

TECHNICAL SUPPORT DOCUMENT
For
DRAFT AIR EMISSION PERMIT NO. 02500056-001

This technical support document (TSD) is intended for all parties interested in the <draft > permit and to meet the requirements that have been set forth by the federal and state regulations (40 CFR § 70.7(a)(5) and Minn. R. 7007.0850, subp. 1). The purpose of this document is to provide the legal and factual justification for each applicable requirement or policy decision considered in the preliminary determination to issue the draft permit.

1. General Information

1.1 Applicant and Stationary Source Location:

Table 1. Applicant and Source Address

Applicant/Address	Stationary Source/Address (SIC Code: 1446)
Tiller Corporation PO Box 1480 Maple Grove, MN 55311	Tiller Corporation 6384 415th St. North Branch Chisago County
Contact: Paul Schultz Phone: (763) 425-4191	

1.2 Facility Description

The North Branch Facility produces industrial sand for use in various industries. Washed sand is brought onsite by truck, unloaded and conveyed to onsite storage piles. A conveying system transports the sand from the onsite piles to the sand dryer to remove the excess moisture. Once the sand is dried, it is conveyed to the gyrotory sifter that separates the sand into various sizes for end use applications. The sorted sand is then transferred through the conveying system to the appropriate storage silo and shipped offsite either via truck or rail. A majority of the product is shipped offsite via rail. The facility operates year round and typical operations are expected to be twenty-four hours per day, seven days per week with the exception of trucking operations which are expected to be twelve hours per day, six days per week with occasional overnight operations if needed. The facility also has a generator to supply power for peak shaving which is also used in emergency situations.

1.3 Description of any Changes Allowed with this Permit Issuance

This is a first time individual state permit with federally enforceable limits.

1.4 Facility Emissions:

	PM tpy	PM ₁₀ tpy	PM _{2.5} tpy	SO ₂ tpy	NO _x Tpy	CO tpy	CO ₂ e tpy	VOC tpy	Single HAP Tpy	All HAPs tpy
Total Facility Limited Potential Emissions	89.3	50.6	24.7	0.48	53.7	93.5	51,100	1.69	0.54	0.66

PM = Particulate Matter

PM_{2.5} = PM smaller than 2.5 microns

NO_x = Nitrogen Oxides

CO = Carbon Monoxide

PM₁₀ = PM smaller than 10 microns

SO₂ = Sulfur Dioxide

VOCs = Volatile Organic Compounds

CO₂e = Carbon Dioxide Equivalents as defined in Minn. R. 7007.0100

HAP = Hazardous Air Pollutant

Table 3. Facility Classification

Classification	Major/Affected Source	Synthetic Minor/Area	Minor/Area
PSD		X	
Part 70 Permit Program		X	
Part 63 NESHAP			X

2. **Regulatory and/or Statutory Basis**

New Source Review (NSR)

The facility is limiting emissions so that it is classified as a synthetic minor source under New Source Review regulations. The facility began construction prior to obtaining the required permit. The construction of this facility exceeded major source thresholds under Prevention of Significant Deterioration Program (PSD). Since the facility has yet to begin operation, Eric V. Schaeffer's memorandum entitled "Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements", November 17, 1998 applies. This guidance states that sources and modifications that were constructed without a valid construction permit and that would be considered major sources or major modifications under the Prevention of Significant Deterioration (PSD) rules in 40 CFR 52.21 are required to install best available control technology (BACT). For subject sources that have started construction but not exceeded the applicable major source threshold or significant emission rate, EPA requires that BACT-equivalent pollution controls be installed. The North Branch site has not begun operation and therefore does not have any emissions attributable to this stationary source. Accordingly, following the 1998 Schaeffer guidance, MPCA had the authority to exercise discretion in what elements need to be incorporated into the permit application submittal to satisfy the source's

permitting obligations. The MPCA stated that the only PSD element which is required as part of this permit action is a BACT analysis for all criteria pollutants (PM, Pb, NO_x, CO, VOC, SO₂). All other elements of a PSD application were not required.

Part 70 Permit Program (Part 70)

The facility is limiting emissions so that it is classified as a synthetic minor source under the Part 70 permit program.

New Source Performance Standards (NSPS)

The following New Source Performance Standards are applicable to the operations at this facility:

- 40 CFR part 60, Subpart UUU—Standards of Performance for Calciners and Dryers in Mineral Industries
- 40 CFR part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The Facility is a non-major source of hazardous air pollutants (HAP) under 40 CFR pt. 63, but subject to an area source NESHAP:

- 40 CFR part 63, subp. ZZZZ, National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The conditions of 40 CFR part 63, subp. ZZZZ are satisfied through compliance with 40 CFR part 60, Subpart IIII.

Compliance Assurance Monitoring (CAM)

CAM does not apply because the facility is not a major source under the Part 70 permit program.

Environmental Review & AERA

The facility has accepted limits on production such that it is not subject to environmental review and is not required to perform an Air Emissions Risk Analysis (AERA).

Minnesota State Rules

Portions of the facility are subject to the following Minnesota Standards of Performance:

- Minn. R. 7011.0050 General Provisions of Federal New Source Performance Standards Incorporated by Reference
- Minn. R. 7011.0110 Visible Emission Restrictions for New Facilities
- Minn. R. 7011.0150 Preventing Particulate Matter from Becoming Airborne
- Minn. R. 7011.0020 Circumvention
- Minn. R. 7011.0700-7011.0735 Standards of Performance for Industrial Process Equipment
- Minn. R. 7011.2300 Standards of Performance for Stationary Internal Combustion Engines
- Minn. R. 7011.3520 Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
- Minn. R. 7011.3350 Standards of Performance for New Nonmetallic Mineral Processing Plants
- Minn. R. 7011.8150 Stationary Reciprocating Internal Combustion Engines

Table 4. Regulatory Overview of Facility

Level*	Applicable Regulations	Comments:
Total Facility	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2; Minn. R. 7011.0150; Minn. R. 7009.0020	The facility is required to comply with a Fugitive Emission Control Plan. This plan identifies all fugitive emission sources, primary and contingent control measures, and record keeping.
	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Emission calculations are based upon feed material moisture content being greater than or equal to 2.00 percent.
	Minn. R. 7011.0150	All reasonable measures shall be taken to prevent avoidable amounts of particulate matter from becoming airborne
	40 CFR pt. 50 Minn. Stat. Section 116.07, subds 4a & 9; Minn. R. 7007.0100, subps. 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2 & 4; Minn. R. 7009.0010 - 7009.0080	The Permittee is required to comply with the National Primary and Secondary Ambient Air Quality Standards and the Minnesota Ambient Air Quality Standards.
	Minn. R. 7011.0020	The facility may not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.
	Minn. R. 7007.0800, subps.	The Permittee must operate all pollution control equipment

	2 & 16(J)	whenever the corresponding process equipment and emission units are operated.
	Minn. R. 7007.0800, subps. 14 & 16(J)	The Permittee is required to retain an operating and maintenance (O&M) plan for all air pollution control equipment. At a minimum, the O&M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation.
	Minn. R. 7019.1000, subp. 4	In any shutdown, breakdown, or deviation the Permittee is required to immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant.
	Minn. R. 7011.0150	The facility may not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne.
	Minn. R. 7030.0010 - 7030.0080	The Permittee is required to comply with noise standards at all times during the operation of any emission units.
	Minn. R. 7007.0800, subp. 9(A)	The permittee is required to allow the agency to inspect and enter the facility.
	Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2	All trucks, hauling material for or to be used in processing, with open beds that enter the facility shall have covers to minimize dust generation from the products hauled. The Permittee shall not allow trucks without covers to make any product deliveries or pick-ups. The Permittee shall not receive or transport material in unenclosed train cars.
	Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2	The Permittee shall keep a daily record of the number of trucks entering the facility.
	Minn. R. ch. 7017	The permittee is required to comply with performance testing requirements.
	Minn. R. 7007.0800, subp. 4(D)	The Permittee is required to annually calibrate or replace all required monitoring equipment.
	Minn. R. 7007.0800, subp. 5	The permittee is required to comply with recordkeeping requirements.
	Minn. R. 7019.1000	The permittee is required to provide notification in the event of a shutdown and/or breakdown and deviations endangering human health or the environment.

	Minn. R. 7007.0800, subp. 6(A)(2)	The Permittee is to submit a Semiannual Deviations Report that is due 30 days after the end of each calendar half-year following Permit Issuance.
	Minn. R. 7007.1150 - 7007.1500	The Permittee is required to submit a permit amendment application if one is needed.
	Minn. R. 7007.1400, subp. 1(H)	The Permittee may apply for an Administrative Amendment to extend a permit deadline by no more than 120 days.
	Minn. R. 7007.0800, subp. 6(C)	The Permittee is required to submit a compliance certification that is due 30 days after end of each calendar year following.
GP 001	Minn. R. 7011.0715	Standards of Performance for Industrial Process Equipment Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. Opacity: less than or equal to 20 percent opacity.
	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	BACT Equivalent limits of: Total Particulate Matter: less than or equal to 0.0020 grains/dry standard cubic foot using 3-hour Average period (this is more stringent than the industrial process equipment rule limit which also applies). PM < 10 micron: less than or equal to 0.0020 grains/dry standard cubic foot using 3-hour Average period. PM < 2.5 micron: less than or equal to 0.0020 grains/dry standard cubic foot using 3-hour Average period.
	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2	The Permittee shall vent emissions from this item to the control equipment meeting the requirements of each associated CE as specified in this permit.
GP 002	Minn. R. 7011.0715, subp. 1 (A)	Standards of Performance for Industrial Process Equipment Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.

		Opacity: less than or equal to 20 percent opacity.
	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	BACT Equivalent limits of: Opacity: less than or equal to 5 percent opacity (this is more stringent than the industrial process equipment rule limit which also applies).
	Minn. R. 7007.0800, subp. 4	The Permittee is required to check for visible emissions (during daylight hours) once each calendar day of operation.
	Minn. R. 7007.0800, subp. 5	The Permittee is required to keep a record of all VE checks, whether or not any VEs were observed, and of any corrective actions taken.
GP 003	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Emission calculations are based upon the moisture content being greater than or equal to 2.0%
	Minn. R. 7007.0800, subps. 4 & 5	The Permittee is required to keep records of the water applications

	Minn. R. 7007.0800, subp. 4	The Permittee is required to check for visible emissions (during daylight hours) once each calendar day of operation.
	Minn. R. 7007.0800, subp. 2	If visible emissions (VEs) are observed, the Permittee is required to determine the cause and take corrective actions as soon as possible to eliminate the VEs.
	Minn. R. 7007.0800, subp. 5	The Permittee is required to record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken. The Permittee is required to maintain watering records
GP 004	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Pollution control requirements.
		The Permittee is required to record the time and date of each pressure drop reading and whether or not the recorded pressure drop was within the range specified in this permit.
		The Permittee is required to operate and maintain the fabric filter at all times that any emission unit controlled by the fabric filter is in operation. The Permittee is required to document periods of non-operation of the control equipment.
	Minn. R. 7007.0800, subps. 4, 5, & 14	Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O&M Plan. The Permittee is required to keep a record of the type and date of any corrective action taken.
	Minn. R. 7007.0800, subp. 4	The Permittee is required to install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.
	Minn. R. 7007.0800, subps. 4, 5 and 14	The Permittee is required to inspect the control equipment components and maintain a written record of these inspections.
	Minn. R. 7007.0800, subp. 14	The Permittee is required to operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan

SV 001	40 CFR Section 60.736(a) & (b); Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Performance testing requirements to verify compliance with the EU 001 emission limits.
	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	
	Minn. R. 7017.2020, subp. 1	
SV 002	40 CFR Section 60.736(a) & (b); Minn. R. 7007.0800, subps. 2	Performance testing requirements to verify compliance with the EU 002 emission limits.
	40 CFR Section 60.736(a) & (b); Minn. R. 7017.2020, subp. 1	
	Minn. R. 7007.0800, subp. 2	
	Minn. R. 7017.2020, subp. 1	
SV 003 through SV 005	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Performance testing requirements to verify compliance with the associate EU emission limits.

and SV 009	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	
	Minn. R. 7017.2020, subp. 1	
SV 006 through SV 008 and SV 010 through SV 012	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Performance testing requirements to verify compliance with the associate EU emission limits.
EU 001	40 CFR pt. 60, subp. UUU	Standards of Performance for Calciners and Dryers in Mineral Industries (NSPS UUU apply).
	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	BACT Equivalent limits and requirements.
EU 002	40 CFR Section 63.6590(c); Minn. R. 7011.8150	Permittee shall meet the requirements of 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. IIII.
CE 001	Title I Condition: To avoid classification as major	The Permittee is required to operate and maintain the control equipment such that it achieves an overall control efficiency to

through CE 019	source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	verify compliance with permitted limits.
FS 005	Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2	Requirements for the facility to prevent particulate matter from becoming airborne.

*Where the requirement appears in the permit (e.g., EU, SV, GP, etc.).

3. Technical Information

3.1 Best Available Control Technology (BACT) Equivalent Analysis

The facility began constructing prior to obtaining the required permit. The construction of this facility exceeded major source thresholds under Prevention of Significant Deterioration Program (PSD). Since the facility has yet to begin operation, Eric V. Schaeffer's memorandum entitled "Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements", November 17, 1998 applies. This guidance states that sources and modifications that were constructed without a valid construction permit and that would be considered major sources or major modifications under the Prevention of Significant Deterioration (PSD) rules in 40 CFR 52.21 are required to install best available control technology (BACT). For subject sources that have started construction but not exceeded the applicable major source threshold or significant emission rate, EPA requires that BACT-equivalent pollution controls be installed. The North Branch site has not begun operation and therefore does not have any emissions attributable to this stationary source. Accordingly, following the 1998 Schaeffer guidance, MPCA had the authority to exercise discretion in what elements need to be incorporated into the permit application submittal to satisfy the source's permitting obligations. The MPCA stated that the only PSD elements which are required as part of this permit action is a BACT analysis for all criteria pollutants (PM, Pb, NO_x, CO, VOC, SO₂). All other elements of a PSD application were not required.

3.2 Summary of BACT Equivalent

Attached to this TSD is a table summarizes the BACT equivalent determinations for each emission unit.

3.3 Calculations of Potential to Emit

Attached to this TSD are detailed calculations.

3.4 Periodic Monitoring

In accordance with the Clean Air Act, it is the responsibility of the owner or operator of a facility to have sufficient knowledge of the facility to certify that the facility is in compliance with all applicable requirements.

In evaluating the monitoring included in the permit, the MPCA considered the following:

- The likelihood of the facility violating the applicable requirements;
- Whether add-on controls are necessary to meet the emission limits;
- The variability of emissions over time;
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- The technical and economic feasibility of possible periodic monitoring methods; and
- The kind of monitoring found on similar units elsewhere.

The following table summarizes the periodic monitoring requirements for those emission units for which the monitoring required by the applicable requirement is nonexistent or inadequate.

Table 6. Periodic Monitoring

Level*	Requirement (basis)	Additional Monitoring	Discussion
Total Facility	Feed Material Moisture Content \geq 2.00% (BACT Equivalent; limit to avoid NSR and Part 70)	Recordkeeping: Testing of moisture content of each different feed material source or maintaining records indicating instances when feed material was sourced from or is being removed from below the water table or wet processed prior to arriving at the site	Monitoring and recordkeeping requirements required the facility to demonstrate that the moisture content of feed material is greater than 2.00%; the basis of relevant PTE calculations.
GP 001	Total Particulate Matter/PM ₁₀ /P M _{2.5} \leq 0.0020 grains/dry standard cubic foot	Performance Testing, Periodic Inspections and Operation of Control Equipment	Performance testing to verify compliance. A testing frequency plan will be developed based upon test data and MPCA guidance.

Level*	Requirement (basis)	Additional Monitoring	Discussion
	Total Particulate Matter/PM ₁₀ /P M _{2.5} ≤ 0.37 lbs/hour (BACT Equivalent; limit to avoid NSR and Part 70)		
GP 002	Total Particulate Matter ≤ 0.30 grains/dry standard cubic foot Opacity: ≤ 5% (BACT Equivalent; limit to avoid NSR and Part 70)	Performance Testing, recordkeeping and monitoring through daily visible emission requirements Periodic Inspections and Operation of Control Equipment	Performance testing to verify compliance with opacity limit; a testing frequency plan will be developed based upon test data and MPCA guidance.
GP 003	Moisture Content: ≥ 2.0% (BACT Equivalent; limit to avoid NSR and Part 70)	Water application rate, recordkeeping and monitoring through daily visible emission requirements	Maintaining moisture content to be ≥ 2.0% provides reasonable assurance that the requirement will be met.
GP 004	Operating Practices (BACT Equivalent; limit to avoid	Periodic inspections, Recordkeeping, Operation and Maintenance plan	Monitoring and recording of operating parameters satisfies monitoring requirements.

Level*	Requirement (basis)	Additional Monitoring	Discussion
	NSR and Part 70)		
SV 001 through SV 012	Performance Testing (see each associated Level)	Performance Testing	Performance testing to verify compliance. Testing frequency plans will be developed based upon test data and MPCA guidance.
EU 001	<p>Opacity \leq 10% (NSPS UUU)</p> <p>Fuel type: Natural gas and No. 2 fuel oil only by design</p> <p>(Minn. R. 7007.0800, subp. 2)</p> <p>When firing fuel oil</p> <p>Total Particulate Matter/PM₁₀/P M_{2.5} \leq 0.0090 grains/dry standard cubic foot</p> <p>Total Particulate Matter/PM₁₀/P M_{2.5} \leq 3.72 lbs/hr</p> <p>NOx \leq 0.16</p>	Performance Testing, Recordkeeping, Periodic Inspections (see SV 001 and CE 001)	Performance testing to verify compliance. Testing frequency plans will be developed based upon test data and MPCA guidance.

Level*	Requirement (basis)	Additional Monitoring	Discussion
	lbs/million Btu $\text{NO}_x \leq 11.36$ lbs/hour $\text{CO} \leq 0.30$ lbs/million Btu $\text{CO} \leq 21.30$ lbs/hour $\text{VOCs} \leq 0.10$ lbs/hour $\text{VOCs} \leq 0.0014$ lbs/million Btu $\text{SO}_2 \leq 0.11$ lbs/hour $\text{SO}_2 \leq 0.0015$ lbs/million Btu (BACT Equivalent; NSPS UUU, limit to avoid NSR and Part 70) When firing natural gas Total Particulate Matter/ PM_{10}/P $\text{M}_{2.5} \leq 0.0065$ grains/dry standard cubic foot Total Particulate		

Level*	Requirement (basis)	Additional Monitoring	Discussion
	Matter/PM ₁₀ /P $M_{2.5} \leq 2.68$ lbs/hr $NO_x \leq 0.080$ lbs/million Btu $NO_x \leq 5.68$ lbs/hour $CO \leq 0.25$ lbs/million Btu $CO \leq 17.75$ lbs/hour $VOCs \leq 0.38$ lbs/hour $VOCs \leq 0.0054$ lbs/million Btu $SO_2 \leq 0.040$ lbs/hour $SO_2 \leq 0.00058$ lbs/million Btu (BACT Equivalent; NSPS UUU, limit to avoid NSR and Part 70)		
EU 002	NMHC+NO _x \leq 4.8 grams/horsepower-hour (6.4 g/kW-hr) Carbon Monoxide \leq 2.6	Performance Testing, monitoring and recordkeeping	Performance testing to verify compliance. Testing frequency plans will be developed based upon test data and MPCA guidance. Monitoring and recording of operating parameters satisfies monitoring requirements.

Level*	Requirement (basis)	Additional Monitoring	Discussion
	<p>grams/horsepower-hour (3.5 g/kW-hr).</p> <p>Total Particulate Matter ≤ 0.15 grams/horsepower-hour (0.20 g/kW-hr).</p> <p>(40 CFR 60.4204(b) & 4201(b); 40 CFR 89.112(a); Minn. R. 7011.3520)</p> <p>Operating Hours ≤ 600 hours/year using 365-day Rolling Sum to be calculated by the end of each day.</p> <p>Total Particulate Matter/PM₁₀/P M_{2.5} ≤ 0.021 grams/horsepower-hour</p> <p>Total Particulate Matter/PM₁₀/P M_{2.5} ≤ 0.050</p>		

Level*	Requirement (basis)	Additional Monitoring	Discussion
	lbs/hour $\text{NO}_x \leq 5.25$ grams/horsepower-hour $\text{NO}_x \leq 13.2$ lbs/hr $\text{CO} \leq 0.25$ grams/horsepower-hour $\text{CO} \leq 0.63$ lbs/hr $\text{VOCs} \leq 0.030$ grams/horsepower-hour $\text{VOC} \leq 0.075$ lbs/hr $\text{SO}_2 \leq 0.014$ (BACT Equivalent; limit to avoid NSR and Part 70) $\text{SO}_2 \leq 0.5$ lbs/million Btu $\text{Opacity} \leq 20$		

Level*	Requirement (basis)	Additional Monitoring	Discussion
	<p>percent opacity once operating temperatures have been attained</p> <p>(Minn. R. 7011.2300)</p> <p>Fuel type: No. 2 fuel oil only by design (Minn. R. 7005.0100, subp. 35a; 40 CFR 60.4207(b); 40 CFR 80.510(b); Minn. R. 7011.3520)</p>		
CE 001 through CE 004, CE 008, CE 012 and CE 013	<p>Control Efficiency and Pressure Drop Range</p> <p>(BACT Equivalent; limit to avoid NSR and Part 70)</p>	Recordkeeping. (See GP 004)	Monitoring and recording of operating parameters satisfies monitoring requirements.
CE 005 through CE 007, CE 009 through CE 011, CE 014	<p>Control Efficiency and Opacity \leq 5%</p> <p>(BACT Equivalent; limit to avoid</p>	Recordkeeping and performance testing.	Monitoring and recording satisfies monitoring requirements.

Level*	Requirement (basis)	Additional Monitoring	Discussion
through CE 019	NSR and Part 70)		
FS 005	Minimize or eliminate fugitive emissions Facility-Wide Speed Limit (BACT Equivalent; limit to avoid NSR and Part 70; Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2)	Daily inspections and recordkeeping	Monitoring and recording of operating parameters satisfies monitoring requirements.

*Where the requirement appears in the permit (e.g., EU, SV, GP, etc.).

3.5 Insignificant Activities

The facility has several operations which are classified as insignificant activities under the MPCA's permitting rules. These are listed in the Appendix to the permit.

The permit is required to include periodic monitoring for all emissions units, including insignificant activities, per EPA guidance. The insignificant activities at this Facility are only subject to general applicable requirements. Using the criteria outlined earlier in this TSD, the following table documents the justification why no additional periodic monitoring is necessary for the current insignificant activities.

Table 7. Insignificant Activities

Insignificant Activity	General Applicable Emission limit	Discussion
Indirect heating equipment with a capacity less than 420,000 Btu/hour, etc.	PM \leq 0.4 lb/MMBtu Opacity \leq 20% with exceptions (Minn. R. 7011.0515)	For these units, based on the fuels used and EPA published emissions factors, it is highly unlikely that they could violate the applicable requirements.
Brazing, soldering or	PM, variable depending	For these units, based on EPA published

Insignificant Activity	General Applicable Emission limit	Discussion
welding equipment	on airflow Opacity \leq 20% (Minn. R. 7011.0715)	emissions factors, it is highly unlikely that they could violate the applicable requirement. In addition, these units are typically operated and vented inside a building, so testing for PM or opacity is not feasible.
Infrequent use of spray paint equipment for routine housekeeping or plant upkeep activities not associated with primary production processes at the stationary source	PM, variable depending on airflow or process weight rate Opacity \leq 20% (Minn. R. 7011.0715)	While spray equipment will have the potential to emit particulate matter, these particular activities are those not associated with production, so they would be infrequent and usually occur outdoors. Testing or monitoring is not feasible.

3.6 Permit Organization

In general, the permit meets the MPCA Delta Guidance for ordering and grouping of requirements. One area where this permit deviates slightly from Delta guidance is in the use of appendices. While appendices are fully enforceable parts of the permit, in general, any requirement that the MPCA thinks should be electronically tracked (e.g., limits, submittals, etc.), should be in Table A or B of the permit. The main reason is that the appendices are word processing sections and are not part of the electronic tracking system. Violation of the appendices can be enforced, but the computer system will not automatically generate the necessary enforcement notices or documents. Staff must generate these.

3.7 Comments Received

Public Notice Period: November 08, 2012 – December 14, 2012

Public Meeting: December 04, 2012

EPA Review Period: November 08, 2012 – December 14, 2012

4. Permit Fee Assessment

This permit action is the issuance of an individual state operating permit based on an initial application received on April 04, 2012 and subsequently updated through the notice date of this permit action. Attached to this TSD contains the MPCA's assessment of Application and Additional Points used to determine the permit application fee for this permit action as required by Minn. R. 7002.0019. The permit action includes a BACT review for eight pollutants, two NSPS', one NESHAP and limits to remain

below four different program thresholds (Part 70, NSR, EAW and AERA) for which additional points apply.

5. Conclusion

Based on the information provided by the facility, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 02500056-001 and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules. The permit is being processed under issuance goals and deadlines.

Staff Members on Permit Team:

- Steven Gorg (Senior Engineer)
- Richard Cordes (peer reviewer)
- Jeff Hedman (peer reviewer)
- Sarah Kilgriff (enforcement)
- Jim Kolar (stack testing)
- Laurie O'Brien (support staff)
- Rachel Mueller (support staff)
- Beckie Olson (support staff)
- Kelly Bettin (support staff)
- Ralph Pribble (Public Information Officer)
- Jeff Smith (Industrial Division Director)
- Don Smith (Industrial Division Manager)

AQ File No. 4539; DQ 3890

Attachments:

1. Calculation Spreadsheets
2. Facility Description and CD-01 Forms
3. MPCA's Assessment of Application and Additional Points
4. Tiller's BACT Equivalent Analysis
5. Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements
6. Summary of BACT Equivalent

Attachment 1:
Calculation Spreadsheets

Tiller Corporation - North Branch Facility
Air Permit Application
Sand Dryer (EU001) Distillate Oil Criteria Pollutant Emission Calculations

EU001 - Sand Dryer

SV001 - Sand Dryer Stack

CE001 - Sand Dryer Baghouse

Sand Dryer - Distillate Oil Combustion Emissions (Back-up Fuel)

Heat Input:	71,000,000	Btu/hr
Heat Content:	138000	Btu/gal ¹
Fuel Usage:	514.49	gal/hr
Fuel sulfur content:	0.0015	%
Operating Hours:	8760	

Criteria Pollutants

Pollutant ²	Emission Factor (lb/MMBtu)	Emissions (lb/hr)	Emissions (tpy)
NO _x	0.16	11.36	49.76
CO	0.3	21.30	93.29

Pollutant	Emission Factor (lb/10 ³ gal)	Emissions (lb/hr)	Emissions (tpy)
SO _x ³	0.213	0.11	0.48
VOC ⁴	0.2	0.10	0.45

Pollutant	Grain Loading Rate	Emissions (lb/hr)	Emissions (tpy)
PM/PM ₁₀ /PM _{2.5} ⁵	0.009	3.72	16.28

Greenhouse Gases

	Emission Factors (lb/gal) ^{6,7}	Global Warming Potential ⁸	Emissions (lb/hr)	Emissions (tpy)
CO ₂	2.25E+01	1	11,553	50,600
N ₂ O	1.82E-04	310	9.37E-02	0.41
CH ₄	9.11E-04	21	4.69E-01	2.05
CO ₂ e			11,591	50,771

1. Distillate fuel oil no. 2 heat content from 40 CFR Part 98 Subpart C, Table C-1.
2. Emission factors from NO_x and CO quotes with FGR.pdf, from Paul Schultz of Tiller 6/18/2012.
3. Emission factor from AP-42 Chapter 1.3 (5/10), Table 1.3-1 for boilers < 100 MMBtu/hr heat input. The SO₂ emission factor is calculated by multiplying an emission factor by the percent sulfur in the fuel oil.
4. VOC emission factor from AP-42 Chapter 1.3 (5/10), Table 1.3-3 for industrial boilers burning distillate fuel oil.
5. Total PM BACT Limit (for fuel oil combustion) of 0.009 proposed by Tiller in submittal to Steve Gorg of the MPCA on 8/31/12. The limit is the sum of the anticipated condensable emissions from fuel oil combustion based on AP-42 factors and the anticipated filterable emissions.
6. CO₂ emission factor and distillate oil no. 2 heat content from 40 CFR Part 98 Subpart C, Table C-1.
7. Emission factors for N₂O and CH₄ from 40 CFR Part 98 Subpart C, Table C-2.
8. Global warming potentials from 40 CFR Part 98 Subpart A, Table A-1.

Tiller Corporation - North Branch Facility
Air Permit Application
Sand Dryer (EU001) Distillate Oil HAP Emission Calculations

EU001 - Sand Dryer

SV001 - Sand Dryer Stack

CE001 - Sand Dryer Baghouse

Sand Dryer - Distillate Oil Combustion HAP Emissions (Back-up Fuel)

Heat Input:	71	MMBtu/hr
Number of Dryers:	1	
Fuel Usage:	514.49	gal/hr
Annual Operating Hours:	8760	
Heat Content: ¹	138000	Btu/gal
Pollution Control Efficiency:	0	%

Pollutant	CAS	Emission Factors² (lb/10³gal)	Hourly Emissions (lb/hr)	Maximum Uncontrolled Emissions (tpy)	Maximum Controlled Emissions (tpy)	Limited Controlled Emissions (tpy)
Benzene	71-43-2	2.14E-04	1.10E-04	4.82E-04	4.82E-04	4.82E-04
Ethylbenzene	100-41-4	6.36E-05	3.27E-05	1.43E-04	1.43E-04	1.43E-04
Formaldehyde	50-00-0	3.30E-02	1.70E-02	7.44E-02	7.44E-02	7.44E-02
Naphthalene	91-20-3	1.13E-03	5.81E-04	2.55E-03	2.55E-03	2.55E-03
1,1,1-Trichloroethane	71-55-6	2.36E-04	1.21E-04	5.32E-04	5.32E-04	5.32E-04
Toluene	108-88-3	6.20E-03	3.19E-03	1.40E-02	1.40E-02	1.40E-02
o-Xylene	95-47-6	1.09E-04	5.61E-05	2.46E-04	2.46E-04	2.46E-04
Acenaphthene	83-32-9	2.11E-05	1.09E-05	4.75E-05	4.75E-05	4.75E-05
Acenaphthylene	203-96-8	2.53E-07	1.30E-07	5.70E-07	5.70E-07	5.70E-07
Anthracene	120-12-7	1.22E-06	6.28E-07	2.75E-06	2.75E-06	2.75E-06
Benz(a)anthracene	56-55-3	4.01E-06	2.06E-06	9.04E-06	9.04E-06	9.04E-06
Benzo(b,k)fluoranthene	205-99-2	1.48E-06	7.61E-07	3.34E-06	3.34E-06	3.34E-06
Benzo(g,h,i)perylene	191-24-2	2.26E-06	1.16E-06	5.09E-06	5.09E-06	5.09E-06
Chrysene	218-01-9	2.38E-06	1.22E-06	5.36E-06	5.36E-06	5.36E-06
Dibenzo(a,h)anthracene	53-70-3	1.67E-06	8.59E-07	3.76E-06	3.76E-06	3.76E-06
Fluoranthene	206-44-0	4.84E-06	2.49E-06	1.09E-05	1.09E-05	1.09E-05
Fluorene	86-73-7	4.47E-06	2.30E-06	1.01E-05	1.01E-05	1.01E-05
Indeno(1,2,3-cd)pyrene	193-39-5	2.14E-06	1.10E-06	4.82E-06	4.82E-06	4.82E-06
Phenanthrene	85-01-8	1.05E-05	5.40E-06	2.37E-05	2.37E-05	2.37E-05
Pyrene	129-00-0	4.25E-06	2.19E-06	9.58E-06	9.58E-06	9.58E-06
OCDD	3268-87-9	3.10E-09	1.59E-09	6.99E-09	6.99E-09	6.99E-09
Arsenic	7784-42-1	5.52E-04	2.84E-04	1.24E-03	1.24E-03	1.24E-03
Beryllium	7440-41-7	4.14E-04	2.13E-04	9.33E-04	9.33E-04	9.33E-04
Cadmium	7440-43-9	4.14E-04	2.13E-04	9.33E-04	9.33E-04	9.33E-04
Chromium	7440-47-3	4.14E-04	2.13E-04	9.33E-04	9.33E-04	9.33E-04
Lead	7439-92-1	1.24E-03	6.39E-04	2.80E-03	2.80E-03	2.80E-03
Manganese	7439-96-5	8.28E-04	4.26E-04	1.87E-03	1.87E-03	1.87E-03
Mercury	7439-97-6	4.14E-04	2.13E-04	9.33E-04	9.33E-04	9.33E-04
Nickel	7440-02-0	4.14E-04	2.13E-04	9.33E-04	9.33E-04	9.33E-04
Selenium	7782-49-2	2.07E-03	1.07E-03	4.66E-03	4.66E-03	4.66E-03
Total HAP		4.78E-02	2.46E-02	1.08E-01	1.08E-01	1.08E-01
Maximum Individual HAP			1.70E-02	7.44E-02	7.44E-02	7.44E-02

1. Distillate oil No. 2 heat content is 0.138 MMBtu/gal per 40 CFR Part 98 Subpart C, Table C-2.

2. HAP emission factors from AP-42 Chapter 1.3 (5/10), Table 1.3-9. HAP emission factors for metal HAP from AP-42 Chapter 1.3 (5/10), Table 1.3-

10. Emission factors for metal HAP are in lb/10¹² Btu and are converted to lb/mgal.

1a) AQ Facility ID No.: 2500056

1b) AQ File No.:

4539

2) Facility Name: Tiller - North Branch

3a)	3b)	3c) CAS#:	N/A			CAS#:	N/A			CAS#:	N/A		
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:	PM			Pollutant Name:	PM ₁₀			Pollutant Name:	PM _{2.5}		
		3e) Potential	3f) Actual			Potential	Actual			Potential	Actual		
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	3.72	3158.11	16.28	16.28	3.72	3161.04	16.28	16.28	3.72	3161.04	16.28	16.28
EU	002	0.05	0.23	0.02	0.02	0.05	0.23	0.02	0.02	0.05	0.23	0.02	0.02
GP	001	10.77	223.31	47.15	47.15	5.51	100.69	24.13	24.13	1.51	26.89	6.60	6.60
GP	002	3.35	67.47	14.66	14.66	1.52	31.91	6.66	6.66	0.25	4.83	1.09	1.09
GP	003	0.11	0.50	0.50	0.50	0.06	0.25	0.25	0.25	0.02	0.10	0.10	0.10
FS	004	0.97	4.25	4.25	4.25	0.46	2.01	2.01	2.01	0.07	0.30	0.30	0.30
FS	005	-	6.38	6.38	6.38	-	1.28	1.28	1.28	-	0.31	0.31	0.31

4)	Potential	Actual	Potential	Actual	Potential	Actual
Total	Unrestricted	Limited	Yr	Unrestricted	Limited	Yr
Facility	3460.25	89.25	89.25	3297.41	50.62	50.62

5)

- ☐ Compact disc containing editable calculation spreadsheet(s) included in the
☒ Editable calculation spreadsheet(s) will be emailed to the MPCA upon request

3a)	3b)	3c) CAS#:	N/A			3c) CAS#:	N/A			3c) CAS#:	N/A		
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:	NO _x			3d) Pollutant Name:	CO			3d) Pollutant Name:	SO _x		
		3e) Potential	3f) Actual			Potential	Actual			Potential	Actual		
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	11.36	70.59	49.76	49.76	21.30	163.58	93.29	93.29	0.11	0.48	0.48	0.48
EU	002	13.18	57.72	3.95	3.95	0.63	2.75	0.19	0.19	0.01	0.06	4.15E-03	4.15E-03
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential	Actual	Potential	Actual	Potential	Actual
Total	Unrestricted	Limited	Yr	Unrestricted	Limited	Yr
Facility	128.31	53.71	53.71	166.32	93.48	93.48

3a)	3b)	3c) CAS#:	N/A			3c) CAS#:	N/A			3c) CAS#:	N/A		
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:	VOC			3d) Pollutant Name:	GHG - CO ₂ e			3d) Pollutant Name:			
		3e) Potential	3f) Actual			Potential	Actual			Potential	Actual		
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	0.38	1.66	1.66	1.66	11,591	50,771	50,771	50,771				
EU	002	0.08	0.33	0.02	0.02	1,129	4,944	339	339				
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				

4)	Potential	Actual	Potential	Actual	Potential	Actual
Total	Unrestricted	Limited	Yr	Unrestricted	Limited	Yr
Facility	1.99	1.69	1.69	55,715	51,109	51,109

3a)	3b)	3c) CAS#:				3c) CAS#:				3c) CAS#:			
Emission Source Type	Emission Source ID No.	3d) Pollutant Name: CO₂ (GHG Mass)				3d) Pollutant Name: N₂O (GHG mass)				3d) Pollutant Name: CH₄ (GHG Mass)			
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	11,553	50,600	50,600	50,600	0.09	0.41	0.41	0.41	0.47	2.05	2.05	2.05
EU	002	1,125	4,928	338	338	9.13E-03	0.04	2.74E-03	2.74E-03	0.05	0.20	0.01	0.01
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential				Actual	Potential				Actual	Potential				Actual
Total		Unrestricted	Limited		Yr		Unrestricted	Limited		Yr		Unrestricted	Limited		Yr
Facility		55,528	50,938		50,938		0.45	0.41		0.41		2.25	2.07		2.07

3a)	3b)	3c) CAS#:				3c) CAS#:				3c) CAS#:			
Emission Source Type	Emission Source ID No.	3d) Pollutant Name: Acetaldehyde				3d) Pollutant Name: Acrolein				3d) Pollutant Name:			
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
EU	002	1.74E-04	7.62E-04	5.22E-05	5.22E-05	5.44E-05	2.38E-04	1.63E-05	1.63E-05				
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00				

4)	Potential				Actual	Potential				Actual	Potential				Actual
Total		Unrestricted	Limited		Yr		Unrestricted	Limited		Yr		Unrestricted	Limited		Yr
Facility		7.62E-04	5.22E-05		5.22E-05		2.38E-04	1.63E-05		1.63E-05					

3a)	3b)	3c) CAS#:				3c) CAS#:				3c) CAS#:			
Emission Source Type	Emission Source ID No.	3d) Pollutant Name: 1,1,1-Trichloroethane				3d) Pollutant Name: 2-Methylnaphthalene				3d) Pollutant Name: 3-Methylchloranthrene			
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	1.21E-04	5.32E-04	5.32E-04	5.32E-04	1.66E-06	7.26E-06	7.26E-06	7.26E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
EU	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential				Actual	Potential				Actual	Potential				Actual
Total		Unrestricted	Limited		Yr		Unrestricted	Limited		Yr		Unrestricted	Limited		Yr
Facility		5.32E-04	5.32E-04		5.32E-04		7.26E-06	7.26E-06		7.26E-06		5.45E-07	5.45E-07		5.45E-07

3a)	3b)	3c) CAS#:				3c) CAS#:				3c) CAS#:			
Emission Source Type	Emission Source ID No.	3d) Pollutant Name: 7-12-Dimethylbenz(a)anthracene				3d) Pollutant Name: Acenaphthene				3d) Pollutant Name: Acenaphthylene			
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	1.11E-06	4.84E-06	4.84E-06	4.84E-06	1.09E-05	4.75E-05	4.75E-05	4.75E-05	1.30E-07	5.70E-07	5.70E-07	5.70E-07
EU	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.23E-05	1.41E-04	9.69E-06	9.69E-06	6.37E-05	2.79E-04	1.91E-05	1.91E-05

GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		4.84E-06	4.84E-06	4.84E-06		1.89E-04	5.72E-05	5.72E-05		2.80E-04	1.97E-05	1.97E-05

3a)	3b)	3c) CAS#:			120-12-7	3c) CAS#:			7784-42-1	3c) CAS#:			56-55-3
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:			Anthracene	3d) Pollutant Name:			Arsenic	3d) Pollutant Name:			Benz(a)anthracene
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	6.28E-07	2.75E-06	2.75E-06	2.75E-06	2.84E-04	1.24E-03	1.24E-03	1.24E-03	2.06E-06	9.04E-06	9.04E-06	9.04E-06
EU	002	8.49E-06	3.72E-05	2.55E-06	2.55E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	4.29E-06	1.88E-05	1.29E-06	1.29E-06
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		3.99E-05	5.30E-06	5.30E-06		1.24E-03	1.24E-03	1.24E-03		2.78E-05	1.03E-05	1.03E-05

3a)	3b)	3c) CAS#:			71-43-2	3c) CAS#:			50-32-8	3c) CAS#:			205-99-2
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:			Benzene	3d) Pollutant Name:			Benzo(a)pyrene	3d) Pollutant Name:			Benzo(b)fluoranthene
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	1.45E-04	6.35E-04	6.35E-04	6.35E-04	8.29E-08	3.63E-07	3.63E-07	3.63E-07	1.24E-07	5.45E-07	5.45E-07	5.45E-07
EU	002	5.35E-03	0.02	1.61E-03	1.61E-03	1.77E-06	7.77E-06	5.32E-07	5.32E-07	7.66E-06	3.35E-05	2.30E-06	2.30E-06
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		0.02	2.24E-03	2.24E-03		8.13E-06	8.95E-07	8.95E-07		3.41E-05	2.84E-06	2.84E-06

3a)	3b)	3c) CAS#:			191-24-2	3c) CAS#:			205-82-3	3c) CAS#:			205-99-2
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:			Benzo(g,h,i)perylene	3d) Pollutant Name:			Benzo(k)fluoranthene	3d) Pollutant Name:			Benzo(b,k)fluoranthene
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	1.16E-06	5.09E-06	5.09E-06	5.09E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07	7.61E-07	3.34E-06	3.34E-06	3.34E-06
EU	002	2.46E-06	1.08E-05	7.37E-07	7.37E-07	1.50E-06	6.59E-06	4.51E-07	4.51E-07	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		1.59E-05	5.83E-06	5.83E-06		7.13E-06	9.96E-07	9.96E-07		3.34E-06	3.34E-06	3.34E-06

3a) Emission Source Type	3b) Emission Source ID No.	3c) CAS#:	7440-41-7				3c) CAS#:	7440-43-9				3c) CAS#:	7440-47-3			
		3d) Pollutant Name:	Beryllium				3d) Pollutant Name:	Cadmium				3d) Pollutant Name:	Chromium			
		3e) Potential				3f) Actual	Potential				Actual	Potential				Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	
EU	001	2.13E-04	9.33E-04	9.33E-04	9.33E-04		2.13E-04	9.33E-04	9.33E-04	9.33E-04		2.13E-04	9.33E-04	9.33E-04	9.33E-04	
EU	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	

4)	Potential				Actual	Potential				Actual	Potential				Actual
Total		Unrestricted	Limited	Yr			Unrestricted	Limited	Yr			Unrestricted	Limited	Yr	
Facility		9.33E-04	9.33E-04	9.33E-04			9.33E-04	9.33E-04	9.33E-04			9.33E-04	9.33E-04	9.33E-04	

3a) Emission Source Type	3b) Emission Source ID No.	3c) CAS#:	218-01-9				3c) CAS#:	7440-48-4				3c) CAS#:	53-70-3			
		3d) Pollutant Name:	Chrysene				3d) Pollutant Name:	Cobalt				3d) Pollutant Name:	Dibenzo(a,h)anthracene			
		3e) Potential				3f) Actual	Potential				Actual	Potential				Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	
EU	001	1.22E-06	5.36E-06	5.36E-06	5.36E-06		5.80E-06	2.54E-05	2.54E-05	2.54E-05		8.59E-07	3.76E-06	3.76E-06	3.76E-06	
EU	002	1.06E-05	4.62E-05	3.17E-06	3.17E-06		0.00E+00	0.00E+00	0.00E+00	0.00E+00		2.39E-06	1.05E-05	7.16E-07	7.16E-07	
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	

4)	Potential				Actual	Potential				Actual	Potential				Actual
Total		Unrestricted	Limited	Yr			Unrestricted	Limited	Yr			Unrestricted	Limited	Yr	
Facility		5.16E-05	8.53E-06	8.53E-06			2.54E-05	2.54E-05	2.54E-05			1.42E-05	4.48E-06	4.48E-06	

3a) Emission Source Type	3b) Emission Source ID No.	3c) CAS#:	25321-22-6				3c) CAS#:	100-41-4				3c) CAS#:	206-44-0			
		3d) Pollutant Name:	Dichlorobenzene				3d) Pollutant Name:	Ethylbenzene				3d) Pollutant Name:	Fluoranthene			
		3e) Potential				3f) Actual	Potential				Actual	Potential				Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	
EU	001	8.29E-05	3.63E-04	3.63E-04	3.63E-04		3.27E-05	1.43E-04	1.43E-04	1.43E-04		2.49E-06	1.09E-05	1.09E-05	1.09E-05	
EU	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		2.78E-05	1.22E-04	8.34E-06	8.34E-06	
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	

4)	Potential				Actual	Potential				Actual	Potential				Actual
Total		Unrestricted	Limited	Yr			Unrestricted	Limited	Yr			Unrestricted	Limited	Yr	
Facility		3.63E-04	3.63E-04	3.63E-04			1.43E-04	1.43E-04	1.43E-04			1.33E-04	1.92E-05	1.92E-05	

3a) Emission Source Type	3b) Emission Source ID No.	3c) CAS#:	86-73-7				3c) CAS#:	50-00-0				3c) CAS#:	110-54-3			
		3d) Pollutant Name:	Fluorene				3d) Pollutant Name:	Formaldehyde				3d) Pollutant Name:	Hexane			
		3e) Potential				3f) Actual	Potential				Actual	Potential				Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	
EU	001	2.30E-06	1.01E-05	1.01E-05	1.01E-05		0.02	0.07	0.07	0.07		0.12	0.54	0.54	0.54	
EU	002	8.83E-05	3.87E-04	2.65E-05	2.65E-05		5.44E-04	2.38E-03	1.63E-04	1.63E-04		0.00E+00	0.00E+00	0.00E+00	0.00E+00	
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00		0.00E+00	0.00E+00	0.00E+00	0.00E+00	

GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		3.97E-04	3.66E-05	3.66E-05		0.08	0.07	0.07		0.54	0.54	0.54

3a)	3b)	3c) CAS#:	193-39-5			3c) CAS#:	7439-92-1			3c) CAS#:	7439-96-5		
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:	Indeno(1,2,3-			3d) Pollutant Name:	Lead			3d) Pollutant Name:	Manganese		
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	1.10E-06	4.82E-06	4.82E-06	4.82E-06	6.39E-04	2.80E-03	2.80E-03	2.80E-03	4.26E-04	1.87E-03	1.87E-03	1.87E-03
EU	002	2.86E-06	1.25E-05	8.57E-07	8.57E-07	1.12E-04	4.90E-04	3.35E-05	3.35E-05	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		1.73E-05	5.68E-06	5.68E-06		3.29E-03	2.83E-03	2.83E-03		1.87E-03	1.87E-03	1.87E-03







3a)	3b)	3c) CAS#:	7439-97-6			3c) CAS#:	91-20-3			3c) CAS#:	7440-02-0		
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:	Mercury			3d) Pollutant Name:	Naphthalene			3d) Pollutant Name:	Nickel		
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	2.13E-04	9.33E-04	9.33E-04	9.33E-04	5.81E-04	2.55E-03	2.55E-03	2.55E-03	2.13E-04	9.33E-04	9.33E-04	9.33E-04
EU	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	8.97E-04	3.93E-03	2.69E-04	2.69E-04	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		9.33E-04	9.33E-04	9.33E-04		6.48E-03	2.82E-03	2.82E-03		9.33E-04	9.33E-04	9.33E-04

3a)	3b)	3c) CAS#:	3268-87-9			3c) CAS#:	95-47-6			3c) CAS#:	85-01-8		
Emission Source Type	Emission Source ID No.	3d) Pollutant Name:	OCDD			3d) Pollutant Name:	o-Xylene			3d) Pollutant Name:	Phenanthrene		
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	1.59E-09	6.99E-09	6.99E-09	6.99E-09	5.61E-05	2.46E-04	2.46E-04	2.46E-04	5.40E-06	2.37E-05	2.37E-05	2.37E-05
EU	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.33E-03	5.83E-03	4.00E-04	4.00E-04	2.82E-04	1.23E-03	8.45E-05	8.45E-05
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		6.99E-09	6.99E-09	6.99E-09		6.08E-03	6.45E-04	6.45E-04		1.26E-03	1.08E-04	1.08E-04

3a) Emission Source Type	3b) Emission Source ID No.	3c) CAS#:	129-00-0			3c) CAS#:	7782-49-2			3c) CAS#:	108-88-3		
		3d) Pollutant Name:	Pyrene			3d) Pollutant Name:	Selenium			3d) Pollutant Name:	Toluene		
		3e) Potential			3f) Actual	Potential			Actual	Potential			Actual
		Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr	Lbs per Hr	Unrestricted tpy	Limited tpy	Tons per yr
EU	001	2.19E-06	9.58E-06	9.58E-06	9.58E-06	1.07E-03	4.66E-03	4.66E-03	4.66E-03	3.19E-03	0.01	0.01	0.01
EU	002	2.56E-05	1.12E-04	7.68E-06	7.68E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.94E-03	8.49E-03	5.82E-04	5.82E-04
GP	001	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	002	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
GP	003	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	004	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
FS	005	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

4)	Potential			Actual	Potential			Actual	Potential			Actual
Total		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr		Unrestricted	Limited	Yr
Facility		1.22E-04	1.73E-05	1.73E-05		4.66E-03	4.66E-03	4.66E-03		0.02	0.01	0.01

Tiller North Branch Facility
Process Weight Rate Calcs for GI-091

Emission Unit ID	Stack ID	Control Equipment ID	Emission Unit Description	Maximum Design Capacity (ton/hr)	Dry Material Processed (lb/hr)	Allowable Emissions per 7011.0730 ¹ (lb/hr)	Design Flow Rate ² (acfm)	Exit Temperature ² (F)	Stack Flow Rate (dscfm)	Concentration (gr/dscf)	Allowable Emissions per 7011.0735 (lb/hr)
EU003	SV003	CE002 (BH2)	Gyrotory Sifter	180	360,000	39.73	25,000	100	23,571	0.07	13.63
EU004	SV003	CE012 (BH2)	Conveyor System	180	360,000	39.73					
EU005	SV004	CE003 (BH3)	Rail Loadout Silo	400	800,000	45.15	1,500	100	1,414	0.17	2.04
EU006	SV005	CE004 (BH4)	Truck Loadout Silo	400	800,000	45.15	1,500	100	1,414	0.17	2.04
EU007/010 - 025	SV006 ,007, 008, 010, 011, 012	CE005, 006, 007, 009, 010, 011, 014, 015, 016, 017, 018, 019 (Bin Vent 1, 2, 3, 4, 5, 6)	Storage Silos	180	360,000	39.73					
				360	720,000	44.39					
EU008	SV009	CE008 (BH8)	Gyrotory Sifter	180	360,000	39.73	25,000	100	23,571	0.07	13.63
EU009	SV009	CE013 (BH8)	Conveyor System ⁴	180	360,000	39.73					
				360	720,000	44.39					

1. Pursuant to Table K of form GI-091, for process weight rates (P) greater than 60,000 lbs/hr, use equation $E = 17.31 \times (P/2000)^{0.16}$ to calculate emission rate (E) in lbs/hr.

2. Design flow rate and exit temperature per data request response provided by Paul Schultz, Tiller on 3/26/2012. The minimum temperature from the exit temperature range provided was conservatively used.

3. The storage silos will have a maximum design capacity of 360 tph under phase 2; therefore, two allowable emission rates were calculated for this emission unit.

4. The conveyor system (EU009) will have two conveyors with a maximum design capacity of 360 tph; therefore, two allowable emission rates were calculated for this emission unit.

Tiller Corporation - North Branch Facility
Air Permit Application
Sand Dryer (EU001) Distillate Oil Criteria Pollutant Uncontrolled Emission Calculations

EU001 - Sand Dryer

SV001 - Sand Dryer Stack

CE001 - Sand Dryer Baghouse

Sand Dryer - Distillate Oil Combustion Emissions (Back-up Fuel)

Heat Input:	71,000,000	Btu/hr
Heat Content:	138000	Btu/gal ¹
Fuel Usage:	514.49	gal/hr
Fuel sulfur content:	0.0015	%
Operating Hours:	8760	

Criteria Pollutants

Pollutant ²	Emission Factor (lb/MMBtu)	Emissions (lb/hr)	Emissions (tpy)
NO _x	0.227	16.12	70.59
CO	0.526	37.35	163.58

Pollutant	Emission Factor (lb/10 ³ gal)	Emissions (lb/hr)	Emissions (tpy)
SO _x ³	0.213	0.11	0.48
VOC ⁴	0.2	0.10	0.45
PM ⁵	2	1.03	4.51
PM ₁₀ /PM _{2.5} ⁵	3.3	1.70	7.44

Greenhouse Gases

	Emission Factors (lb/gal) ^{6,7}	Global Warming Potential ⁸	Emissions (lb/hr)	Emissions (tpy)
CO ₂	2.25E+01	1	11,553	50,600
N ₂ O	1.82E-04	310	9.37E-02	0.41
CH ₄	9.11E-04	21	4.69E-01	2.05
CO ₂ e			11,591	50,771

1. Distillate fuel oil no. 2 heat content from 40 CFR Part 98 Subpart C, Table C-1.
2. Emission factors from NO_x and CO quotes with standard UFII burner, from Todd Laubis email to Paul Schultz of Tiller 6/18/2012.
3. Emission factor from AP-42 Chapter 1.3 (5/10), Table 1.3-1 for boilers < 100 MMBtu/hr heat input. The SO₂ emission factor is calculated by multiplying an emission factor by the percent sulfur in the fuel oil.
4. VOC emission factor from AP-42 Chapter 1.3 (5/10), Table 1.3-3 for industrial boilers burning distillate fuel oil.
5. PM emissions are based on the filterable emission factor from AP-42 Chapter 1.3 (5/10), Table 1.3-1. PM₁₀/PM_{2.5} emissions are calculated by summing the filterable PM emission factor from AP-42 Chapter 1.3 (5/10), Table 1.3-1 and the condensable PM emission factor from Table 1.3-2. It is assumed here that PM₁₀, and PM_{2.5} emissions are equal.
6. CO₂ emission factor and distillate oil no. 2 heat content from 40 CFR Part 98 Subpart C, Table C-1.
7. Emission factors for N₂O and CH₄ from 40 CFR Part 98 Subpart C, Table C-2.
8. Global warming potentials from 40 CFR Part 98 Subpart A, Table A-1.

Tiller Corporation - North Branch Facility

Air Permit Application

Sand Dryer (EU001) Natural Gas Criteria Uncontrolled Pollutant Emission Calculations

EU001 - Sand Dryer

SV001 - Sand Dryer Stack

CE001 - Sand Dryer Baghouse

Sand Dryer - Natural Gas Combustion Emissions (Primary Fuel)

Heat Input:	71,000,000	Btu/hr
Heat Content: ¹	1028	Btu/scf
Operating Hours:	8760	

Criteria Pollutants

Pollutant²	Emission Factor (lb/MMBtu)	Emissions (lb/hr)	Emissions (tpy)
NO _x	0.13	9.23	40.43
CO	0.3	21.30	93.29

Pollutant	Emission Factor (lb/10⁶ scf)	Emissions (lb/hr)	Emissions (tpy)
SO _x ³	0.6	0.04	0.18
VOC ³	5.5	0.38	1.66
PM ⁴	1.9	0.13	0.57
PM ₁₀ /PM _{2.5} ⁴	7.6	0.52	2.30

Greenhouse Gases

	Emission Factors^{5,6} (lb/MMBtu)	Global Warming Potential⁷	Emissions (lb/hr)	Emissions (tpy)
CO ₂	1.17E+02	1	8,299	36,350
N ₂ O	2.20E-04	310	1.57E-02	6.86E-02
CH ₄	2.20E-03	21	1.57E-01	6.86E-01
CO ₂ e			8,307	36,385

1. Natural gas heat content from 40 CFR Part 98 Subpart C, Table C-1.

2. Emission factors from NO_x and CO quotes with standard UFII burner, from Todd Laubis email to Paul Schultz of Tiller 6/18/2012.

3. Emission factors from AP-42 Chapter 1.4 (7/98), Table 1.4-2.

4. Emission factors from AP-42 Chapter 1.4 (7/98), Table 1.4-2. PM emissions are based on the filterable emissions and PM₁₀ and PM_{2.5} emissions are calculated by summing the filterable and the condensable PM emission factors. Per Table 1.4-2 footnote c, PM₁₀ is assumed to be equal to PM_{2.5}.

5. CO₂ emission factor from 40 CFR Part 98 Subpart C, Table C-1.

6. Emission factors for N₂O and CH₄ from 40 CFR Part 98 Subpart C, Table C-2.

7. Global warming potentials from 40 CFR Part 98 Subpart A, Table A-1.

Tiller Corporation - North Branch Facility
Air Permit Application
Sand Dryer (EU001) Uncontrolled PM Emission Calculations

EU001 Sand Dryer Uncontrolled Emissions
SV001 - Sand Dryer Stack
CE001 - Sand Dryer Baghouse

Throughput ¹ (tons/hr)	Operating Hours	PM/PM ₁₀ /PM _{2.5} Uncontrolled Emission Factor ² (lb/ton)	PM/PM ₁₀ /PM _{2.5} Controlled Emission Factor ² (lb/ton)	Maximum Uncontrolled PM/PM ₁₀ /PM _{2.5} Emissions ³ (lb/hr)	Maximum Uncontrolled PM/PM ₁₀ /PM _{2.5} Emissions (tpy)	Maximum Uncontrolled (Non-fugitive) PM/PM ₁₀ /PM _{2.5} Emissions (tpy)
360	8760	2	0.01	720.00	3,153.60	3,153.60

1. The value listed is the maximum throughput (post-phase 2) and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.

2. Emission factors from AP-42 Chapter 11.19 (11/95), Table 11.19.1-1 (Uncontrolled - Sand Dryer; Controlled - Sand dryer with fabric filter). Emission factor is not provided for PM₁₀ and PM_{2.5} so it is assumed PM=PM₁₀=PM_{2.5}. As noted in AP-42, these factors are for filterable PM only. Condensable PM is considered under the dryer fuel combustion emissions.

3. It is assumed here that PM, PM₁₀, and PM_{2.5} emissions are equal.

Tiller Corporation - North Branch Facility

Air Permit Application

EU003 Gyrotory Sifter System (Phase I) Screening Units (EU003 and EU008) Uncontrolled Emission Calculations

SV003 - Gyrotory Sifter Stack

CE002 - Gyrotory Sifter System Baghouse

Pollutant	Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor ² (lb/ton)	Capture Efficiency ³	Maximum Uncontrolled Emissions (lb/hr)	Maximum Uncontrolled Emissions (tpy)	Maximum Uncontrolled Emissions (tpy) (Non-Fugitive) ⁴
PM	180	8760	0.025	100%	4.50	19.71	19.71
PM-10	180	8760	0.0087	100%	1.57	6.86	6.86
PM-2.5	180	8760	0.0087	100%	1.57	6.86	6.86

1. The value listed is the maximum throughput for each screening unit and was provided by Paul Schultz of Tiller via phone conversation 3/28/12 and confirmed in the Tiller data request response received 4/02/2012. This throughput represents the maximum plantwide throughput at the completion of Phase I of the project.

2. Emission factors from AP-42 Chapter 11.19.2 (08/04), Table 11.19.2-2 (Uncontrolled screening factors). Emission factor is not provided for PM_{2.5} from uncontrolled screening so it is assumed PM₁₀=PM_{2.5}.

3. Capture efficiency is based on a total enclosure.

4. The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

EU008 Gyrotory Sifter System (Phase 2)

SV009 - Gyrotory Sifter Stack

CE008 - Gyrotory Sifter System Baghouse

Pollutant	Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor ² (lb/ton)	Capture Efficiency ³	Maximum Uncontrolled Emissions (lb/hr)	Maximum Uncontrolled Emissions (tpy)	Maximum Uncontrolled Emissions (tpy) (Non-Fugitive) ⁴
PM	180	8760	0.025	100%	4.50	19.71	19.71
PM-10	180	8760	0.0087	100%	1.57	6.86	6.86
PM-2.5	180	8760	0.0087	100%	1.57	6.86	6.86

1. The value listed is the maximum throughput for each screening unit and was provided by Paul Schultz of Tiller via phone conversation 3/28/12 and confirmed in the Tiller data request response received 4/02/2012. This throughput represents the maximum incremental throughput increase as a result of the completion of Phase II of the project.

2. Emission factors from AP-42 Chapter 11.19.2 (08/04), Table 11.19.2-2 (Uncontrolled screening factors). Emission factor is not provided for PM_{2.5} from uncontrolled screening so it is assumed PM₁₀=PM_{2.5}.

3. Capture efficiency is based on a total enclosure.

4. The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

Tiller Corporation - North Branch Facility
Air Permit Application
Sand Dryer (EU001) Natural Gas Criteria Pollutant Emission Calculations

EU001 - Sand Dryer

SV001 - Sand Dryer Stack

CE001 - Sand Dryer Baghouse

Sand Dryer - Natural Gas Combustion Emissions (Primary Fuel)

Heat Input:	71,000,000	Btu/hr
Heat Content: ¹	1028	Btu/scf
Operating Hours:	8760	

Criteria Pollutants

Pollutant ²	Emission Factor (lb/MMBtu)	Emissions (lb/hr)	Emissions (tpy)
NO _x	0.08	5.68	24.88
CO	0.25	17.75	77.75

Pollutant	Emission Factor (lb/10 ⁶ scf)	Emissions (lb/hr)	Emissions (tpy)
SO _x ³	0.6	0.04	0.18
VOC ³	5.5	0.38	1.66

Pollutant	Grain Loading Rate (gr/dscf)	Emissions (lb/hr)	Emissions (tpy)
PM/PM ₁₀ /PM _{2.5} ⁴	0.0065	2.68	11.76

Greenhouse Gases

	Emission Factors ^{5,6} (lb/MMBtu)	Global Warming Potential ⁷	Emissions (lb/hr)	Emissions (tpy)
CO ₂	1.17E+02	1	8,299	36,350
N ₂ O	2.20E-04	310	1.57E-02	6.86E-02
CH ₄	2.20E-03	21	1.57E-01	6.86E-01
CO ₂ e			8,307	36,385

1. Natural gas heat content heat content from 40 CFR Part 98 Subpart C, Table C-1.

2. Emission factors from NO_x and CO quotes with FGR.pdf, from Todd Laubis email to Paul Shultz of Tiller 6/18/2012

3. Emission factors from AP-42 Chapter 1.4 (7/98), Table 1.4-2.

4. Total PM BACT Limit (for natural gas combustion) of 0.0065 per discussion with Steve Gorg of the MPCA on 11/06/12. The limit is the sum of the anticipated condensable emissions from natural gas combustion based on AP-42 factors and the anticipated filterable emissions.

5. CO₂ emission factor from 40 CFR Part 98 Subpart C, Table C-1.

6. Emission factors for N₂O and CH₄ from 40 CFR Part 98 Subpart C, Table C-2.

7. Global warming potentials from 40 CFR Part 98 Subpart A, Table A-1.

Tiller Corporation - North Branch Facility
Air Permit Application
Sand Dryer (EU001) Natural Gas HAP Emission Calculations

EU001 - Sand Dryer

SV001 - Sand Dryer Stack

CE001 - Sand Dryer Baghouse

Sand Dryer - Natural Gas Combustion HAP Emissions (Primary Fuel)

Heat Input:	71	MMBtu/hr
Number of Dryers:	1	
Conversion to 1b/MMBtu for Natural Gas (MMBtu/MMscf): ¹	1028	
Annual Operating Hours:	8760	
Pollution Control Efficiency:	0	%

Pollutant	CAS	Emission Factors ² (lb/MMscf)	Hourly Emissions (lb/hr)	Maximum Uncontrolled Emissions (tpy)	Maximum Controlled Emissions (tpy)	Limited Controlled Emissions (tpy)
2-Methylnaphthalene	91-57-6	2.40E-05	1.66E-06	7.26E-06	7.26E-06	7.26E-06
3-Methylchloranthrene	56-49-5	1.80E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
7-12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	1.11E-06	4.84E-06	4.84E-06	4.84E-06
Acenaphthene	83-32-9	1.80E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
Acenaphthylene	203-96-8	1.80E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
Anthracene	120-12-7	2.40E-06	1.66E-07	7.26E-07	7.26E-07	7.26E-07
Benz(a)anthracene	56-55-3	1.80E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
Benzene	71-43-2	2.10E-03	1.45E-04	6.35E-04	6.35E-04	6.35E-04
Benzo(a)pyrene	50-32-8	1.20E-06	8.29E-08	3.63E-07	3.63E-07	3.63E-07
Benzo(b)fluoranthene	205-99-2	1.80E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
Benzo(g,h,i)perylene	191-24-2	1.20E-06	8.29E-08	3.63E-07	3.63E-07	3.63E-07
Benzo(k)fluoranthene	205-82-3	1.80E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
Chrysene	218-01-9	1.80E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	8.29E-08	3.63E-07	3.63E-07	3.63E-07
Dichlorobenzene	25321-22-6	1.20E-03	8.29E-05	3.63E-04	3.63E-04	3.63E-04
Fluoranthene	206-44-0	3.00E-06	2.07E-07	9.08E-07	9.08E-07	9.08E-07
Fluorene	86-73-7	2.80E-06	1.93E-07	8.47E-07	8.47E-07	8.47E-07
Formaldehyde	50-00-0	7.50E-02	5.18E-03	2.27E-02	2.27E-02	2.27E-02
Hexane	110-54-3	1.80E+00	1.24E-01	5.45E-01	5.45E-01	5.45E-01
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	1.24E-07	5.45E-07	5.45E-07	5.45E-07
Naphthalene	91-20-3	6.10E-04	4.21E-05	1.85E-04	1.85E-04	1.85E-04
Phenanthrene	85-01-8	1.70E-05	1.17E-06	5.14E-06	5.14E-06	5.14E-06
Pyrene	129-00-0	5.00E-06	3.45E-07	1.51E-06	1.51E-06	1.51E-06
Toluene	108-88-3	3.40E-03	2.35E-04	1.03E-03	1.03E-03	1.03E-03
Arsenic	7784-42-1	2.00E-04	1.38E-05	6.05E-05	6.05E-05	6.05E-05
Beryllium	7440-41-7	1.20E-05	8.29E-07	3.63E-06	3.63E-06	3.63E-06
Cadmium	7440-43-9	1.10E-03	7.60E-05	3.33E-04	3.33E-04	3.33E-04
Chromium	7440-47-3	1.40E-03	9.67E-05	4.24E-04	4.24E-04	4.24E-04
Cobalt	7440-48-4	8.40E-05	5.80E-06	2.54E-05	2.54E-05	2.54E-05
Manganese	7439-96-5	3.80E-04	2.62E-05	1.15E-04	1.15E-04	1.15E-04
Mercury	7439-97-6	2.60E-04	1.80E-05	7.87E-05	7.87E-05	7.87E-05
Nickel	7440-02-0	2.10E-03	1.45E-04	6.35E-04	6.35E-04	6.35E-04
Selenium	7782-49-2	2.40E-05	1.66E-06	7.26E-06	7.26E-06	7.26E-06
Lead	7439-92-1	0.0005	3.45E-05	1.51E-04	1.51E-04	1.51E-04
Total POM		8.52E-05	5.88E-06	2.58E-05	2.58E-05	2.58E-05
Total HAP		1.89E+00	1.30E-01	5.71E-01	5.71E-01	5.71E-01
Maximum Individual HAP			1.24E-01	5.45E-01	5.45E-01	5.45E-01

1. Natural gas heat content from 40 CFR Part 98 Subpart C, Table C-1.

2. HAP Emission Factors from AP-42 Chapter 1.4 (7/98), Tables 1.4-3 and 1.4-4.

Tiller Corporation - North Branch Facility
Air Permit Application
Generator (EU002) Emission Calculations

EU002 - Generator

SV002 - Generator Stack

Engine Power (bhp)	1141
Operating Hours ¹	600
Generator Heat Input (MMBtu/hr)	6.9
Fuel sulfur content (%)	0.0015
Pollution Control Efficiency (%)	0

Criteria Pollutants

Pollutant	Emission Factor (lb/hp-hr)	Emissions (lb/hr)	Limited Controlled Emissions (tpy)	Maximum Controlled/Uncontrolled Emissions (tpy)
NO _x ²	1.16E-02	1.32E+01	3.95	58
CO ²	5.50E-04	6.28E-01	0.19	3
SO _x ³	1.21E-05	1.38E-02	0.00	0.06
PM/PM ₁₀ /PM _{2.5} ²	4.62E-05	5.27E-02	0.02	0.23
VOC ²	6.60E-05	7.53E-02	0.02	0.33
Lead ⁴	9.80E-08	1.12E-04	0.00	0.00

Greenhouse Gases

	Emission Factors (lb/MMBtu) ^{5,6}	Global Warming Potential ⁷	Emissions (lb/hr)	Limited Controlled Emissions (tpy)	Maximum Controlled/Uncontrolled Emissions (tpy)
CO ₂	1.63E+02	1	1.13E+03	337.52	4,927.76
N ₂ O	1.32E-03	310	9.13E-03	0.00	0.04
CH ₄	6.61E-03	21	4.56E-02	0.01	0.20
CO ₂ e			1.13E+03	338.65	4,944.35

Tiller Corporation - North Branch Facility
Air Permit Application
Generator (EU002) Emission Calculations

HAP Emissions

Pollutant	CAS	Emission Factors (lb/MMBtu)⁸	Emissions (lb/hr)	Maximum Uncontrolled Emissions (tpy)	Maximum Controlled Emissions (tpy)	Limited Controlled Emissions (tpy)
Benzene	71-43-2	7.76E-04	5.35E-03	2.35E-02	2.35E-02	1.61E-03
Toluene	108-88-3	2.81E-04	1.94E-03	8.49E-03	8.49E-03	5.82E-04
Xylenes	--	1.93E-04	1.33E-03	5.83E-03	5.83E-03	4.00E-04
Formaldehyde	50-00-0	7.89E-05	5.44E-04	2.38E-03	2.38E-03	1.63E-04
Acetaldehyde	75-07-0	2.52E-05	1.74E-04	7.62E-04	7.62E-04	5.22E-05
Acrolein	107-02-8	7.88E-06	5.44E-05	2.38E-04	2.38E-04	1.63E-05
Naphthalene	91-20-3	1.30E-04	8.97E-04	3.93E-03	3.93E-03	2.69E-04
Acenaphthylene	203-96-8	9.23E-06	6.37E-05	2.79E-04	2.79E-04	1.91E-05
Acenaphthene	83-32-9	4.68E-06	3.23E-05	1.41E-04	1.41E-04	9.69E-06
Fluorene	86-73-7	1.28E-05	8.83E-05	3.87E-04	3.87E-04	2.65E-05
Phenanthrene	85-01-8	4.08E-05	2.82E-04	1.23E-03	1.23E-03	8.45E-05
Anthracene	120-12-7	1.23E-06	8.49E-06	3.72E-05	3.72E-05	2.55E-06
Fluoranthene	206-44-0	4.03E-06	2.78E-05	1.22E-04	1.22E-04	8.34E-06
Pyrene	129-00-0	3.71E-06	2.56E-05	1.12E-04	1.12E-04	7.68E-06
Benz(a)anthracene	56-55-3	6.22E-07	4.29E-06	1.88E-05	1.88E-05	1.29E-06
Chrysene	218-01-9	1.53E-06	1.06E-05	4.62E-05	4.62E-05	3.17E-06
Benzo(b)fluoranthene	205-99-2	1.11E-06	7.66E-06	3.35E-05	3.35E-05	2.30E-06
Benzo(k)fluoranthene	205-82-3	2.18E-07	1.50E-06	6.59E-06	6.59E-06	4.51E-07
Benzo(a)pyrene	50-32-8	2.57E-07	1.77E-06	7.77E-06	7.77E-06	5.32E-07
Indeno(1,2,3-cd)pyrene	193-39-5	4.14E-07	2.86E-06	1.25E-05	1.25E-05	8.57E-07
Dibenzo(a,h)anthracene	53-70-3	3.46E-07	2.39E-06	1.05E-05	1.05E-05	7.16E-07
Benzo(g,h,i)perylene	191-24-2	3.56E-07	2.46E-06	1.08E-05	1.08E-05	7.37E-07
PAH	--	2.12E-04	1.46E-03	6.41E-03	6.41E-03	4.39E-04
Total HAP			1.23E-02	5.40E-02	5.40E-02	3.70E-03

1. A limit of 600 hours per year is proposed for the generator due to the anticipated operating hours. The limited controlled emission calculations are based on this proposed limit. The maximum controlled/uncontrolled emissions are based on 8760 hours of operation.
2. Emission factors were taken from the manufacturers provided specification sheet. The emission factors were provided in g/hp-hr and were converted to lb/hp-hr using a conversion factor of 1 g = 0.0022 lbs. The manufacturer's specification sheet provided an emission factor for PM and it is assumed here that PM, PM₁₀, and PM_{2.5} emissions are equal.
3. Emission factors from AP-42 Chapter 3.4 (10/96), Table 3.4-1.
4. Lead emission factor of 1.4*10⁻⁵ lb/mmbtu from EPA FIRE Database for SCC code 20300102. Conversion factor of 7000 btu/hp-hr used to convert to lb/hp-hr.
5. Emission factor for CO₂ from 40 CFR Part 98 Subpart C, Table C-1.
6. Emission factors for N₂O and CH₄ from 40 CFR Part 98 Subpart C, Table C-2.
7. Global Warming Potentials from 40 CFR Part 98 Subpart A, Table A-1.
8. Emission factors from AP-42 Chapter 3.4 (10/96), Tables 3.4-3 and 3.4-4.

Worst Case HAP Calculations

EU001 Sand Dryer Distillate Oil (Back-up fuel)

Pollutant	Limited Controlled Emissions (tpy)	Hourly Emissions (lb/hr)
1,1,1-Trichloroethane	5.32E-04	1.21E-04
Acenaphthene	4.75E-05	1.09E-05
Acenaphthylene	5.70E-07	1.30E-07
Anthracene	2.75E-06	6.28E-07
Arsenic	1.24E-03	2.84E-04
Benz(a)anthracene	9.04E-06	2.06E-06
Benzen	4.82E-04	1.10E-04
Benzo(g,h,i)perylene	5.09E-06	1.16E-06
Benzo(b,k)fluoranthene	3.34E-06	7.61E-07
Beryllium	9.33E-04	2.13E-04
Cadmium	9.33E-04	2.13E-04
Chromium	9.33E-04	2.13E-04
Chrysene	5.36E-06	1.22E-06
Dibenzo(a,h)anthracene	3.76E-06	8.59E-07
Ethylbenzene	1.43E-04	3.27E-05
Fluoranthene	1.09E-05	2.49E-06
Fluorene	1.01E-05	2.30E-06
Formaldehyde	7.44E-02	1.70E-02
Indeno(1,2,3-cd)pyrene	4.82E-06	1.10E-06
Lead	2.80E-03	6.39E-04
Manganese	1.87E-03	4.26E-04
Mercury	9.33E-04	2.13E-04
Naphthalene	2.55E-03	5.81E-04
Nickel	9.33E-04	2.13E-04
OCDD	6.99E-09	1.59E-09
o-Xylene	2.46E-04	5.61E-05
Phenanathrene	2.37E-05	5.40E-06
Pyrene	9.58E-06	2.19E-06
Selenium	4.66E-03	1.07E-03
Toluene	1.40E-02	3.19E-03

EU001 Sand Dryer Natural Gas (Primary fuel)

Pollutant	Limited Controlled Emissions (tpy)	Hourly Emissions (lb/hr)
2-Methylnapthalene	7.26E-06	1.66E-06
3-Methylchloranthrene	5.45E-07	1.24E-07
7-12-Dimethylbenz(a)anthracene	4.84E-06	1.11E-06
Acenaphthene	5.45E-07	1.24E-07
Acenaphthylene	5.45E-07	1.24E-07
Anthracene	7.26E-07	1.66E-07
Arsenic	6.05E-05	1.38E-05
Benz(a)anthracene	5.45E-07	1.24E-07
Benzen	6.35E-04	1.45E-04
Benzo(a)pyrene	3.63E-07	8.29E-08
Benzo(b)fluoranthene	5.45E-07	1.24E-07
Benzo(g,h,i)perylene	3.63E-07	8.29E-08
Benzo(k)fluoranthene	5.45E-07	1.24E-07
Beryllium	3.63E-06	8.29E-07
Cadmium	3.33E-04	7.60E-05
Chromium	4.24E-04	9.67E-05
Chrysene	5.45E-07	1.24E-07
Cobalt	2.54E-05	5.80E-06
Dibenzo(a,h)anthracene	3.63E-07	8.29E-08
Dichlorobenzene	3.63E-04	8.29E-05
Fluoranthene	9.08E-07	2.07E-07
Fluorene	8.47E-07	1.93E-07
Formaldehyde	2.27E-02	5.18E-03
Hexane	5.45E-01	1.24E-01
Indeno(1,2,3-cd)pyrene	5.45E-07	1.24E-07
Lead	1.51E-04	3.45E-05
Manganese	1.15E-04	2.62E-05
Mercury	7.87E-05	1.80E-05
Naphthalene	1.85E-04	4.21E-05
Nickel	6.35E-04	1.45E-04
Phenanathrene	5.14E-06	1.17E-06
Pyrene	1.51E-06	3.45E-07
Selenium	7.26E-06	1.66E-06
Toluene	1.03E-03	2.35E-04

Worst Case Potential-to-Emit Summary

EU001 Sand Dryer - Worst Case Potential-to-Emit of Natural Gas and Distillate Oil HAP Emissions

Pollutant	CAS	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions Before Operating Limits (tpy)	Maximum Annual Emissions After Operating Limits (tpy)
1,1,1-Trichloroethane	71-55-6	1.21E-04	5.32E-04	5.32E-04
2-Methylnaphthalene	91-57-6	1.66E-06	7.26E-06	7.26E-06
3-Methylchloranthrene	56-49-5	1.24E-07	5.45E-07	5.45E-07
7-12-Dimethylbenz(a)anthracene	57-97-6	1.11E-06	4.84E-06	4.84E-06
Acenaphthene	83-32-9	1.09E-05	4.75E-05	4.75E-05
Acenaphthylene	203-96-8	1.30E-07	5.70E-07	5.70E-07
Anthracene	120-12-7	6.28E-07	2.75E-06	2.75E-06
Arsenic	7784-42-1	2.84E-04	1.24E-03	1.24E-03
Benz(a)anthracene	56-55-3	2.06E-06	9.04E-06	9.04E-06
Benzene	71-43-2	1.45E-04	6.35E-04	6.35E-04
Benzo(a)pyrene	50-32-8	8.29E-08	3.63E-07	3.63E-07
Benzo(b)fluoranthene	205-99-2	1.24E-07	5.45E-07	5.45E-07
Benzo(g,h,i)perylene	191-24-2	1.16E-06	5.09E-06	5.09E-06
Benzo(k)fluoranthene	205-82-3	1.24E-07	5.45E-07	5.45E-07
Benzo(b,k)fluoranthene	205-99-2	7.61E-07	3.34E-06	3.34E-06
Beryllium	7440-41-7	2.13E-04	9.33E-04	9.33E-04
Cadmium	7440-43-9	2.13E-04	9.33E-04	9.33E-04
Chromium	7440-47-3	2.13E-04	9.33E-04	9.33E-04
Chrysene	218-01-9	1.22E-06	5.36E-06	5.36E-06
Cobalt	7440-48-4	5.80E-06	2.54E-05	2.54E-05
Dibenzo(a,h)anthracene	53-70-3	8.59E-07	3.76E-06	3.76E-06
Dichlorobenzene	25321-22-6	8.29E-05	3.63E-04	3.63E-04
Ethylbenzene	100-41-4	3.27E-05	1.43E-04	1.43E-04
Fluoranthene	206-44-0	2.49E-06	1.09E-05	1.09E-05
Fluorene	86-73-7	2.30E-06	1.01E-05	1.01E-05
Formaldehyde	50-00-0	1.70E-02	7.44E-02	7.44E-02
Hexane	110-54-3	1.24E-01	5.45E-01	5.45E-01
Indeno(1,2,3-cd)pyrene	193-39-5	1.10E-06	4.82E-06	4.82E-06
Lead	7439-92-1	6.39E-04	2.80E-03	2.80E-03
Manganese	7439-96-5	4.26E-04	1.87E-03	1.87E-03
Mercury	7439-97-6	2.13E-04	9.33E-04	9.33E-04
Naphthalene	91-20-3	5.81E-04	2.55E-03	2.55E-03
Nickel	7440-02-0	2.13E-04	9.33E-04	9.33E-04
OCDD	3268-87-9	1.59E-09	6.99E-09	6.99E-09
o-Xylene	95-47-6	5.61E-05	2.46E-04	2.46E-04
Phenanathrene	85-01-8	5.40E-06	2.37E-05	2.37E-05
Pyrene	129-00-0	2.19E-06	9.58E-06	9.58E-06
Selenium	7782-49-2	1.07E-03	4.66E-03	4.66E-03
Toluene	108-88-3	3.19E-03	1.40E-02	1.40E-02

Worst Case Potential-to-Emit Summary

EU002 Generator - Worst Case Potential-to-Emit

Pollutant	CAS	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions Before Operating Limits (tpy)	Maximum Annual Emissions After Operating Limits (tpy)
Acetaldehyde	75-07-0	1.74E-04	7.62E-04	5.22E-05
Acrolein	107-02-8	5.44E-05	2.38E-04	1.63E-05
Acenaphthene	83-32-9	3.23E-05	1.41E-04	9.69E-06
Acenaphthylene	203-96-8	6.37E-05	2.79E-04	1.91E-05
Anthracene	120-12-7	8.49E-06	3.72E-05	2.55E-06
Benz(a)anthracene	56-55-3	4.29E-06	1.88E-05	1.29E-06
Benzene	71-43-2	5.35E-03	2.35E-02	1.61E-03
Benzo(a)pyrene	50-32-8	1.77E-06	7.77E-06	5.32E-07
Benzo(b)fluoranthene	205-99-2	7.66E-06	3.35E-05	2.30E-06
Benzo(g,h,i)perylene	191-24-2	2.46E-06	1.08E-05	7.37E-07
Benzo(k)fluoranthene	205-82-3	1.50E-06	6.59E-06	4.51E-07
Chrysene	218-01-9	1.06E-05	4.62E-05	3.17E-06
Dibenzo(a,h)anthracene	53-70-3	2.39E-06	1.05E-05	7.16E-07
Fluoranthene	206-44-0	2.78E-05	1.22E-04	8.34E-06
Fluorene	86-73-7	8.83E-05	3.87E-04	2.65E-05
Formaldehyde	50-00-0	5.44E-04	2.38E-03	1.63E-04
Indeno(1,2,3-cd)pyrene	193-39-5	2.86E-06	1.25E-05	8.57E-07
Lead	7439-92-1	1.12E-04	4.90E-04	3.35E-05
Naphthalene	91-20-3	8.97E-04	3.93E-03	2.69E-04
Xylenes	#N/A	1.33E-03	5.83E-03	4.00E-04
Phenanthrene	85-01-8	2.82E-04	1.23E-03	8.45E-05
Pyrene	129-00-0	2.56E-05	1.12E-04	7.68E-06
Toluene	108-88-3	1.94E-03	8.49E-03	5.82E-04

Worst Case Potential-to-Emit Summary

EU001 Sand Dryer (Worst Case) and EU002 Generator

Pollutant	CAS	Unrestricted (Before Limits) Total HAP Emissions (EU001 Worst Case + EU002) (tpy)	Limited Total HAP Emissions (EU001 Worst Case + EU002) (tpy)
Acetaldehyde	75-07-0	7.62E-04	5.22E-05
Acrolein	107-02-8	2.38E-04	1.63E-05
1,1,1-Trichloroethane	71-55-6	5.32E-04	5.32E-04
2-Methylnaphthalene	91-57-6	7.26E-06	7.26E-06
3-Methylchloranthrene	56-49-5	5.45E-07	5.45E-07
7-12-Dimethylbenz(a)anthracene	57-97-6	4.84E-06	4.84E-06
Acenaphthene	83-32-9	1.89E-04	5.72E-05
Acenaphthylene	203-96-8	2.80E-04	1.97E-05
Anthracene	120-12-7	3.99E-05	5.30E-06
Arsenic	7784-42-1	1.24E-03	1.24E-03
Benz(a)anthracene	56-55-3	2.78E-05	1.03E-05
Benzene	71-43-2	2.41E-02	2.24E-03
Benzo(a)pyrene	50-32-8	8.13E-06	8.95E-07
Benzo(b)fluoranthene	205-99-2	3.41E-05	2.84E-06
Benzo(g,h,i)perylene	191-24-2	1.59E-05	5.83E-06
Benzo(k)fluoranthene	205-82-3	7.13E-06	9.96E-07
Benzo(b,k)fluoranthene	205-99-2	3.34E-06	3.34E-06
Beryllium	7440-41-7	9.33E-04	9.33E-04
Cadmium	7440-43-9	9.33E-04	9.33E-04
Chromium	7440-47-3	9.33E-04	9.33E-04
Chrysene	218-01-9	5.16E-05	8.53E-06
Cobalt	7440-48-4	2.54E-05	2.54E-05
Dibenzo(a,h)anthracene	53-70-3	1.42E-05	4.48E-06
Dichlorobenzene	25321-22-6	3.63E-04	3.63E-04
Ethylbenzene	100-41-4	1.43E-04	1.43E-04
Fluoranthene	206-44-0	1.33E-04	1.92E-05
Fluorene	86-73-7	3.97E-04	3.66E-05
Formaldehyde	50-00-0	7.67E-02	7.45E-02
Hexane	110-54-3	5.45E-01	5.45E-01
Indeno(1,2,3-cd)pyrene	193-39-5	1.73E-05	5.68E-06
Lead	7439-92-1	3.29E-03	2.83E-03
Manganese	7439-96-5	1.87E-03	1.87E-03
Mercury	7439-97-6	9.33E-04	9.33E-04
Naphthalene	91-20-3	6.48E-03	2.82E-03
Nickel	7440-02-0	9.33E-04	9.33E-04
OCDD	3268-87-9	6.99E-09	6.99E-09
o-Xylene	95-47-6	6.08E-03	6.45E-04
Phenanathrene	85-01-8	1.26E-03	1.08E-04
Pyrene	129-00-0	1.22E-04	1.73E-05
Selenium	7782-49-2	4.66E-03	4.66E-03
Toluene	108-88-3	2.25E-02	1.46E-02

Tiller Corporation - North Branch Facility
Air Permit Application
Baghouse Emission Calculations

Baghouse Captured Emissions (All Emission Units)

SV	EU	CE ¹	Description	Operating Hours	Airflow ² (acfm)	Temperature ² (°F)	Airflow ³ (dscfm)	Total PM/PM ₁₀ /PM _{2.5} Grain Loading Rate ⁴ (gr/dscfm)	Potential PM/PM ₁₀ /PM _{2.5} Emissions ⁵ (lb/hr)	Potential PM/PM ₁₀ /PM _{2.5} Emissions ⁵ (tpy)
001	001	001	Sand Dryer	8760	60,000	200	48,182	0.009	3.72	16.28
003	003 and 004	002 and 012	Gyrotory Sifter and Conveyors	8760	25,000	150	21,721	0.0020	0.37	1.63
004	005	003	Rail Load Out	8760	1,500	125	1,359	0.0020	0.02	0.10
005	006	004	Truck Load Out	8760	1,500	125	1,359	0.0020	0.02	0.10
009	008 and 009	008 and 013	Gyrotory Sifter and Conveyors	8760	25,000	150	21,721	0.0020	0.37	1.63

1. Although there are two CE numbers listed for SV003 and SV009, there is only one baghouse associated with those units. There are two CE numbers assigned due to differing capture efficiencies for the emission units being controlled.

2. The airflow and temperature were taken from the permit application, dated 4/4/2012. The temperature used is an average of the given range.

3. ACFM was converted to DSCFM according to the equation shown below. Temperature is in degrees Fahrenheit, actual pressure (P) is assumed to equal standard pressure (14.7 psi) and the volumetric fraction of water vapor is conservatively assumed to be zero.

$$DSCFM = ACFM * (460 \text{ } ^\circ R + 70) / (460 \text{ } ^\circ R + \text{temp}) * (\text{actual P} / 14.7) * (1 - B_{w,v})$$

4. Grain loading rates for PM/PM₁₀/PM_{2.5} (total PM) for the sand dryer and for the other baghouses are proposed BACT limits submitted to the MPCA on 8/31/12 and discussed with MPCA on 11/6/12. The sand dryer grain loading limit is determined based on a predicted filterable grain loading rate combined with a condensable grain loading rate based on natural gas and fuel oil combustion emission factors for boilers in AP-42.

5. It is assumed that PM₁₀ and PM_{2.5} emissions are equivalent and include filterable and condensable emissions.

Tiller Corporation - North Branch Facility
Air Permit Application
Conveyor System (EU004 and EU009) Uncaptured Emission Calculations

EU004 and EU009 Conveyor Transfer Uncaptured Emissions

Emissions from material transfer points based on AP 42 Section 13.2.4.2(11/06), Equation 1. \square Emission Factor, lb/(ton (E)) = $k (0.0032) (U/5)^{1.3} / (M/2)^{1.4}$

Variable	Units	Pre-Dryer Transfer Points (transfer chute)	Post-Dryer Transfer Points (totally enclosed)	Post-Dryer Transfer Points (transfer chute)
k (PM)	particle size multiplier (constant) AP 42 Section 13.2.4.2(11/06)	0.74	0.74	0.74
k (PM ₁₀)		0.35	0.35	0.35
k (PM _{2.5})		0.053	0.053	0.053
U	Mean wind speed ¹ (mph)	4.71	1	4.71
M	Material moisture content ² (%)	2	1	1
E (PM)	Emission Factor (lb/ton)	0.0022	0.0008	0.0058
E (PM ₁₀)		0.0010	0.0004	0.0027
E (PM _{2.5})		0.0002	0.0001	0.0004

1. The mean wind speed for totally enclosed transfers is assumed to be 1 mph. The mean wind speed for transfers from transfer chutes is assumed to be 50% of the mean wind speed based on meteorological data from the MPC/A (MSPMPX 2006-2010 modeling meteorological dataset).

2. The material moisture content for the pre-dried sand will be between 2-5% per phone conversation with Paul Schultz of Tiller 3/29/2012. Tiller is accepting a limit of 2% as the minimum moisture content for the pre-dried sand. For post-dried sand the material moisture content will be less than 1%.

Conveyor Uncaptured Emissions

EU	Pollutant	Throughput ¹ (tons/hr)	Operating Hours	Uncaptured Emission Factor ² (lb/ton)	Capture Efficiency	Potential Uncaptured Emissions (lb/hr)	Potential Uncaptured Emissions (tpy)	Maximum Uncaptured Emissions (tpy)	Number of Conveyor Transfer Points ^{5,6,7}	Maximum Uncaptured Emissions (tpy) (Non-Fugitive) ⁸
EU004 Pre-Dryer Transfer Points (Phase 1) ³	PM	180	8760	0.0022	-	1.97	8.64	8.64	5	0.00
	PM ₁₀	180	8760	0.0010	-	0.93	4.09	4.09	5	0.00
	PM _{2.5}	180	8760	0.0002	-	0.14	0.62	0.62	5	0.00
EU004 Post-Dryer Transfer Points (Phase 1) ⁴	PM	180	8760	0.0058	80%	3.95	17.32	86.61	19	69.29
	PM ₁₀	180	8760	0.0027	80%	1.87	8.19	40.97	19	32.77
	PM _{2.5}	180	8760	0.0004	80%	0.28	1.24	6.20	19	4.96
EU009 Post-Dryer Transfer Points (Phase 2) ⁴	PM	180	8760	0.0058	80%	1.46	6.38	31.91	7	25.53
	PM ₁₀	180	8760	0.0027	80%	0.69	3.02	15.09	7	12.07
	PM _{2.5}	180	8760	0.0004	80%	0.10	0.46	2.29	7	1.83
EU009 Post-Dryer Transfer Points with Increased Throughput (Phase 2) ⁴	PM	360	8760	0.0058	80%	0.83	3.65	18.23	2	14.59
	PM ₁₀	360	8760	0.0027	80%	0.39	1.72	8.62	2	6.90
	PM _{2.5}	360	8760	0.0004	80%	0.06	0.26	1.31	2	1.04

1. The value listed is the maximum throughput and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.

2. Uncaptured emission factor based on AP 42 Section 13.2.4.2(11/06), Equation 1.

3. The pre-dryer transfer points are uncontrolled per 3/30/2012 phone conversation with Tiller.

4. Capture efficiency of 80% based on hood design meeting the guidelines of "Industrial Ventilation - A Manual of Recommended Practice, 21st Edition".

5. The total number of transfer points post dryer is based on the total number of conveyor transfer points provided by Paul Schultz of Tiller via e-mail on 3/16/12 minus the number of conveyors prior to the dryer provided by Paul Schultz of Tiller via e-mail on 3/29/12.

6. The number of pre-dryer transfer points was provided by Paul Schultz of Tiller via e-mail on 3/29/12.

7. The number of post-dryer transfer points that will handle a higher material throughput that represent the additional conveyors that will be added as part of Phase 2 was provided by Paul Schultz of Tiller via phone conversation on 3/28/12.

8. The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

Tiller Corporation - North Branch Facility
Air Permit Application

Rail and Truck Loadout (EU005 and EU006) Uncaptured Emission Calculations

EU005 and EU006 Rail and Truck Load-out Emissions (Uncaptured Emissions)

Emissions from loadouts based on AP 42 Section 13.2.4.2(11/06), Equation 1, $E = k (0.0032) (U/5)^{1.3} / (M/2)^{1.4}$

Variable	Units	Truck/Rail Loadout (partial enclosure)
k (PM)	Partial enclosure	
k (PM ₁₀)	(constant)	0.74
k (PM _{2.5})	AP 42 Section 13.2.4.2(11/06)	0.35
U	Mean wind speed ¹ (mph)	0.053
M	Material moisture content ² (%)	4.71
E (PM)	Emission Factor (lb/ton)	1
E (PM ₁₀)		0.0058
E (PM _{2.5})		0.0027
		0.0004

1. The mean wind speed for partially enclosed transfers is assumed to be 50% of the mean wind speed based on meteorological data from the MPCA (MSPMPX 2006-2010 modeling meteorological dataset).
2. The material moisture content for the product will be less than 1%.

EU005 Rail Load-out¹ (Phase 1 and Post-Phase 2)

Pollutant	Silo Loadout Throughput ¹ (tons/hr)	Silo Loading Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor ² (lb/ton)	Capture Efficiency ³	Number of Loadout Transfer Points ⁴	Number of Loading Transfer Points ⁴	Potential Uncaptured Emissions (lb/hr)	Potential Uncaptured Emissions (tpy)	Maximum Uncontrolled Emissions (tpy)	Maximum Uncontrolled Emissions (tpy) (Non-Fugitive) ⁵
PM	400	360	8760	0.0058	80%	1	1	0.88	3.85	19.25	15.40
PM ₁₀	400	360	8760	0.0027	80%	1	1	0.42	1.82	9.10	7.28
PM _{2.5}	400	360	8760	0.0004	80%	1	1	0.06	0.28	1.38	1.10

1. The maximum rail loadout design will be the same for phase 1 and post-phase 2. The maximum loadout throughput was provided by Paul Schultz of Tiller via phone conversation 4/03/12. There are two silos associated with the rail loadout and one silo can be loaded while the other silo is unloading.
2. The maximum rail loadout design will be the same for phase 1 and post-phase 2. The maximum loadout throughput was provided by Paul Schultz of Tiller via phone conversation 3/28/12. The maximum loading throughput was confirmed by Mike Caron of Tiller via phone conversation 4/03/12. There are two silos associated with the rail loadout and one silo can be loaded while the other silo is unloading.
3. Uncontrolled emission factor based on AP 42 Section 13.2.4.2(11/06), Equation 1.
4. Capture efficiency of 80% based on hood design meeting the guidelines of "Industrial Ventilation - A Manual of Recommended Practice, 21st Edition".
5. There are two silos associated with the rail loadout system and one silo can be loaded while the other silo is unloading so there is one loadout transfer and one loading transfer that can occur at the same time per Mike Caron of Tiller via phone conversation 4/03/12.
6. The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

EU006 Truck Load-out¹ (Phase 1 and Post-Phase 2)

Pollutant	Silo Loadout Throughput ¹ (tons/hr)	Silo Loading Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor ² (lb/ton)	Capture Efficiency ³	Number of Loadout Transfer Points ⁴	Number of Loading Transfer Points ⁴	Potential Uncaptured Emissions (lb/hr)	Potential Uncaptured Emissions (tpy)	Maximum Uncontrolled Emissions (tpy)	Maximum Uncontrolled Emissions (tpy) (Non-Fugitive) ⁵
PM	400	360	8760	0.0058	80%	1	1	0.88	3.85	19.25	15.40
PM ₁₀	400	360	8760	0.0027	80%	1	1	0.42	1.82	9.10	7.28
PM _{2.5}	400	360	8760	0.0004	80%	1	1	0.06	0.28	1.38	1.10

1. The maximum silo loadout design will be the same for phase 1 and post-phase 2. The maximum loadout throughput was provided by Paul Schultz of Tiller via phone conversation 3/28/12. The maximum loading throughput was confirmed by Mike Caron of Tiller via phone conversation 4/03/12. There are two silos associated with the truck loadout and one silo can be loaded while the other silo is unloading.
2. Uncontrolled emission factor based on AP 42 Section 13.2.4.2(11/06), Equation 1.
3. Capture efficiency of 80% based on hood design meeting the guidelines of "Industrial Ventilation - A Manual of Recommended Practice, 21st Edition".
4. There are two silos associated with the truck loadout system and one silo can be loaded while the other silo is unloading so there is one loadout transfer and one loading transfer that can occur at the same time per Mike Caron of Tiller via phone conversation 4/03/12.
5. The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

Tiller Corporation - North Branch Facility
Air Permit Application
Storage Silo (EU007) Emission Calculations

EU 007/010-025 Silo Storage Emissions
SV 006/007/008/010/011/012 - Storage Silo Bin Vent Stacks
CE 005/006/007/009/010/011/014/015/016/017/018/019* - Storage Silo Bin Vents

**Note that there although there are only six bin vents controlling the emissions from the storage silos (and six stack vents), there are twelve CE numbers assigned due to differing capture and control efficiencies for the loading and unloading from the storage silos.*

Emissions from storage silos based on AP 42 Section 13.2.4.2(11/06), Equation 1. □ Emission Factor, lb/ton (E) = $k \cdot (0.0032) \cdot (U/5)^{1.3} / (M/2)^{1.4}$

Variable	Units	Silo Unloading (partial enclosure)	Silo Loading (total enclosure)
k (PM ₁₀)	particle-size multiplier (constant)	0.74	0.74
k (PM ₁₀)	AP 42 Section	0.35	0.35
k (PM _{2.5})	13.2.4.2(11/06)	0.053	0.053
U	Mean wind speed ¹ (mph)	4.71	1
M	Material moisture content ² (%)	1	1
E (PM ₁₀)	Emission Factor (lb/ton)	0.0058	0.0008
E (PM ₁₀)		0.0027	0.0004
E (PM _{2.5})		0.0004	0.0001

¹ The mean wind speed for rotary enclosed transfers is assumed to be 1 mph. The mean wind speed for transfers through partial enclosures is assumed to be 50% of the mean wind speed based on meteorological data from the MPCA (MSPMPX 2006-2010 modeling meteorological dataset).

2. The material moisture content for the product will be less than 1%.

EU 007/010 - 018 Storage Silo Loading (including storage silo elevators) (Phase 1)
SV 006/007/008 - Storage Silo Bin Vent Stacks
CE005/006/007 (loading) - Storage Silo Bin Vents

Pollutant	Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor ² (lb/ton)	Controlled Emission Factor ² (lb/ton)	Capture Efficiency ³	Calculated Baghouse Control Efficiency ⁴	Number of Transfer Points ⁵	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Maximum Uncontrolled Emissions (tpy)	Maximum Uncontrolled Emissions (tpy) (Non-Fugitive) ⁶
PM	180	8760	0.0008	0.00014	100%	82%	3	0.08	0.33	1.82	1.82
PM ₁₀	180	8760	0.0004	4.60E-05	100%	87%	3	0.02	0.11	0.86	0.86
PM _{2.5}	180	8760	0.0001	1.30E-05	100%	76%	3	0.01	0.03	0.13	0.13

1. The value listed is the maximum throughput and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.
2. Uncontrolled emission factor based on AP 42 Section 13.2.4.2(11/06). Controlled emission factor estimated based on AP-42 Chapter 11.19.2 (08/04) (Conveyor transfer point controlled).

3. Capture efficiency of 100% based on total enclosure.

4. Baghouse control efficiency calculated based on the controlled and uncontrolled emission factors.

5. Via phone conversation on 3/23/12, Paul Schultz of Tiller indicated that there are 3 points for loading sand into the top of the silos that are totally enclosed.

6. The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

EU 012 - 018 Storage Silo Unloading (Phase 1)
SV 006/007/008 - Storage Silo Bin Vent Stacks
CE009/010/011 (unloading) - Storage Silo Bin Vents

Pollutant	Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor ² (lb/ton)	Controlled Emission Factor ² (lb/ton)	Capture Efficiency ³	Calculated Baghouse Control Efficiency ⁴	Number of Transfer Points ⁵	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Maximum Uncontrolled Emissions (tpy)	Maximum Uncontrolled Emissions (tpy) (Non-Fugitive) ⁶
PM	180	8760	0.0058	0.00014	80%	98%	7	1.60	7.00	31.91	25.53
PM ₁₀	180	8760	0.0027	4.60E-05	80%	98%	7	0.74	3.22	15.09	12.07
PM _{2.5}	180	8760	0.0004	1.30E-05	80%	97%	7	0.12	0.51	2.29	1.83

1. The value listed is the maximum throughput and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.
2. Uncontrolled emission factor based on AP 42 Section 13.2.4.2(11/06). Controlled emission factor estimated based on AP-42 Chapter 11.19.2 (08/04) (Conveyor transfer point controlled).

3. Capture efficiency of 80% based on hood design meeting the guidelines of "Industrial Ventilation - A Manual of Recommended Practice, 21st Edition".

4. Baghouse control efficiency calculated based on the controlled and uncontrolled emission factors.

5. Via phone conversation on 3/23/12, Paul Schultz of Tiller indicated that there are 7 transfer points from the silo to the conveyor belt. Emissions are controlled by the baghouse associated with the conveyors.

6. The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

Tiller Corporation - North Branch Facility
Air Permit Application
Storage Silo (EU007) Emission Calculations

EU 007/010 - 025 Storage Silo Loading (including storage silo elevators) (Post-Phase 2)
SV006/007/008/010/011/012 - Storage Silo Bin Vent Stacks
CE005/006/007/014/015/016 (loading) - Storage Silo Bin Vents

Pollutant	Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor ² (lb/ton)	Controlled Emission Factor ² (lb/ton)	Capture Efficiency ³	Calculated Baghouse Control Efficiency ⁴	Number of Transfer Points ⁵	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Maximum Uncontrolled Emissions (tpy)	Maximum Uncontrolled Emissions (tpy) (Non-Fugitive) ⁶
PM	360	8760	0.0008	0.00014	100%	82%	3	0.15	0.66	3.65	3.65
PM ₁₀	360	8760	0.0004	4.60E-05	100%	87%	3	0.05	0.22	1.73	1.73
PM _{2.5}	360	8760	0.0001	1.30E-05	100%	76%	3	0.01	0.06	0.26	0.26

- The value listed is the maximum throughput and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.
- Uncontrolled emission factor based on AP 42 Section 13.2.4.2(11/06). Controlled emission factor estimated based on AP-42 Chapter 11.19.2 (08/04) (Conveyor transfer point controlled).
- Capture efficiency of 100% based on total enclosure.
- Baghouse control efficiency calculated based on the controlled and uncontrolled emission factors.
- Via phone conversation on 3/28/12, Paul Schultz of Tiller indicated that the three existing silo transfer points will be used for loading and there will be an additional 180 ton/hour throughput (360 ton/hour total).
- The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

EU 012 - 025 Storage Silo Unloading (Post-Phase 2)
SV006/007/008/010/011/012 - Storage Silo Bin Vent Stacks
CE009/010/011/017/018/019 (unloading) - Storage Silo Bin Vents

Pollutant	Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor ² (lb/ton)	Controlled Emission Factor ² (lb/ton)	Capture Efficiency ³	Calculated Baghouse Control Efficiency ⁴	Number of Transfer Points ⁵	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Maximum Uncontrolled Emissions (tpy)	Maximum Uncontrolled Emissions (tpy) (Non-Fugitive) ⁶
PM	180	8760	0.0058	0.00014	80%	98%	14	3.20	14.00	63.82	51.06
PM ₁₀	180	8760	0.0027	4.60E-05	80%	98%	14	1.47	6.44	30.19	24.15
PM _{2.5}	180	8760	0.0004	1.30E-05	80%	97%	14	0.23	1.03	4.57	3.66

- The value listed is the maximum throughput and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.
- Uncontrolled emission factor based on AP 42 Section 13.2.4.2(11/06). Controlled emission factor estimated based on AP-42 Chapter 11.19.2 (08/04) (Conveyor transfer point controlled).
- Capture efficiency of 80% based on hood design meeting the guidelines of "Industrial Ventilation - A Manual of Recommended Practice, 21st Edition".
- Baghouse control efficiency calculated based on the controlled and uncontrolled emission factors.
- Via phone conversation on 3/28/12, Paul Schultz of Tiller indicated that there will be 7 additional transfer points (14 transfer points total) from the silos to the conveyor belt through a transfer chute (post-phase 2).
- The maximum uncontrolled (non-fugitive) emissions are calculated based on the portion of the emissions that can be captured.

Tiller Corporation- North Branch Facility

Air Permit Application

Storage Pile (FS001, FS002 and FS003) Emission Calculations

Fugitive Particulate Matter Emissions from Active Piles
FS001, FS002, FS003

Source/Units		
Silt content (%)	1	Paul Schultz of Tiller indicated that the silt content is conservatively estimated at 1%. As sand will be delivered wet and will not be allowed to sit for extended periods of time.
Number of days with >= 0.01" precipitation in a year	115	From AP-42 Section 13.2.2 Figure 13.3.3-1 (11/06)
Percent of time wind speeds exceed 12 mph at mean pile height	27.23	Using meteorological data from the MPCA (MSPMPX 2006-2010 modeling meteorological dataset), the average percentage of time that the wind speed is greater than 12 mph is 27.23%.
Number of days the pile is present	365	Days per year
Total size of pile bases (Acres)	1.25	Pile sizes provided by Paul Schultz, Tiller. Confirmed on 3/22/12 call that the storage piles FS001 & FS002 are 1 acre total. Confirmed on 8/10/12 that storage pile FS003 is 0.25 acre total footprint. Note that storage pile FS003 is located in a 3-sided building; however for purposes of the emission calculations the pile 1.25 is assumed to be open.

PM Emission Factor ¹ (lb/(days*acres))	PM Emissions (lb/hr)	PM Emissions (tpy)
2.19	0.11	0.50

PM ₁₀ Emission Factor ¹ (lb/(days*acres))	PM ₁₀ Emissions (lb/hr)	PM ₁₀ Emissions (tpy)
1.09	0.06	0.25

PM _{2.5} Emission Factor ¹ (lb/(days*acres))	PM _{2.5} Emissions (lb/hr)	PM _{2.5} Emissions (tpy)
0.44	0.02	0.10

1. Emissions are calculated using the methodology listed in Section 4.1.3 - Wind Emissions From Continuously Active Piles of the EPA document Control of Open Fugitive Dust Sources, EPA-450/3-88-008, September 1988, Page 4-7.

$$E = 1.7 \left(\frac{s}{1.5} \right) \left(\frac{365 - p}{235} \right) \left(\frac{f}{15} \right) (lb / day / acre)$$

Control of Open Fugitive Dust Sources
EPA-450/3-88-008, September 1988, Page 4-17, Equation 2.

**Tiller Corporation- North Branch Facility
Air Permit Application
Loader (FS004) Emission Calculations**

Emission Factor Calculations for Loader FS004

Emissions from material transfer points based on AP 42 Section 13.2.4.2(11/06), Equation 1.

Emission Factor, lb/ton (E) = $k (0.0032) (U/5)^{1.3} / (M/2)^{1.4}$

Variable	Units	Post-Dryer Transfer Points (transfer chute)
k (PM)	particle size	0.74
k (PM ₁₀)	multiplier (constant)	0.35
k (PM _{2.5})	AP 42 Section 13.2.4.2(11/06)	0.053
U	Mean wind speed ¹ (mph)	9.42
M	Material moisture content ² (%)	2
E (PM)	Emission Factor (lb/ton)	0.0054
E (PM ₁₀)		0.0026
E (PM _{2.5})		0.0004

1. The mean wind speed for transfers from transfer chutes is assumed to be the mean wind speed based on meteorological data from the MPCA (MSPMPX 2006-2010 modeling meteorological dataset).

2. The material moisture content for the pre-dried sand will be between 2-5% per phone conversation with Paul Schultz of Tiller 3/29/2012. Tiller is accepting a limit of 2% as the minimum moisture content for the pre-dried sand. For post-dried sand the material moisture content will be less than 1%.

Pollutant	Loader Throughput ¹ (tons/hr)	Operating Hours	Uncontrolled Emission Factor (lb/ton)	Number of Loading Transfer Points ²	Potential Uncaptured Emissions (lb/hr)	Potential Uncaptured Emissions (tpy)
PM	180	8760	0.0054	1	0.9711	4.2534
PM ₁₀	180	8760	0.0026	1	0.4593	2.0117
PM _{2.5}	180	8760	0.0004	1	0.0696	0.3046

1. The value listed is the maximum throughput and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.

2. Material is transferred from the piles to the screen via loader. Assumed one transfer/drop point for moving material to the screen.

Tiller Corporation - North Branch Facility
Air Permit Application
Paved Haul Road (FS005) Emission Calculations - Phase 1

Haul Road Emissions - FS005

Phase 1

Typical / Maximum / Potential Emissions

$$E(tpy) = \left[k(sL)^{0.91}(W)^{1.02} \right] \left(1 - \frac{P}{4N} \right) \left(\frac{VMT}{2000} \right) \quad \text{AP-42, Section 13.2.1.3, Equation (2), 01/11}$$

Parameter	Value	Definition	Source
k (PM)	0.011	Particle size multiplier (lb/VMT)	AP-42, Table 13.2.1-1, 01/11
k (PM ₁₀)	0.0022		
k (PM _{2.5})	0.00054		
P	115	Number of Wet days/yr	AP-42, Figure 13.2.1-2, 01/11
N	365	Number of days/yr	-
sL (Mar -Nov)	0.6	Silt loading (g/m ²)	AP-42, Table 13.2.1-2, 01/11 Assumes silt loading similar to public roadways as a result of fugitive dust plan.
sL (Dec - Feb)	2.4		

Estimate of Average ¹Weight of Vehicles (W)¹

Vehicle Type	Product Handled	Weight Empty (tons)	Weight Full (tons)	Average Weight (tons)
Truck	Sand	14	40	27
Loader ²	Sand	26	34	30

1. Truck weight information provided by Paul Schultz of Tiller via phone conversation on 3/22/12 and via e-mail on 3/23/12.
2. Loader weight information provided by Paul Schultz of Tiller via email 8/3/12.

Estimate of Vehicle Miles Traveled (VMT) - Raw Material Unloading

Description	Frequency of Truck Deliveries ¹ (trucks/week)	Vehicle Distance Traveled per Delivery ² (ft)	Vehicle Distance Traveled per Delivery (miles)	Vehicle Miles Traveled per Month
Truck Unloading - Sand	900	1,400	0.27	1034.1

1. Per 8/3/12 call with Mike Caron of Tiller assume 900 trucks/week.
2. Vehicle distance traveled was determined based on Tiller site drawing and truck route description provided by Paul Schultz of Tiller via phone conversation on 3/22/12.

Estimate of Vehicle Miles Traveled (VMT) - Product Loading

Description	Frequency of Truck Deliveries ¹ (trucks/week)	Vehicle Distance Traveled per Delivery ² (ft)	Vehicle Distance Traveled per Delivery (miles)	Vehicle Miles Traveled per Month
Product Truck Loading	100	800	0.15	65.7

1. Per 8/3/12 call with Mike Caron of Tiller assume 100 trucks/week.
2. Vehicle distance traveled was determined based on Tiller site drawing and truck route description provided by Paul Schultz of Tiller via phone conversation on 3/22/12 and via email 3/28/12.

Estimate of Vehicle Miles Traveled (VMT) - Loader

Description	Throughput (ton/hr) ¹	Capacity of Loader (ton/truck) ²	Frequency of Loader (Vehicle/week)	Vehicle Distance Traveled per Delivery ² (ft)	Vehicle Distance Traveled per Delivery (miles)	Vehicle Miles Traveled per Month
Truck Unloading - Sand	180	8	3780.00	400	0.08	1240.9

1. The value listed is the maximum throughput and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.
2. Provided by Paul Schultz of Tiller via email 8/3/12.

Intermediate Calculations

Vehicle Type	(W) ^{1.02} Truck	(W) ^{1.02} Loader	(sL) ^{.91}	(sL) ^{.91}	(1-P/(4N))
	28.84	32.11	0.63	2.22	0.92

Estimate of Particulate Emissions from Roadway Fugitives

Typical / Maximum

	Dec - Feb (tpy)	Mar - Nov (tpy)	Total Annual Emissions (tpy)
PM	2.41	2.05	4.46
PM ₁₀	0.48	0.29	0.77
PM _{2.5}	0.12	0.07	0.19

Tiller Corporation - North Branch Facility
Air Permit Application
Paved Haul Road (FS005) Emission Calculations Phase 2

Haul Road Emissions - FS005

Post - Phase 2

Typical / Maximum / Potential Emissions

$$E(tpy) = \left[k(sL)^{0.91}(W)^{1.02} \right] \left(1 - \frac{P}{4N} \right) \left(\frac{VMT}{2000} \right) \quad \text{AP-42, Section 13.2.1.3, Equation (2), 01/11}$$

Parameter	Value	Definition	Source
k (PM)	0.011	Particle size multiplier (lb/VMT)	AP-42, Table 13.2.1-1, 01/11
k (PM ₁₀)	0.0022		
k (PM _{2.5})	0.00054		
P	115	Number of Wet days/yr	AP-42, Figure 13.2.1-2, 01/11
N	365	Number of days/yr	-
sL (Mar -Nov)	0.6	Silt loading (g/m ²)	AP-42, Table 13.2.1-2, 01/11 Assumes silt loading similar to public roadways as a result of fugitive dust plan.
sL (Dec - Feb)	2.4		

Estimate of Average Weight of Vehicles (W)¹

Vehicle Type	Product Handled	Weight Empty (tons)	Weight Full (tons)	Average Weight (tons)
Truck ¹	Sand	14	40	27
Loader ²	Sand	26	34	30

1. Truck weight information provided by Paul Schultz of Tiller via phone conversation on 3/22/12 and via e-mail on 3/23/12.

2. Loader weight information provided by Paul Schultz of Tiller via email 8/3/12.

Estimate of Vehicle Miles Traveled (VMT) - Raw Material Unloading

Description	Frequency of Truck Deliveries ¹ (trucks/week)	Vehicle Distance Traveled per Delivery ² (ft)	Vehicle Distance Traveled per Delivery (miles)	Vehicle Miles Traveled per Month
Truck Unloading - Sand	1800	1,400	0.27	2068.2

1. Per 8/3/12 call with Mike Caron of Tiller assume 1800 trucks/week.

2. Vehicle distance traveled was determined based on Tiller site drawing and truck route description provided by Paul Schultz of Tiller via phone conversation on 3/22/12.

Estimate of Vehicle Miles Traveled (VMT) - Product Loading

Description	Frequency of Truck Deliveries ¹ (trucks/week)	Vehicle Distance Traveled per Delivery ² (ft)	Vehicle Distance Traveled per Delivery (miles)	Vehicle Miles Traveled per Month
Product Truck Loading	150	800	0.15	98.5

1. Per 8/3/12 call with Mike Caron of Tiller assume 150 trucks/week.

2. Vehicle distance traveled was determined based on Tiller site drawing and truck route description provided by Paul Schultz of Tiller via phone conversation on 3/22/12 and via email 3/28/12.

Estimate of Vehicle Miles Traveled (VMT) - Loader

Description	Throughput (ton/hr) ¹	Capacity of Loader (ton/truck) ²	Frequency of Loader (Vehicle/week)	Vehicle Distance Traveled per Delivery ² (ft)	Vehicle Distance Traveled per Delivery (miles)	Vehicle Miles Traveled per Month
Truck Unloading - Sand	180	8.00	3780.00	400	0.08	1240.9

1. The value listed is the maximum throughput and was provided by Paul Schultz of Tiller via phone conversation 3/28/12.

2. Provided by Paul Schultz of Tiller via email 8/3/12.

Intermediate Calculations

Vehicle Type	(W) ^{1.02} Truck	(W) ^{1.02} Loader	(sL) ^{.91} (Mar-Nov)	(sL) ^{.91} (Dec-Feb)	(1-P/(4N))
	28.84	32.11	0.63	2.22	0.92

Estimate of Particulate Emissions from Roadway Fugitives

	Typical / Maximum		
	Dec - Feb (tpy)	Mar - Nov (tpy)	Total Annual Emissions (tpy)
PM	3.45	2.93	6.38
PM ₁₀	0.69	0.59	1.28
PM _{2.5}	0.17	0.14	0.31

Tiller Corporation - North Branch Facility
Air Permit Application
Facility Emissions Summary (Phase 1)

Facility Emissions Summary - Phase 1

	NO _x		CO		SO _x		PM		PM ₁₀		PM _{2.5}		VOC	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EU-001 Sand Dryer ¹	11.36	49.76	21.30	93.29	0.11	0.48	3.72	16.28	3.72	16.28	3.72	16.28	0.38	1.66
EU-002 Generator ²	13.18	3.95	0.63	0.19	0.01	0.00	0.05	0.02	0.05	0.02	0.05	0.02	0.08	0.02
SV-003 (EU-003, EU-004)							6.30	27.59	3.18	13.91	0.80	3.49		
EU-005 Rail Load-out							0.90	3.95	0.44	1.92	0.09	0.38		
EU-006 Truck Load-out							0.90	3.95	0.44	1.92	0.09	0.38		
EU-007/010 - 018 Storage Silos (including elevators)							1.67	7.33	0.76	3.33	0.12	0.55		
FS-001/002/003 Fugitive Pile Emissions							0.11	0.50	0.06	0.25	0.02	0.10		
FS-004 Loader							0.97	4.25	0.46	2.01	0.07	0.30		
FS-005 Paved Haul Road Emissions							-	4.46	-	0.77	-	0.19		
GP-001 (EU-003, 004, 005, 006)							8.10	35.49	4.05	17.75	0.97	4.25		
GP-002 (EU-007/010-018)							1.67	7.33	0.76	3.33	0.12	0.55		
GP-003 (FS-001, 002, 003)							0.11	0.50	0.06	0.25	0.02	0.10		
Total	24.54	53.71	21.93	93.48	0.12	0.48	14.63	68.34	9.10	40.41	4.96	21.68	0.46	1.69

	Lead		CO ₂		N ₂ O		CH ₄		CO ₂ e		Total HAP		Single HAP ³ (Hexane)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EU-001 Sand Dryer ¹	0.0006	0.0028	11,553	50,600	0.09	0.41	0.47	2.05	11,591	50,771	0.13	0.57	0.12	0.54
EU-002 Generator ²	0.00	0.00	1,125	338	0.01	0.00	0.05	0.01	1,129	339	0.01	0.00	0.00	0.00
SV-003 (EU-003, EU-004)														
EU-005 Rail Load-out														
EU-006 Truck Load-out														
EU-007/010 - 018 Storage Silos (including elevators)														
FS-001/002/003 Fugitive Pile Emissions														
FS-004 Loader														
FS-005 Paved Haul Road Emissions														
GP-001 (EU-003, 004, 005, 006)														
GP-002 (EU-007/010-018)														
GP-003 (FS-001, 002, 003)														
Total	0.0008	0.0028	12,678	50,938	0.10	0.41	0.51	2.07	12,720	51,109	0.14	0.57	0.12	0.54

1. The maximum emission rate for each pollutant from either the fuel oil operating or natural gas operating scenario is conservatively used to determine the potential emissions for the sand dryer. Also note that the PM/PM_{PM_{2.5}} emissions from the dryer are based on the sand dryer grain loading rate and airflow.
2. The emissions shown for the generator assume the operating limit of 600 hours per year.
3. Hexane is the maximum single HAP from the combustion sources and is only emitted from the sand dryer.

Tiller Corporation - North Branch Facility
Air Permit Application
Facility Emissions Summary (Post-Phase 2)

Facility Emissions Summary - Phase 2

	NO _x		CO		SO _x		PM		PM ₁₀		PM _{2.5}		VOC	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EU-001 Sand Dryer ¹	11.36	49.76	21.30	93.29	0.11	0.48	3.72	16.28	3.72	16.28	3.72	16.28	0.38	1.66
EU-002 Generator ²	13.18	3.95	0.63	0.19	0.01	0.00	0.05	0.02	0.05	0.02	0.05	0.02	0.08	0.02
SV-003 (EU-003, EU-004)							6.30	27.59	3.18	13.91	0.80	3.49		
EU-005 Rail Load-out							0.90	3.95	0.44	1.92	0.09	0.38		
EU-006 Truck Load-out							0.90	3.95	0.44	1.92	0.09	0.38		
EU-007/010 - 025 Storage Silos (including elevators)							3.35	14.66	1.52	6.66	0.25	1.09		
SV-009 (EU-008, EU-009)							2.66	11.66	1.46	6.37	0.54	2.35		
FS-001/002/003 Fugitive Pile Emissions							0.11	0.50	0.06	0.25	0.02	0.10		
FS-004 Loader							0.97	4.25	0.46	2.01	0.07	0.30		
FS-005 Paved Haul Road Emissions							-	6.38	-	1.28	-	0.31		
GP-001 (EU-003, 004, 005, 006, 008, 009)							10.77	47.15	5.51	24.13	1.51	6.60		
GP-002 (EU-007/010 - 025)							3.35	14.66	1.52	6.66	0.25	1.09		
GP-003 (FS-001, 002, 003)							0.11	0.50	0.06	0.25	0.02	0.10		
Total	24.54	53.71	21.93	93.48	0.12	0.48	18.97	89.25	11.32	50.62	5.62	24.70	0.46	1.69

	Lead		CO ₂		N ₂ O		CH ₄		CO ₂ e		Total HAP		Single HAP ³ (Hexane)	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
EU-001 Sand Dryer ¹	0.0006	0.0028	11,553	50,600	0.09	0.41	0.47	2.05	11,591	50,771	0.13	0.57	0.12	0.54
EU-002 Generator ²	0.00	0.00	1,125	338	0.01	0.00	0.05	0.01	1,129	339	0.01	0.00	0.00	0.00
SV-003 (EU-003, EU-004)														
EU-005 Rail Load-out														
EU-006 Truck Load-out														
EU-007/010 - 025 Storage Silos (including elevators)														
SV-009 (EU-008, EU-009)														
FS-001/002/003 Fugitive Pile Emissions														
FS-004 Loader														
FS-005 Paved Haul Road Emissions														
GP-001 (EU-003, 004, 005, 006, 008, 009)														
GP-002 (EU-007/010 - 025)														
GP-003 (FS-001, 002, 003)														
Total	0.0008	0.0028	12,678	50,938	0.1028	0.4132	0.5142	2.0662	12,720	51,109	0.14	0.57	0.12	0.54

1. The maximum emission rate for each pollutant from either the fuel oil operating or natural gas operating scenario is conservatively used to determine the potential emissions for the sand dryer. Also note that the PM/PM_{PM2.5} emissions from the dryer are based on the sand dryer emission factor from AP-42 Chapter 11.19 (11/95) as well as the fuel combustion emissions. The fuel combustion emissions from the worst case fuel (fuel oil) have conservatively been included.
2. The emissions shown for the generator assume the operating limit of 600 hours per year.
3. Hexane is the maximum single HAP from the combustion sources and is only emitted from the sand dryer.

Tiller Corporation - North Branch Facility
Air Permit Application
Unrestricted Emissions Summary - Post Phase 2

Facility Unrestricted Emissions Summary

	NO _x	CO	SO _x	PM	PM ₁₀	PM _{2.5}	VOC
	tpy	tpy	tpy	tpy	tpy	tpy	tpy
EU-001 Sand Dryer ¹	70.59	163.58	0.48	3,158.11	3,161.04	3,161.04	1.66
EU-002 Generator ²	57.72	2.75	0.06	0.23	0.23	0.23	0.33
SV-003 (EU-003, EU-004)				114.96	51.91	13.68	
EU-005 Rail Load-out				19.25	9.10	1.38	
EU-006 Truck Load-out				19.25	9.10	1.38	
EU-007/010 - 025 Storage Silos (including elevators)				67.47	31.91	4.83	
SV-009 (EU-008, EU-009)				69.86	30.58	10.45	
FS-001/002/003 Fugitive Pile Emissions				0.50	0.25	0.10	
FS-004 Loader				4.25	2.01	0.30	
FS-005 Paved Haul Road Emissions				6.38	1.28	0.31	
GP-001 (EU-003, 004, 005, 006, 008, 009)				223.31	100.69	26.89	
GP-002 (EU-007/010 - 025)				67.47	31.91	4.83	
GP-003 (FS-001, 002, 003)				0.50	0.25	0.10	
Total	128.31	166.32	0.54	3460.25	3297.41	3193.71	1.99

	Lead	CO ₂	N ₂ O	CH ₄	CO ₂ e	Total HAP	Single HAP ³ (Hexane)
	tpy	tpy	tpy	tpy	tpy	tpy	tpy
EU-001 Sand Dryer ¹	0.0028	50,600	0.41	2.05	50,771	0.57	0.54
EU-002 Generator ²	0.00	4,928	0.04	0.20	4,944	0.05	0.00
SV-003 (EU-003, EU-004)							
EU-005 Rail Load-out							
EU-006 Truck Load-out							
EU-007/010 - 025 Storage Silos (including elevators)							
SV-009 (EU-008, EU-009)							
FS-001/002/003 Fugitive Pile Emissions							
FS-004 Loader							
FS-005 Paved Haul Road Emissions							
GP-001 (EU-003, 004, 005, 006, 008, 009)							
GP-002 (EU-007/010 - 025)							
GP-003 (FS-001, 002, 003)							
Total	0.0033	55,528	0.45	2.25	55,715	0.63	0.54

1. The maximum emission rate for each pollutant from either the fuel oil operating or natural gas operating scenario is conservatively used to determine the potential emissions for the sand dryer. Also note that the PM/PM₁₀/PM_{2.5} emissions from the dryer are based on the sand dryer emission factor from AP-42 Chapter 11.19 (11/95) as well as the fuel combustion emissions from the worst case fuel (fuel oil) have conservatively been included.
2. The emissions shown for the generator assume 8760 hours of operation and do not take into account the proposed limit on hours of operation.
3. Hexane is the maximum single HAP from the combustion sources and is only emitted from the sand dryer.

Attachment 2:
Facility Description and CD-01 Forms

FACILITY DESCRIPTION: GROUPS (GP)

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 02500056

Facility Name: Tiller - North Branch

ID No.	Group Status	Added By (Action)	Retired By (Action)	Include in EI	Operator ID for Item	Group Description	Group Items
1 GP 001	Active	PER 001		<input type="checkbox"/>		Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)	CE 002, CE 003, CE 004, CE 008, EU 003, EU 004, EU 005, EU 006, EU 008, EU 009, SV 003, SV 004, SV 005, SV 009
2 GP 002	Active	PER 001		<input type="checkbox"/>		Storage Silos	CE 005, CE 006, CE 007, CE 009, CE 010, CE 011, CE 014, CE 015, CE 016, CE 017, CE 018, CE 019, EU 007, EU 010, EU 011, EU 012, EU 013, EU 014, EU 015, EU 016, EU 017, EU 018, EU 019, EU 020, EU 021, EU 022, EU 023, EU 024, EU 025, SV 006, SV 007, SV 008, SV 010, SV 011, SV 012
3 GP 003	Active	PER 001		<input type="checkbox"/>		Storage Piles	FS 001, FS 002, FS 003
4 GP 004	Active	PER 001		<input type="checkbox"/>		Fabric Filters	CE 001, CE 002, CE 003, CE 004, CE 008, CE 012, CE 013

FACILITY DESCRIPTION: STACK/VENTS (SV)

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 02500056

Facility Name: Tiller - North Branch

ID No.	Stack/ Vent Status	Added By (Action)	Retired By (Action)	Operator ID for Item	Operator's Description	Height of Opening From Ground (feet)	Inside Dimensions		Design Flow Rate at Top (ACFM)	Exit Gas Temperature at Top (°F)	Flow Rate/ Temperature Information Source	Discharge Direction
							Diameter or Length (feet)	Width (feet)				
1	SV 001	Active	PER 001		Sand Dryer	40	4.25		60000	220	Estimate	Up, No Cap
2	SV 002	Active	PER 001		Generator	101.7	1.16		5611.5	949	Manufacturer	Up, No Cap
3	SV 003	Active	PER 001		Gyrotory Sifter System/Conveyor System	24	2.67	3.33	25000	200	Estimate	Up, No Cap
4	SV 004	Active	PER 001		Rail Load-Out	63	0.67		1500	150	Estimate	Horizontal
5	SV 005	Active	PER 001		Truck Load-Out	63	0.67		1500	150	Estimate	Horizontal
6	SV 006	Active	PER 001		Storage Silo Bin Vent 1	53	0.33	1.25	20	150	Estimate	Horizontal
7	SV 007	Active	PER 001		Storage Silo Bin Vent 2	53	0.33	1.25	20	150	Estimate	Horizontal
8	SV 008	Active	PER 001		Storage Silo Bin Vent 3	53	0.33	1.25	20	150	Estimate	Horizontal
9	SV 009	Active	PER 001	Phase II	Gyrotory Sifter System/Conveyor System Phase II	24	2.67	3.33	25000	200	Estimate	Up, No Cap
10	SV 010	Active	PER 001	Phase II	Storage Silo Bin Vent 4 Phase II	53	.33	1.25	20	150	Estimate	Horizontal
11	SV 011	Active	PER 001	Phase II	Storage Silo Bin Vent 5 Phase II	53	.33	1.25	20	150	Estimate	Horizontal
12	SV 012	Active	PER 001	Phase II	Storage Silo Bin Vent 6 Phase II	53	.33	1.25	20	150	Estimate	Horizontal
13	SV 013	Active	PER 001		Silo Vent							
14	SV 014	Active	PER 001		Silo Vent							
15	SV 015	Active	PER 001		Silo Vent							
16	SV 016	Active	PER 001		Silo Vent							
17	SV 017	Active	PER 001		Silo Vent							
18	SV 018	Active	PER 001		Silo Vent							
19	SV 019	Active	PER 001		Silo Vent							
20	SV 020	Active	PER 001		Silo Vent							

FACILITY DESCRIPTION: CONTROL EQUIPMENT (CE)

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 02500056

Facility Name: Tiller - North Branch

ID No.	Control Equip. Status	Added By (Action)	Retired By (Action)	Operator ID for Item	Control Equip. Type	Control Equipment Description	Manufacturer	Model	Pollutants Controlled	Capture Efficiency (%)	Destruction/Collection Efficiency (%)	Afterburner Combustion Parameters
1 CE 001	Active	PER 001		Dryer	017	Fabric Filter - Medium Temperature i.e., 180 F < T < 250 F	Custom Welding & Metal Fab Inc	S-60-756	PM2.5 PM10 PM	100 100 100	99.5 99.5 99.5	
2 CE 002	Active	PER 001		Sifter2	018	Fabric Filter - Low Temperature, i.e., T < 180 Degrees F	SLY Inc	STJ-1717-10	PM2.5 PM10 PM	100 100 100	90 95 99	
3 CE 003	Active	PER 001		Rail L/O	018	Fabric Filter - Low Temperature, i.e., T < 180 Degrees F	SLY Inc	SBR-55-PV-84	PM2.5 PM10 PM	80 80 80	90 95 99	
4 CE 004	Active	PER 001		Truck L/O	018	Fabric Filter - Low Temperature, i.e., T < 180 Degrees F	SLY Inc	SBR-55-PV-84	PM2.5 PM10 PM	80 80 80	90 95 99	
5 CE 005	Active	PER 001		Loading	099	Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	100 100 100	76 87 82	
6 CE 006	Active	PER 001		Loading	099	Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	100 100 100	76 87 82	
7 CE 007	Active	PER 001		Loading	099	Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	100 100 100	76 87 82	
8 CE 008	Active	PER 001		Sifter8	018	Fabric Filter - Low Temperature, i.e., T < 180 Degrees F	SLY Inc	STJ-1717-10	PM2.5 PM10 PM	100 100 100	99 95 90	
9 CE 009	Active	PER 001		Unloading	099	Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	80 80 80	97 98 98	
10 CE 010	Active	PER 001		Unloading	099	Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	80 80 80	97 98 98	
11 CE 011	Active	PER 001		Unloading	099	Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	80 80 80	97 98 98	
12 CE 012	Active	PER 001		Conveyor2	018	Fabric Filter - Low Temperature, i.e., T < 180 Degrees F	SLY Inc	STJ-1717-10	PM2.5 PM10 PM	80 80 80	90 95 99	
13 CE 013	Active	PER 001		Conveyor8	018	Fabric Filter - Low Temperature, i.e., T < 180 Degrees F	SLY Inc	STJ-1717-10	PM2.5 PM10 PM	80 80 80	90 95 99	
14 CE 014	Active	PER 001		Loading2	099	Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	100 100 100	76 87 82	

FACILITY DESCRIPTION: CONTROL EQUIPMENT (CE)

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 02500056

Facility Name: Tiller - North Branch

ID No.	Control Equip. Status	Added By (Action)	Retired By (Action)	Operator ID for Item	Control Equip. Type	Control Equipment Description	Manufacturer	Model	Pollutants Controlled	Capture Efficiency (%)	Destruction/ Collection Efficiency (%)	Afterburner Combustion Parameters
15	CE 015	Active	PER 001			Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	100 100 100	76 87 82	
16	CE 016	Active	PER 001			Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	100 100 100	76 87 82	
17	CE 017	Active	PER 001			Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	80 80 80	97 98 98	
18	CE 018	Active	PER 001			Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	80 80 80	97 98 98	
19	CE 019	Active	PER 001			Other	Belgrade Steel Tank Co	Belgrade 150	PM2.5 PM10 PM	80 80 80	97 98 98	

FACILITY DESCRIPTION: EMISSION UNIT (EU)

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 02500056

Facility Name: Tiller - North Branch

ID No.	Emission Unit Status	Added By (Action)	Retired By (Action)	Insignif-icant Activity	Operator ID for Item	Stack/Vent ID No(s).	Control Equip. ID No(s).	Operator Description	Manufacturer	Model Number	SIC	Max. Design Capacity	Maximum Design Capacity		Max Fuel Input (mil Btu)
													Materials	Units n	Units d
1 EU 001	Active	PER 001		<input type="checkbox"/>		SV 001 (M)	CE 001	Sand Dryer	Genco	Ultra II 85	1446	360	Sand	Ton	71
2 EU 002	Active	PER 001		<input type="checkbox"/>		SV 002 (M)		Generator (Tier 2 - 6.9 Mbtu/hr)	Ziegler/Cat	C27 EPA Tier 2	1446				6.9
3 EU 003	Active	PER 001		<input type="checkbox"/>		SV 003 (M)	CE 002	Gyrotory Sifter System	Sweco	Gyro-Max/Big-Max	1446	180	Sand	Ton	Hr
4 EU 004	Active	PER 001		<input type="checkbox"/>		SV 003 (M)	CE 012	Conveyor System	Superior	multiple	1446	180	Sand	Ton	Hr
5 EU 005	Active	PER 001		<input type="checkbox"/>		SV 004 (M)	CE 003	Rail Load-Out	Belgrade	700 Barrel Silo	1446	400	Sand	Ton	Hr
6 EU 006	Active	PER 001		<input type="checkbox"/>		SV 005 (M)	CE 004	Truck Load-Out	Belgrade	900 Barrel Silo	1446	400	Sand	Ton	Hr
7 EU 007	Active	PER 001		<input type="checkbox"/>		SV 006 (M) SV 007 (P) SV 008 (P) SV 010 (M) SV 011 (P) SV 012 (P)	CE 005 CE 006 CE 007 CE 014 CE 015 CE 016	Storage Silo Elevator 1	Belgrade	1200 Barrel Silos	1446	360	Sand	Ton	Hr
8 EU 008	Active	PER 001		<input type="checkbox"/>		SV 009 (M)	CE 008	Gyrotory Sifter System Phase II	Sweco	Gyro-Max/Big-Max	1446	180	Sand	Ton	Hr
9 EU 009	Active	PER 001		<input type="checkbox"/>		SV 009 (M)	CE 013	Conveyor System Phase II	Superior	multiple	1446	360	Sand	Ton	Hr
10 EU 010	Active	PER 001		<input type="checkbox"/>		SV 006 (P) SV 007 (M) SV 008 (P) SV 010 (P) SV 011 (M) SV 012 (P)	CE 005 CE 006 CE 007 CE 014 CE 015 CE 016	Storage Silo Elevator 2	Orthman	200 tph	1446	200	Sand	Ton	Hr
11 EU 011	Active	PER 001		<input type="checkbox"/>		SV 006 (P) SV 007 (P) SV 008 (M) SV 010 (P) SV 011 (P) SV 012 (M)	CE 005 CE 006 CE 007 CE 014 CE 015 CE 016	Storage Silo Elevator 3	Orthman	200 tph	1446	200	Sand	Ton	Hr
12 EU 012	Active	PER 001		<input type="checkbox"/>		SV 006 (M)	CE 005 CE 009	Storage Silo 1	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
13 EU 013	Active	PER 001		<input type="checkbox"/>		SV 006 (M)	CE 005 CE 009	Storage Silo 2	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
14 EU 014	Active	PER 001		<input type="checkbox"/>		SV 006 (M)	CE 005 CE 009	Storage Silo 3	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
15 EU 015	Active	PER 001		<input type="checkbox"/>		SV 007 (M)	CE 006 CE 010	Storage Silo 4	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
16 EU 016	Active	PER 001		<input type="checkbox"/>		SV 007 (M)	CE 006 CE 010	Storage Silo 5	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr

FACILITY DESCRIPTION: EMISSION UNIT (EU)

ID No.	Emission Unit Status	Added By (Action)	Commence Const. Date	Initial Startup Date	Removal Date	Firing Method	Pct. Fuel/Space Heat	Bottleneck	Elevator Type
1 EU 001	Active	PER 001	01/30/2012						
2 EU 002	Active	PER 001	01/30/2012						
3 EU 003	Active	PER 001	01/30/2012						
4 EU 004	Active	PER 001	01/30/2012						
5 EU 005	Active	PER 001	01/30/2012						
6 EU 006	Active	PER 001	01/30/2012						
7 EU 007	Active	PER 001	01/30/2012						
8 EU 008	Active	PER 001							
9 EU 009	Active	PER 001							
10 EU 010	Active	PER 001	01/30/2012						
11 EU 011	Active	PER 001	01/30/2012						
12 EU 012	Active	PER 001	01/30/2012						
13 EU 013	Active	PER 001	01/30/2012						
14 EU 014	Active	PER 001	01/30/2012						
15 EU 015	Active	PER 001	01/30/2012						
16 EU 016	Active	PER 001	01/30/2012						

FACILITY DESCRIPTION: EMISSION UNIT (EU)

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 02500056

Facility Name: Tiller - North Branch

ID No.	Emission Unit Status	Added By (Action)	Retired By (Action)	Insignificant Activity	Operator ID for Item	Stack/Vent ID No(s).	Control Equip. ID No(s).	Operator Description	Manufacturer	Model Number	SIC	Max. Design Capacity	Maximum Design Capacity		Max Fuel Input (mil Btu)
													Materials	Units n	Units d
17 EU 017	Active	PER 001		<input type="checkbox"/>		SV 007 (M)	CE 006 CE 010	Storage Silo 6	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
18 EU 018	Active	PER 001		<input type="checkbox"/>		SV 008 (M)	CE 007 CE 011	Storage Silo 7	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
19 EU 019	Active	PER 001		<input type="checkbox"/>	Phase II	SV 010 (M)	CE 014 CE 017	Storage Silo 8 Phase II	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
20 EU 020	Active	PER 001		<input type="checkbox"/>	Phase II	SV 010 (M)	CE 014 CE 017	Storage Silo 9 Phase II	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
21 EU 021	Active	PER 001		<input type="checkbox"/>	Phase II	SV 010 (M)	CE 014 CE 017	Storage Silo 10 Phase II	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
22 EU 022	Active	PER 001		<input type="checkbox"/>	Phase II	SV 011 (M)	CE 015 CE 018	Storage Silo 11 Phase II	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
23 EU 023	Active	PER 001		<input type="checkbox"/>	Phase II	SV 011 (M)	CE 015 CE 018	Storage Silo 12 Phase II	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
24 EU 024	Active	PER 001		<input type="checkbox"/>	Phase II	SV 011 (M)	CE 015 CE 018	Storage Silo 13 Phase II	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr
25 EU 025	Active	PER 001		<input type="checkbox"/>	Phase II	SV 012 (M)	CE 016 CE 019	Storage Silo 14 Phase II	Belgrade	1200 Barrel Silos	1446	180	Sand	Ton	Hr

FACILITY DESCRIPTION: EMISSION UNIT (EU)

	ID No.	Emission Unit Status	Added By (Action)	Commence Const. Date	Initial Startup Date	Removal Date	Firing Method	Pct. Fuel/ Space Heat	Bottleneck	Elevator Type
17	EU 017	Active	PER 001	01/30/2012						
18	EU 018	Active	PER 001	01/30/2012						
19	EU 019	Active	PER 001							
20	EU 020	Active	PER 001							
21	EU 021	Active	PER 001							
22	EU 022	Active	PER 001							
23	EU 023	Active	PER 001							
24	EU 024	Active	PER 001							
25	EU 025	Active	PER 001							

FACILITY DESCRIPTION: FUGITIVE SOURCES (FS)

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 02500056

Facility Name: Tiller - North Branch

ID No.	Fugitive Source Status	Added By (Action)	Retired By (Action)	Insignif-icant Activity	Operator ID for Item	Pollutant(s) Emitted	Control Equip. ID No(s).	Fugitive Source Description	Year Installed	Year Removed
1 FS 001	Active	PER 001		<input type="checkbox"/>		PM2.5 PM10 PM		Raw material sand pile		
2 FS 002	Active	PER 001		<input type="checkbox"/>		PM PM10 PM2.5		Raw material sand pile		
3 FS 003	Active	PER 001		<input type="checkbox"/>		PM2.5 PM10 PM		Raw material sand pile		
4 FS 004	Active	PER 001		<input type="checkbox"/>		PM PM10 PM2.5		Loader		
5 FS 005	Active	PER 001		<input type="checkbox"/>		PM2.5 PM10 PM		Paved Haul Road Emissions		

FACILITY DESCRIPTION: BUILDINGS (BG)

Show: Active and Pending Records

Action: PER 001

AQD Facility ID: 02500056

Facility Name: Tiller - North Branch

ID No.	Added By (Action)	Retired By (Action)	Operator ID for Item	Length (feet)	Width (feet)	Roof Height from Ground (feet)	Description/Comment	Building Status
1 BG 001	PER 001			88	50	89	Gyratory Sifter	Active
2 BG 002	PER 001			99.2	96.4	47.4	WIP Building	Active
3 BG 003	PER 001			24.0	12.0	23.4	Control Building	Active
4 BG 004	PER 001			60.0	35.0	22.0	Shop/Lab Building	Active
5 BG 005	PER 001			60.0	50.0	89.0	Gyratory Sifter Phase 2	Active
6 BG 006	PER 001		BH-1	61.8	13.2	27.4	Baghouse 1	Active
7 BG 007	PER 001		BH-2	11.3	11.3	35.7	Baghouse 2	Active
8 BG 008	PER 001		EU-001	70.8	10.8	25.3	Sand Dryer	Active
9 BG 009	PER 001		EU-005	25.0	12.0	63.0	Rail Load-Out w/BH-3 total height is 64'3"	Active
10 BG 010	PER 001		EU-006	25	12	63	Truck Load-Out w/BH-4 total height is 64'3"	Active
11 BG 011	PER 001		EU-007	90.0	12.0	63.0	Storage Silos	Active
12 BG 012	PER 001		EU-007	90.0	12.0	63.0	Storage Silos additional set of 7 silos	Active
13 BG 013	PER 001		BH-8	11.3	11.3	35.7	Baghouse 8 Phase 2	Active



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: Total Facility

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	SOURCE-SPECIFIC REQUIREMENTS
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2	Permit Appendix: This permit contains an appendix as listed in the permit Table of Contents. The Permittee shall comply with all requirements contained in the appendix.
3.0		CD	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0100; Minn. R. 7007.0800, subp. 2; Minn. R. 7011.0150; Minn. R. 7009.0020	Comply with Fugitive Emission Control Plan: This plan shall identify all fugitive emission sources, primary and contingent control measures, and record keeping. The Permittee shall follow the actions and recordkeeping specified in the control plan. The plan may be amended by the Permittee with the Commissioner's approval. If the Commissioner determines the Permittee is out of compliance with Minn. R. 7011.0150 or the fugitive control plan, then the Permittee may be required to amend the control plan and/or to install and operate particulate matter ambient monitors as requested by the Commissioner.
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Feed Material Moisture Content: greater than or equal to 2.00 percent
5.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Demonstrate the moisture content is greater than or equal to 2.00% by either 1 or 2: 1. Test moisture content of each different feed material source (sampled at an area representative of the feed source and physically capable of being sampled), as follows: a. Use ASTM method numbers D 2216-92 or D 4643-93 (or equivalent). b. Keep records of each moisture content test summarizing the method used, results, date, time, and initials of person performing test. c. Test daily, when operating.
6.0		CD	(continued) Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	d. When testing indicates that feed material moisture content is less than 2.00%, in situations where it is infeasible to sample and test, or where the Permittee elects not to sample and test, the Permittee shall operate a moisture addition device at or immediately prior to the drier where unprocessed feed material is being fed to achieve a moisture content greater than or equal to 2.00%. Moisture addition during operation shall continue until subsequent moisture content testing demonstrates that feed material moisture content is greater than or equal to 2.00%. Daily, when operating, either:



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

7.0		CD	(continued) Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	i. Keep records of the date, water flow rate, material throughput rate, initials of the person making the record, and the time the record was made; or ii. Conduct moisture content testing on the feed material after water application, and if results show moisture content is less than 2.00%, increase water addition to insure moisture content is 2.00% or greater and re-test to verify. 2. Keep records indicating instances when feed material was sourced from or is being removed from below the water table or wet processed prior to arriving at the site. Records shall include a description of the source, the corresponding dates, and the initials of the person making the record.
8.0		CD	Minn. R. 7011.0150	Non-Process Dust Control: All reasonable measures shall be taken to prevent avoidable amounts of particulate matter from becoming airborne. In a practical manner this refers to preventing avoidable visible dust emissions beyond the lot line surrounding the stationary source. Control of non-process dust emissions can be achieved through such measures as applying water or commercially available dust suppressant to stockpiles, unpaved roads and handling areas. The permittee will minimize fugitive dust by following the Fugitive Dust Control Plan. In addition, the following requirements apply to the Permittee:
9.0		CD	(continued) Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	1. Record date and time of action and name of person making the record. 2. Record amount of water or dust suppressant applied. 3. If a commercially available dust suppressant is used, it shall be applied in accordance with the manufacturer's guidelines. The Permittee must keep a copy of these manufacturer's guidelines. 4. Record the location (e.g., site sketch) of water or dust suppressant application. 5. Install a rain gauge at the site and record the precipitation in the previous 24 hours for each day of operation at the site. 6. Make and record basic weather observations according to the MPCA Weather Summary Criteria that best characterize each operating day. 7. Unpaved roads at the site shall be posted with speed limit signs indicating a maximum speed of 15 miles per hour. 8. Equipment to apply water or dust suppressant shall always be available at the site within a given operating day.
10.0		CD	Minn. R. 7007.0800, subp. 2, Minn. R. 7007.0800	Labeling Requirements: Permanently affix the manufacturer's serial number (or otherwise unique identifying number) to each piece of screening, transfer operation, and stationary internal combustion engine equipment for tracking purposes within 60 days of permit issuance. The number shall be permanently affixed and maintained so that it is readable and visible at all times from a safe distance at each stationary source. This number shall correspond to the number contained in records regarding the piece of equipment.
11.0		CD	hdr	OPERATIONAL REQUIREMENTS
12.0		CD	40 CFR pt. 50, Minn. Stat. Section 116.07, subds. 4a & 9; Minn. R. 7007.0100, ubps. 7A, 7L & 7M; Minn. R. 7007.0800, subps. 1, 2, & 4; Minn. R. 7009-0010 - 009.0080	The Permittee shall comply with National Primary and Secondary Ambient Air Quality Standards, 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards, Minn. R. 7009.0010 to 7009.0080. Compliance shall be demonstrated upon written request by the MPCA.
13.0		CD	Minn. R. 7011.0020	Circumvention: Do not install or use a device or means that conceals or dilutes emissions, which would otherwise violate a federal or state air pollution control rule, without reducing the total amount of pollutant emitted.
14.0		CD	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)	Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated.
15.0		CD	Minn. R. 7007.0800, subps. 14 and 16(J)	Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment. At a minimum, the O & M plan shall identify all air pollution control equipment and control practices and shall include a preventative maintenance program for the equipment and practices, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment and practices to proper operation to meet applicable permit conditions, a description of the employee training program for proper operation and maintenance of the control equipment and practices, and the records kept to demonstrate plan implementation.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

16.0		CD	Minn. R. 7019.1000, subp. 4	Operation Changes: In any shutdown, breakdown, or deviation the Permittee shall immediately take all practical steps to modify operations to reduce the emission of any regulated air pollutant. The Commissioner may require feasible and practical modifications in the operation to reduce emissions of air pollutants. No emissions units that have an unreasonable shutdown or breakdown frequency of process or control equipment shall be permitted to operate.
17.0		CD	Minn. R. 7011.0150	Fugitive Emissions: Do not cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne. Comply with all other requirements listed in Minn. R. 7011.0150.
18.0		CD	Minn. R. 7030.0010 - 7030.0080	Noise: The Permittee shall comply with the noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during the operation of any emission units. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.
19.0		CD	Minn. R. 7007.0800, subp. 9(A)	Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).
20.0		CD	Minn. R. 7007.0800, subp. 16	The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.
21.0		CD	Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2□□	All trucks, hauling material for or to be used in processing, with open beds that enter the facility shall have covers to minimize dust generation from the products hauled. The Permittee shall not allow trucks without covers to make any product deliveries or pick-ups. The Permittee shall not receive or transport material in unenclosed train cars.
22.0		CD	Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2	The Permittee shall keep a daily record of the number of trucks entering the facility.
23.0		CD	hdr	PERFORMANCE TESTING
24.0		CD	Minn. R. ch. 7017	Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.
25.0		CD	Minn. R. 7017.2018; Minn. R. 7017.2030, subps. 1-4, Minn. R. 7017.2035, subps. 1-2	Performance Test Notifications and Submittals: Performance Tests are due as outlined in Table A of the permit. See Table B for additional testing requirements. Performance Test Notification (written): due 30 days before each Performance Test Performance Test Plan: due 30 days before each Performance Test Performance Test Pre-test Meeting: due 7 days before each Performance Test Performance Test Report: due 45 days after each Performance Test Performance Test Report - Microfiche Copy: due 105 days after each Performance Test The Notification, Test Plan, and Test Report may be submitted in an alternative format as allowed by Minn. R. 7017.2018.
26.0		CD	Minn. R. 7017	Opacity Performance Testing: As provided in Minn. R. 7017.2020, subp. 2, the Permittee may conduct performance testing required by this permit as included in an approved performance test plan. The Permittee shall be certified in Method 9. The number of tests to be determined by the Permittee and MPCA.
27.0		CD	Minn. R. 7017	On each day of operation, the Permittee shall ensure that at least one Method 9 certified employee or representative is onsite.
28.0		CD	Minn. R. 7017.2025	Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as stated in the MPCA's Notice of Compliance letter granting preliminary approval. Preliminary approval is based on formal review of a subsequent performance test on the same unit as specified by Minn. R. 7017.2025, subp. 3. The limit is final upon issuance of a permit amendment incorporating the change.
29.0		CD	hdr	MONITORING REQUIREMENTS
30.0		CD	Minn. R. 7007.0800, subp. 4(D)	Monitoring Equipment Calibration: The Permittee shall calibrate all required monitoring equipment at least once every 12 months (any requirements applying to continuous emission monitors are listed separately in this permit).



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

31.0		CD	Minn. R. 7007.0800, subp. 4(D)	Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, or during checks of the monitoring systems, such as calibration checks and zero and span adjustments. If monitoring records are required, they should reflect any such periods of process shutdown or checks of the monitoring system.
32.0		CD	Minn. R. 7007.0800, subp. 4(D)	Monitoring Equipment: Install or make needed repairs to monitoring equipment within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.
33.0		CD	hdr	RECORDKEEPING
34.0		CD	Minn. R. 7007.0800, subp. 5(C)	Recordkeeping: Retain all records at the stationary source, unless otherwise specified within this permit, for a period of five (5) years from the date of monitoring, sample, measurement, or report. Records which must be retained at this location include all calibration and maintenance records, all original recordings for continuous monitoring instrumentation, and copies of all reports required by the permit. Records must conform to the requirements listed in Minn. R. 7007.0800, subp. 5(A). The records may be maintained in either electronic or paper format.
35.0		CD	Minn. R. 7007.0800, subp. 5(B)	Recordkeeping: Maintain records describing any insignificant modifications (as required by Minn. R. 7007.1250, subp. 3) or changes contravening permit terms (as required by Minn. R. 7007.1350, subp. 2), including records of the emissions resulting from those changes. The records may be maintained in either electronic or paper format.
36.0		CD	Minn. R. 7007.1200, subp. 4	If the Permittee determines that no permit amendment or notification is required prior to making a change, the Permittee must retain records of all calculations required under Minn. R. 7007.1200. For expiring permits, these records shall be kept for a period of five years from the date the change was made or until permit reissuance, whichever is longer. The records shall be kept at the stationary source for the current calendar year of operation and may be kept at the stationary source or office of the stationary source for all other years. The records may be maintained in either electronic or paper format.
37.0		CD	hdr	REPORTING/SUBMITTALS
38.0		CD	Minn. R. 7019.1000, subp. 3	Shutdown Notifications: Notify the Commissioner at least 24 hours in advance of a planned shutdown of any control equipment or process equipment if the shutdown would cause any increase in the emissions of any regulated air pollutant. If the owner or operator does not have advance knowledge of the shutdown, notification shall be made to the Commissioner as soon as possible after the shutdown. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 3. At the time of notification, the owner or operator shall inform the Commissioner of the cause of the shutdown and the estimated duration. The owner or operator shall notify the Commissioner when the shutdown is over.
39.0		CD	Minn. R. 7019.1000, subp. 2	Breakdown Notifications: Notify the Commissioner within 24 hours of a breakdown of more than one hour duration of any control equipment or process equipment if the breakdown causes any increase in the emissions of any regulated air pollutant. The 24-hour time period starts when the breakdown was discovered or reasonably should have been discovered by the owner or operator. However, notification is not required in the circumstances outlined in Items A, B and C of Minn. R. 7019.1000, subp. 2. At the time of notification or as soon as possible thereafter, the owner or operator shall inform the Commissioner of the cause of the breakdown and the estimated duration. The owner or operator shall notify the Commissioner when the breakdown is over.
40.0		CD	Minn. R. 7019.1000, subp. 1	Notification of Deviations Endangering Human Health or the Environment: As soon as possible after discovery, notify the Commissioner or the state duty officer, either orally or by facsimile, of any deviation from permit conditions which could endanger human health or the environment.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

41.0		CD	Minn. R. 7019.1000, subp. 1	Notification of Deviations Endangering Human Health or the Environment Report: Within 2 working days of discovery, notify the Commissioner in writing of any deviation from permit conditions which could endanger human health or the environment. Include the following information in this written description: 1. the cause of the deviation; 2. the exact dates of the period of the deviation, if the deviation has been corrected; 3. whether or not the deviation has been corrected; 4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and 5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.
42.0		S/A	Minn. R. 7007.0800, subp. 6(A)(2)	Semiannual Deviations Report: due 30 days after end of each calendar half-year following Permit Issuance. The first semiannual report submitted by the Permittee shall cover the calendar half-year in which the permit is issued. The first report of each calendar year covers January 1 - June 30. The second report of each calendar year covers July 1 - December 31. If no deviations have occurred, the Permittee shall submit the report stating no deviations.
43.0		CD	Minn. R. 7007.1150 - 7007.1500	Application for Permit Amendment: If a permit amendment is needed, submit an application in accordance with the requirements of Minn. R. 7007.1150 through Minn. R. 7007.1500. Submittal dates vary, depending on the type of amendment needed.
44.0		CD	Minn. R. 7007.1400, subp. 1(H)	Extension Requests: The Permittee may apply for an Administrative Amendment to extend a deadline in a permit by no more than 120 days, provided the proposed deadline extension meets the requirements of Minn. R. 7007.1400, subp. 1(H). Performance testing deadlines from the General Provisions of 40 CFR pt. 60 and pt. 63 are examples of deadlines for which the MPCA does not have authority to grant extensions and therefore do not meet the requirements of Minn. R. 7007.1400, subp. 1(H).
45.0		S/A	Minn. R. 7007.0800, subp. 6(C)	Compliance Certification: due 31 days after end of each calendar year following Permit Issuance (for the previous calendar year). The Permittee shall submit this to the Commissioner on a form approved by the Commissioner. This report covers all deviations experienced during the calendar year.
46.0		CD	Minn. R. 7019.3000 - 7019.3100	Emission Inventory Report: due on or before April 1 of each calendar year following permit issuance, to be submitted on a form approved by the Commissioner.
47.0		CD	Minn. R. 7002.0005 - 7002.0095	Emission Fees: due 60 days after receipt of an MPCA bill.
48.0		CD	hdr	NEW SOURCE PERFORMANCE STANDARDS - General Provisions
49.0		S/A	40 CFR Section 60.7(a)(1); Minn. R. 7019.0100, subp. 1	Notification of the Date Construction Began: due 30 days after Start Of Construction (or reconstruction). Submit the name and number of each unit and the date construction of each unit began.
50.0		S/A	40 CFR Section 60.7(a)(3); Minn. R. 7019.0100, subp. 1	Notification of the Actual Date of Initial Startup: due 15 days after Initial Startup
51.0		CD	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1	Notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in 40 CFR Section 60.14(e).
52.0		CD	40 CFR Section 60.7(a)(6); Minn. R. 7019.0100, subp. 1	Notification of Anticipated Date for Conducting Opacity Observations: due 30 day prior to observation date
53.0		CD	40 CFR Section 60.15(d); Minn. R. 7011.0050; 40 CFR 60.7(a), Minn. R. 7007.0800, subp. 2, Minn. R. 7011.3350)	If an owner or operator of an existing facility proposes to replace components, and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, he shall notify the Administrator of the proposed replacements.
54.0		CD	40 CFR 60.7(b), Minn. R. 7019.0100, subp. 1	Recordkeeping: Maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.
55.0		CD	Minn. R. 7007.0800, subp. 5(C); meets requirements of 40 CFR Section 60.7(f); Minn. R. 7019.0100, subp. 1	Recordkeeping: Maintain a file of all measurements, maintenance, reports and records for at least five years. 40 CFR Section 60.7(f) specifies two years.
56.0		CD	40 CFR Section 60.11; Minn. R. 7017.2015	Opacity Compliance: When measuring opacity to demonstrate compliance with opacity standards, using Reference Method 9.



MINNESOTA POLLUTION CONTROL AGENCY
AIR QUALITY
520 LAFAYETTE ROAD
ST. PAUL, MN 55155-4194

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Facility Name: Tiller - North Branch

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57.0		CD	40 CFR Section 60.12; Minn. R. 7011.0050	No owner or operator shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard.
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COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

Associated Items:

- CE 002 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
- CE 003 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
- CE 004 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
- CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
- EU 003 Gyrotory Sifter System
- EU 004 Conveyor System
- EU 005 Rail Load-Out
- EU 006 Truck Load-Out
- EU 008 Gyrotory Sifter System Phase II
- EU 009 Conveyor System Phase II
- SV 003 Gyrotory Sifter System/Conveyor System
- SV 004 Rail Load-Out
- SV 005 Truck Load-Out
- SV 009 Gyrotory Sifter System/Conveyor System Phase II

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS AND LIMITS
2.0		CD	Minn R. 7007.0800, subp. 2	The requirements of this group apply individually to each associated item in this group.
3.0		LIMIT	Minn. R. 7011.0715, subp. 1(A)	Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.
4.0		LIMIT	Minn. R. 7011.0715, subp. 1(B)	Opacity: less than or equal to 20 percent opacity .
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 0.0020 grains/dry standard cubic foot using 3-hour Average period (this is more stringent than the industrial process equipment rule limit which also applies).
6.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 0.37 lbs/hour using 3-hour Average



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7.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 0.0020 grains/dry standard cubic foot using 3-hour Average period.
8.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 0.37 lbs/hour using 3-hour Average
9.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 2.5 micron: less than or equal to 0.0020 grains/dry standard cubic foot using 3-hour Average period.
10.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 2.5 micron: less than or equal to 0.37 lbs/hour using 3-hour Average
11.0		CD	hdr	CONTROL EQUIPMENT (see each associated CE)
12.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall vent emissions from this item to the control equipment meeting the requirements of each associated CE as specified in this permit.
13.0		CD	hdr	PERFORMANCE TESTING (see each associate SV)
14.0		CD	Minn. R. 7007.0800, subps. 2	To verify compliance with the emission limits, Performance testing on each EU must be performed such that no dilution air enters the process during testing; testing is to be representative of each EU alone. The permittee shall submit emissions testing results that include PM4 emission information to assist in the development of emission factors for crystalline silica in the PM4 fraction.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: GP 002 Storage Silos

Associated Items:

- CE 005 Other
- CE 006 Other
- CE 007 Other
- CE 009 Other
- CE 010 Other
- CE 011 Other
- CE 014 Other
- CE 015 Other
- CE 016 Other
- CE 017 Other
- CE 018 Other
- CE 019 Other
- EU 007 Storage Silo Elevator 1
- EU 010 Storage Silo Elevator 2
- EU 011 Storage Silo Elevator 3
- EU 012 Storage Silo 1
- EU 013 Storage Silo 2
- EU 014 Storage Silo 3
- EU 015 Storage Silo 4
- EU 016 Storage Silo 5
- EU 017 Storage Silo 6
- EU 018 Storage Silo 7
- EU 019 Storage Silo 8 Phase II
- EU 020 Storage Silo 9 Phase II
- EU 021 Storage Silo 10 Phase II
- EU 022 Storage Silo 11 Phase II
- EU 023 Storage Silo 12 Phase II
- EU 024 Storage Silo 13 Phase II
- EU 025 Storage Silo 14 Phase II
- SV 006 Storage Silo Bin Vent 1
- SV 007 Storage Silo Bin Vent 2
- SV 008 Storage Silo Bin Vent 3
- SV 010 Storage Silo Bin Vent 4 Phase II
- SV 011 Storage Silo Bin Vent 5 Phase II
- SV 012 Storage Silo Bin Vent 6 Phase II

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS AND LIMITS
2.0		CD	Minn R. 7007.0800, subp. 2	The requirements of this group apply individually to each associated item in this group.
3.0		LIMIT	Minn. R. 7011.0715, subp. 1 (A)	Total Particulate Matter: less than or equal to 0.30 grains/dry standard cubic foot of exhaust gas unless required to further reduce emissions to comply with the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735.



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Facility Name: Tiller - North Branch

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4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Opacity: less than or equal to 5 percent opacity (this is more stringent than the industrial process equipment rule limit which also applies).
5.0		CD	Minn. R. 7011.0715, subp. 1(B); Minn. R. 7011.0110	Opacity: less than or equal to 20 percent opacity .
6.0		CD	Minn. R. 7007.0800, subp. 4	Visible Emissions (VE) Check: Once each day of operation, the Permittee shall observe the storage silos during the daylight hours to determine if there are any visible emissions. Once each week of operation, the Permittee shall inspect the top of the storage silos during the daylight hours to determine if there are any visible emissions.
7.0		CD	Minn. R. 7007.0800, subp. 5	Recordkeeping: The Permittee shall keep a record of all VE checks, whether or not any VEs were observed, and of any corrective actions taken.
8.0		CD	hdr	CONTROL EQUIPMENT (see each associated CE)
9.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall vent emissions from this item to the control equipment meeting the requirements of each associated CE as specified in this permit.
10.0		CD	hdr	PERFORMANCE TESTING (see each associated SV)
11.0		CD	Minn. R. 7007.0800, subps. 2	To verify compliance with the emission limits, Performance testing on each EU must be performed such that no dilution air enters the process during testing; testing is to be representative of each EU alone.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: GP 003 Storage Piles

Associated Items: FS 001 Raw material sand pile

FS 002 Raw material sand pile

FS 003 Raw material sand pile

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS AND LIMITS
2.0		CD	Minn R. 7007.0800, subp. 2	The requirements of this group apply individually to each associated item in this group.
3.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall water the storage piles at the facility and maintain a moisture content of no less than 2.00% at all times for exposed storage pile surfaces. Watering shall comply with the following conditions: a. The water application rate shall be at least 0.1 gallon of water for each 1 square foot every 24 hours; not required when moisture content is demonstrated to be greater than or equal to 2.00%. b. A rainfall of at least 0.16 inches during the previous 24 hours shall substitute for one water application, unless the facility moisture content is rated as "dry." "Dry" is defined as having a moisture content less than 2.00%. c. If storage piles cannot be watered because the ambient air temperature (as measured at the facility during daylight operating hours) will be less than 35 degrees F (1.7C), then watering shall be postponed and accomplished as soon as the conditions preventing water application have abated.
4.0		CD	Minn. R. 7007.0800, subs. 4 & 5	Daily Recordkeeping: The Permittee shall keep records of the water applications, including the following: a. The stock piles watered, the amount of water applied, the time watered, and the method of application. If water was not applied because there was a 0.16 inch or greater rainfall or because of the temperature, it must be noted in the record along with the source of measurement (i.e. on-site rain gauge or thermometer). b. Records of watering equipment breakdowns and repairs, and records of contingency efforts undertaken. c. Whether or not visible emissions were observed. If visible emissions are observed record the source of those emissions and the contingency efforts undertaken.
5.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Demonstrate the moisture content is greater than or equal to 2.00% by: 1. Test moisture content of each source (sampled at an area representative of the source and physically capable of being sampled), as follows: a. Use ASTM method numbers D 2216-92 or D 4643-93 (or equivalent). b. Keep records of each moisture content test summarizing the method used, results, date, time, and initials of person performing test. c. Test daily, when operating, when temperature is greater than 35 degree F (1.7C).
6.0		CD	(continued) Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	d. When testing indicates that the material moisture content is less than 2.00%, in situations where it is infeasible to sample and test, or where the Permittee elects not to sample and test, the Permittee shall operate a moisture addition device to achieve a moisture content greater than or equal to 2.00%. Moisture addition during operation shall continue until subsequent moisture content testing demonstrates that feed material moisture content is greater than or equal to 2.00%. Daily, when operating, either:



COMPLIANCE PLAN **CD-01**

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7.0		CD	(continued) Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	i. Keep records of the date, water application rate, material processing rate, initials of the person making the record, and the time the record was made; or ii. Conduct moisture content testing on the material after water application, and if results show moisture content is less than 2.00%, increase water addition to insure moisture content is 2.00% or greater and re-test to verify.
8.0		CD	hdr	VISIBLE EMISSION REQUIREMENTS
9.0		CD	Minn. R. 7007.0800, subp. 4	Check for visible emissions (during daylight hours) once each calendar day.
10.0		CD	Minn. R. 7007.0800, subp. 2	Corrective Actions: If visible emissions (VEs) are observed, determine the cause and take corrective actions as soon as possible to eliminate the VEs.
11.0		CD	Minn. R. 7007.0800, subp. 5	Recordkeeping: Record the time and date of each VE inspection, and whether or not any VEs were observed. If VEs were observed, also record a brief description of the type of corrective actions taken, and the date the actions were taken. Maintain watering records for storage piles.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: GP 004 Fabric Filters

Associated Items: CE 001 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F
CE 002 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
CE 003 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
CE 004 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
CE 012 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
CE 013 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (see CE 001 through CE 004, CE 008, CE 012 and CE 013 for additional requirements)
2.0		CD	Minn R. 7007.0800, subp. 2	The requirements of this group apply individually to each associated item in this group.
3.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall comply with the requirements of CE 001-004, CE 008, CE 012 and CE 013 as specified in this permit.
4.0		CD	hdr	MONITORING AND RECORDKEEPING
5.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Recordkeeping of Pressure Drop. The Permittee shall read and record the pressure drop across the fabric filter, once each day of operation. The Permittee shall record the time and date of each pressure drop reading and whether or not the recorded pressure drop was within the range specified in this permit.
6.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the fabric filter at all times that any emission unit controlled by the fabric filter is in operation. The Permittee shall document periods of non-operation of the control equipment.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

7.0		CD	Minn. R. 7007.0800, subps. 4, 5, and 14	<p>Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur:</p> <ul style="list-style-type: none">- visible emissions are observed;- the recorded pressure drop is outside the required operating range; or- the fabric filter or any of its components are found during the inspections to need repair. <p>Corrective actions shall return the pressure drop to within the permitted range, eliminate visible emissions, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O & M Plan for the fabric filter. The Permittee shall keep a record of the type and date of any corrective action taken for each filter.</p>
8.0		CD	Minn. R. 7007.0800, subp. 4	<p>Monitoring Equipment: The Permittee shall install and maintain the necessary monitoring equipment for measuring and recording pressure drop as required by this permit. The monitoring equipment must be installed, in use, and properly maintained when the monitored fabric filter is in operation.</p>
9.0		CD	Minn. R. 7007.0800, subps. 4, 5 and 14	<p>Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, the Permittee shall inspect the control equipment components. The Permittee shall maintain a written record of these inspections.</p>
10.0		CD	Minn. R. 7007.0800, subp. 14	<p>The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O & M) Plan. The Permittee shall keep copies of the O & M Plan available onsite for use by staff and MPCA staff.</p>



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: SV 001 Sand Dryer

Associated Items: EU 001 Sand Dryer

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to EU 001)
2.0		CD	Minn R. 7007.0800, subp. 2	The permittee must comply with 40 CFR pt. 60 - Standards of Performance for New Stationary Sources Subpart UUU - Standards of Performance for Calciners and Dryers in Mineral Industries.
3.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Particulate matter emission limits are based upon on a maximum air flow of 48,182 dscfm.
4.0		CD	hdr	When firing fuel oil
5.0		S/A	40 CFR Section 60.736(a) & (b); Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Total Particulate Matter. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
6.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM10 (including both filterable and back half condensables) emissions when firing diesel fuel. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits. The permittee shall submit emissions testing results that include PM4 emission information to assist in the development of emission factors for crystalline silica in the PM4 fraction.
7.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM2.5 (including both filterable and back half condensables) emissions when firing diesel fuel. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
8.0		S/A	40 CFR Section 60.736(a) & (b); Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity when firing diesel fuel. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
9.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure NOx emissions when firing diesel fuel. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
10.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Carbon Monoxide emissions when firing diesel fuel. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
11.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Volatile Organic Compounds when firing diesel fuel. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
12.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Sulfur Dioxide emissions when firing diesel fuel. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

13.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Total Particulate Matter emissions when firing diesel fuel. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
14.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM10 emissions when firing diesel fuel. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
15.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM 2.5 emissions when firing diesel fuel. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
16.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity emissions when firing diesel fuel. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
17.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for NOx emissions when firing diesel fuel. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
18.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Carbon Monoxide emissions when firing diesel fuel. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
19.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Volatile Organic Compound emissions when firing diesel fuel. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
20.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Sulfur Dioxide emissions when firing diesel fuel. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
21.0		CD	hdr	When firing natural gas
22.0		S/A	40 CFR Section 60.736(a) & (b); Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Total Particulate Matter when firing natural gas. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
23.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM10 (including both filterable and back half condensables) emissions when firing natural gas. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits. The permittee shall submit emissions testing results that include PM4 emission information to assist in the development of emission factors for crystalline silica in the PM4 fraction.
24.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM2.5 (including both filterable and back half condensables) emissions when firing natural gas. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
25.0		S/A	40 CFR Section 60.736(a) & (b); Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity when firing natural gas. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

26.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure NOx emissions when firing natural gas. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
27.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Carbon Monoxide emissions when firing natural gas. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
28.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Volatile Organic Compounds when firing natural gas. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
29.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Sulfur Dioxide emissions when firing natural gas. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
30.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Total Particulate Matter emissions when firing natural gas. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
31.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM10 emissions when firing natural gas. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
32.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM 2.5 emissions when firing natural gas. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
33.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity emissions when firing natural gas. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
34.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for NOx emissions when firing natural gas. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
35.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Carbon Monoxide emissions when firing natural gas. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
36.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Volatile Organic Compound emissions when firing natural gas. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
37.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Sulfur Dioxide emissions when firing natural gas. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: SV 002 Generator

Associated Items: EU 002 Generator (Tier 2 - 6.9 Mbtu/hr)

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to EU 002)
2.0		CD	40 CFR Section 60.736(a) & (b); Minn. R. 7007.0800, subps. 2	To verify compliance with the EU 002 emission limits, Performance testing on EU 002 must be performed such that no dilution air enters the process during testing; testing is to be representative of EU 002 alone.
3.0		S/A	40 CFR Section 60.736(a) & (b); Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Total Particulate Matter. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
4.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM10 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
5.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM2.5 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
6.0		S/A	40 CFR Section 60.736(a) & (b); Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
7.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure NOx emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
8.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Carbon Monoxide emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
9.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Volatile Organic Compounds. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
10.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Permit Issuance to measure Sulfur Dioxide emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
11.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Total Particulate Matter. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
12.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM10 (including back half condensables). The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
13.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM2.5. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

14.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Nitrogen Oxides (when firing diesel fuel). The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
15.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Carbon Monoxide. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
16.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Volatile Organic Compounds. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
17.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Sulfur Dioxide. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: SV 003 Gyrotory Sifter System/Conveyor System

Associated Items: EU 003 Gyrotory Sifter System

EU 004 Conveyor System

GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 001)
2.0		CD	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	To verify compliance with the emission limits, Performance testing on the relevant emission units must be performed such that no dilution air enters the process during testing; testing is to be representative of the emission unit alone.
3.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Particulate matter emission limits are based upon on a maximum air flow of 21,721 dscfm.
4.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Total Particulate Matter. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
5.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM10 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits. The permittee shall submit emissions testing results that include PM4 emission information to assist in the development of emission factors for crystalline silica in the PM4 fraction.
6.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM2.5 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
7.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
8.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Total Particulate Matter. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
9.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM10 (including back half condensables). The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
10.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM2.5. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
11.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: SV 004 Rail Load-Out

Associated Items: EU 005 Rail Load-Out

GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 001)
2.0		CD	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	To verify compliance with the emission limits, Performance testing on the relevant emission units must be performed such that no dilution air enters the process during testing; testing is to be representative of the emission unit alone.
3.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Particulate matter emission limits are based upon on a maximum air flow of 1,359 dscfm.
4.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Total Particulate Matter. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
5.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM10 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits. The permittee shall submit emissions testing results that include PM4 emission information to assist in the development of emission factors for crystalline silica in the PM4 fraction.
6.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM2.5 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
7.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
8.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Total Particulate Matter. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
9.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM10 (including back half condensables). The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
10.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM2.5. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
11.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: SV 005 Truck Load-Out

Associated Items: EU 006 Truck Load-Out

GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 001)
2.0		CD	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	To verify compliance with the emission limits, Performance testing on the relevant emission units must be performed such that no dilution air enters the process during testing; testing is to be representative of the emission unit alone.
3.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Particulate matter emission limits are based upon on a maximum air flow of 1,359 dscfm.
4.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Total Particulate Matter. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
5.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM10 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits. The permittee shall submit emissions testing results that include PM4 emission information to assist in the development of emission factors for crystalline silica in the PM4 fraction.
6.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM2.5 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
7.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
8.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Total Particulate Matter. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
9.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM10 (including back half condensables). The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
10.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM2.5. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
11.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: **SV 006 Storage Silo Bin Vent 1**

Associated Items: EU 007 Storage Silo Elevator 1

EU 010 Storage Silo Elevator 2

EU 011 Storage Silo Elevator 3

EU 012 Storage Silo 1

EU 013 Storage Silo 2

EU 014 Storage Silo 3

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 002)
2.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity.
3.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: **SV 007 Storage Silo Bin Vent 2**

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 015 Storage Silo 4
EU 016 Storage Silo 5
EU 017 Storage Silo 6
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 002)
2.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity.
3.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: **SV 008 Storage Silo Bin Vent 3**

Associated Items: EU 007 Storage Silo Elevator 1

EU 010 Storage Silo Elevator 2

EU 011 Storage Silo Elevator 3

EU 018 Storage Silo 7

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 002)
2.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity.
3.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: SV 009 Gyrotory Sifter System/Conveyor System Phase II

Associated Items: EU 008 Gyrotory Sifter System Phase II

EU 009 Conveyor System Phase II

GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 001)
2.0		CD	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	To verify compliance with the emission limits, Performance testing on the relevant emission units must be performed such that no dilution air enters the process during testing; testing is to be representative of the emission unit alone.
3.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Particulate matter emission limits are based upon on a maximum air flow of 21,721 dscfm.
4.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Total Particulate Matter. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
5.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM10 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits. The permittee shall submit emissions testing results that include PM4 emission information to assist in the development of emission factors for crystalline silica in the PM4 fraction.
6.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure PM2.5 (including both filterable and back half condensables) emissions. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
7.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity. During the test the permittee shall use the monitoring devices to determine the control equipment pressure drop range(s). The arithmetic averages of the three runs shall be used as the baseline average values for the limits.
8.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Total Particulate Matter. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
9.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM10 (including back half condensables). The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
10.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for PM2.5. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.
11.0		S/A	Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: **SV 010 Storage Silo Bin Vent 4 Phase II**

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 019 Storage Silo 8 Phase II
EU 020 Storage Silo 9 Phase II
EU 021 Storage Silo 10 Phase II
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 002)
2.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity.
3.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: **SV 011 Storage Silo Bin Vent 5 Phase II**

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 022 Storage Silo 11 Phase II
EU 023 Storage Silo 12 Phase II
EU 024 Storage Silo 13 Phase II
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 002)
2.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity.
3.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: SV 012 Storage Silo Bin Vent 6 Phase II

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 025 Storage Silo 14 Phase II
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	PERFORMANCE TESTING (refer to GP 002)
2.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Initial Performance Test: due 180 days after Initial Startup to measure Opacity.
3.0		S/A	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.2020, subp. 1	Testing Frequency Plan: due 60 days after Initial Performance Test for Opacity. The plan shall specify a testing frequency based on the test data and MPCA guidance. Future performance tests based on 12 month, 36 month, and 60 month intervals, or as applicable, shall be required upon written approval of the MPCA.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: EU 001 Sand Dryer

Associated Items: CE 001 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

SV 001 Sand Dryer

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS AND LIMITS
2.0		CD	40 CFR pt. 60, subp. UUU	The permittee must comply with 40 CFR pt. 60 - Standards of Performance for New Stationary Sources Subpart UUU - Standards of Performance for Calciners and Dryers in Mineral Industries.
3.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Particulate matter emission limits are based upon on a maximum air flow of 60,000 acfm.
4.0		CD	Minn. R. 7007.0800, subp. 2	Fuel type: Natural gas and No. 2 fuel oil only by design.
5.0		LIMIT	40 CFR Section 60.732(b)	Opacity: less than or equal to 10 percent opacity
6.0		CD	hdr	Limits when firing fuel oil
7.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 0.0090 grains/dry standard cubic foot using 3-hour Rolling Average period of exhaust gas when firing diesel fuel.
8.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 3.72 lbs/hour using 3-hour Average period of exhaust gas when firing diesel fuel.
9.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 0.0090 grains/dry standard cubic foot using 3-hour Rolling Average period of exhaust gas when firing diesel fuel.



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Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

10.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 3.72 lbs/hour using 3-hour Average period of exhaust gas when firing diesel fuel.
11.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 2.5 micron: less than or equal to 0.0090 grains/dry standard cubic foot using 3-hour Rolling Average period of exhaust gas when firing diesel fuel.
12.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 2.5 micron: less than or equal to 3.72 lbs/hour using 3-hour Average period of exhaust gas when firing diesel fuel.
13.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Nitrogen Oxides: less than or equal to 11.36 lbs/hour using 3-hour Average period of exhaust gas when firing diesel fuel.
14.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Nitrogen Oxides: less than or equal to 0.16 lbs/million Btu heat input using 3-hour Rolling Average period of exhaust gas when firing diesel fuel.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

15.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Carbon Monoxide: less than or equal to 21.30 lbs/hour using 3-hour Average period of exhaust gas when firing diesel fuel.
16.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Carbon Monoxide: less than or equal to 0.30 lbs/million Btu heat input using 3-hour Rolling Average period of exhaust gas when firing diesel fuel.
17.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Volatile Organic Compounds: less than or equal to 0.10 lbs/hour using 3-hour Rolling Average period of exhaust gas when firing diesel fuel.
18.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Volatile Organic Compounds: less than or equal to 0.0014 lbs/million Btu heat input using 3-hour Average period of exhaust gas when firing diesel fuel.
19.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Sulfur Dioxide: less than or equal to 0.11 lbs/hour using 3-hour Rolling Average period of exhaust gas when firing diesel fuel.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

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20.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Sulfur Dioxide: less than or equal to 0.0015 lbs/million Btu heat input using 3-hour Average period of exhaust gas when firing diesel fuel.
21.0		CD	hdr	Limits when firing natural gas
22.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 0.0065 grains/dry standard cubic foot using 3-hour Rolling Average period of exhaust gas when firing natural gas.
23.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 2.68 lbs/hour using 3-hour Average period of exhaust gas when firing natural gas.
24.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 0.0065 grains/dry standard cubic foot using 3-hour Rolling Average period of exhaust gas when firing natural gas.
25.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 2.68 lbs/hour using 3-hour Average period of exhaust gas when firing natural gas.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

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26.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 2.5 micron: less than or equal to 0.0065 grains/dry standard cubic foot using 3-hour Rolling Average period of exhaust gas when firing natural gas.
27.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 2.5 micron: less than or equal to 2.68 lbs/hour using 3-hour Average period of exhaust gas when firing natural gas.
28.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Nitrogen Oxides: less than or equal to 5.68 lbs/hour using 3-hour Average period of exhaust gas when firing natural gas.
29.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Nitrogen Oxides: less than or equal to 0.080 lbs/million Btu heat input using 3-hour Rolling Average period of exhaust gas when firing natural gas.
30.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Carbon Monoxide: less than or equal to 17.75 lbs/hour using 3-hour Average period of exhaust gas when firing natural gas.



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31.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Carbon Monoxide: less than or equal to 0.25 lbs/million Btu heat input using 3-hour Rolling Average period of exhaust gas when firing natural gas.
32.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Volatile Organic Compounds: less than or equal to 0.38 lbs/hour using 3-hour Rolling Average period of exhaust gas when firing natural gas.
33.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Volatile Organic Compounds: less than or equal to 0.0054 lbs/million Btu heat input using 3-hour Average period of exhaust gas when firing natural gas.
34.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Sulfur Dioxide: less than or equal to 0.040 lbs/hour using 3-hour Rolling Average period of exhaust gas when firing natural gas.
35.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Sulfur Dioxide: less than or equal to 0.00058 lbs/million Btu heat input using 3-hour Average period of exhaust gas when firing natural gas.
36.0		CD	hdr	MONITORING
37.0		CD	40 CFR Section 60.734(c)	The owner or operator of an industrial sand rotary dryer who uses a dry control device is exempt from the monitoring requirements of 40 CFR Section 60.734.
38.0		CD	hdr	RECORDKEEPING AND REPORTING
39.0		CD	Minn. R. 7007.0800, subps. 4, 5, & 14	Periodic Inspections: At least once per calendar quarter, or more frequently as required by the manufacturing specifications, inspect the control equipment components. Maintain a written record of these inspections.



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40.0		CD	Minn. R. 7007.0800, subps. 4, 5, & 14	Corrective Actions: Take corrective action as soon as possible if any of the following occur: - The recorded pressure drop is outside the required operating range; or - The control device(s) or any of its components are found during the inspections to need repair. Corrective actions shall return the pressure drop to within the permitted range, and/or include completion of necessary repairs identified during the inspection, as applicable. Corrective actions include, but are not limited to, those outlined in the O&M Plan. Keep a record of the type and date of any corrective action taken.
41.0		CD	Minn. R. 7007.0800, subps. 4 & 5	Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of No. 2 fuel oil, certifying that the sulfur content does not exceed 0.0015% by weight.
42.0		CD	Minn. R. 7007.0800, subp. 5	The Permittee shall keep records of fuel type and usage on a monthly basis.
43.0		CD	hdr	CONTROL EQUIPMENT - see also CE 001
44.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall vent emissions from this item to the control equipment meeting the requirements of CE 001 as specified in this permit
45.0		CD	hdr	PERFORMANCE TESTING (see SV 001)
46.0		CD	Minn. R. 7007.0800, subps. 2	To verify compliance with the EU 001 emission limits, Performance testing on EU 001 must be performed such that no dilution air enters the process during testing; testing is to be representative of EU 001 alone.
47.0		CD	hdr	NEW SOURCE PERFORMANCE STANDARDS - General Provisions
48.0		S/A	40 CFR Section 60.7(a)(3); Minn. R. 7019.0100, subp. 1	Notification of the Actual Date of Initial Startup: due 15 days after Initial Startup
49.0		CD	40 CFR Section 60.7(a)(6); Minn. R. 7019.0100, subp. 1	Notification of Anticipated Date for Conducting Opacity Observations: due 30 day prior to observation date.
50.0		S/A	40 CFR Section 60.15(d); Minn. R. 7011.0050	Notification of the Date Construction Began: due 60 days after Start Of Construction (or as soon as practicable). Submit the information specified in 40 CFR Section 60.15(d)(1) through (7).
51.0		CD	40 CFR Section 60.7(b), Minn. R. 7019.0100, subp. 1	Recordkeeping: Maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.
52.0		CD	40 CFR Section 60.11; Minn. R. 7017.2015	Opacity Compliance: Demonstrate compliance with opacity standards using Reference Method 9.



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Subject Item: EU 002 Generator (Tier 2 - 6.9 Mbtu/hr)

Associated Items: SV 002 Generator

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS AND LIMITS
2.0		CD	40 CFR Section 63.6590(c); Minn. R. 7011.8150	EU 002 is a new affected source as defined under 40 CFR pt. 63, subp. ZZZZ, and the facility is an area source as defined at 40 CFR Section 63.2, and EU 002 is a non-emergency CI ICE with a displacement less than 30 liters per cylinder (kW>560). The Permittee shall meet the requirements of 40 CFR pt. 63, subp. ZZZZ by meeting the requirements of 40 CFR pt. 60, subp. IIII. No further requirements of 40 CFR pt. 63, subp. ZZZZ apply to EU 002.
3.0		CD	40 CFR Section 60.4206; 40 CFR Section 60.4211(a); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	The Permittee must operate and maintain the engine according to the manufacturer's written instructions or procedures developed by the Permittee that are approved by the engine manufacturer, over the entire life of the engine. The Permittee may only change those settings that are permitted by the manufacturer. The Permittee must also meet the requirements of 40 CFR parts 89, 94 and/or 1068, as applicable.
4.0		CD	40 CFR 60.4209; 40 CFR 60.4211(a); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	The Permittee shall operate and maintain the unit in accordance with the standards as required by 40 CFR 60.4204 or 40 CFR 60.4205, according to the manufacturer's written instructions, or according to procedures developed by the owner or operator that are approved by the engine manufacturer, for the entire life of the engine. Settings for the units may not be changed unless permitted by the manufacturer.
5.0		LIMIT	40 CFR 60.4204(b) & 4201(b); 40 CFR 89.112(a); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	NMHC+NOx: less than or equal to 4.8 grams/horsepower-hour (6.4 g/kW-hr).
6.0		LIMIT	40 CFR 60.4204(b) & 4201(b); 40 CFR 89.112(a); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Carbon Monoxide: less than or equal to 2.6 grams/horsepower-hour (3.5 g/kW-hr).
7.0		LIMIT	40 CFR 60.4204(b) & 4201(b); 40 CFR 89.112(a); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Total Particulate Matter: less than or equal to 0.15 grams/horsepower-hour (0.20 g/kW-hr).
8.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Operating Hours: less than or equal to 600 hours/year using 365-day Rolling Sum to be calculated by the end of each day.
9.0		CD	40 CFR 60.4211(c); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	The Permittee must purchase the EU 002 engine as certified to meet the emission standards of 40 CFR 60.4204(b). The engine must be installed and configured according to the manufacturer's specifications.
10.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 0.021 grams/horsepower-hour using 3-hour Average period (of exhaust gas).



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11.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Total Particulate Matter: less than or equal to 0.050 lbs/hour using 3-hour Average period (of exhaust gas).
12.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 0.021 grams/horsepower-hour using 3-hour Average period (of exhaust gas).
13.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 10 micron: less than or equal to 0.050 lbs/hour using 3-hour Average period (of exhaust gas).
14.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 2.5 micron: less than or equal to 0.021 grams/horsepower-hour using 3-hour Average period (of exhaust gas).
15.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	PM < 2.5 micron: less than or equal to 0.050 lbs/hour using 3-hour Average period (of exhaust gas).



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16.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Nitrogen Oxides: less than or equal to 5.25 grams/horsepower-hour using 3-hour Average period.
17.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Nitrogen Oxides: less than or equal to 13.2 lbs/hour using 3-hour Average period (of exhaust gas).
18.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Carbon Monoxide: less than or equal to 0.25 grams/horsepower-hour using 3-hour Average period.
19.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Carbon Monoxide: less than or equal to 0.63 lbs/hour using 3-hour Average period (of exhaust gas).
20.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Volatile Organic Compounds: less than or equal to 0.030 grams/horsepower-hour using 3-hour Average period.



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21.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Volatile Organic Compounds: less than or equal to 0.075 lbs/hour using 3-hour Average period (of exhaust gas).
22.0		LIMIT	Minn. R. 7011.2300, subp. 2; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Sulfur Dioxide: less than or equal to 0.50 lbs/million Btu heat input
23.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Sulfur Dioxide: less than or equal to 0.014 lbs/hour using 3-hour Average period (of exhaust gas).
24.0		LIMIT	Minn. R. 7011.2300, subp. 1; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.
25.0		CD	Minn. R. 7005.0100, subp. 35a; Minn. R. 7007.0800, subp. 2; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Fuel type: No. 2 fuel oil only by design.
26.0		LIMIT	40 CFR 60.4207(b); 40 CFR 80.510(b); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Sulfur Content of Fuel: less than or equal to 15 parts per million
27.0		CD	40 CFR 60.4207(b); 40 CFR 80.510(b); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Fuel Type: Diesel fuel must meet the requirements of 40 CFR 80.510(b), which requires that diesel fuel have a maximum sulfur content of 15 ppm and either a minimum cetane index of 40 or a maximum aromatic content of 35 percent by volume.
28.0		CD	hdr	MONITORING, RECORDKEEPING AND REPORTING
29.0		CD	Minn. R. 7007.0800, subp. 4; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Visible Emissions (VE) Check: Once each day of Generator unit operation, the Permittee shall observe the generator stack/vent during the daylight hours to determine if there are any visible emissions.
30.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	Daily Recordkeeping - Operating Hours. By the end of each operating day, calculate and record the following: 1. The total operating hours for that calendar day; 2. The total operating hours for the previous 364 days; and 3. The total operating hours for the 365 day rolling sum.
31.0		CD	40 CFR 60.4214(a)(2); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	The Permittee must keep records of the following information: - All notifications submitted to comply with Subpart IIII and all documentation supporting any notification; - Maintenance conducted on the engine; and - Documentation from the engine manufacturer that the engine is certified to meet the emission standards.



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32.0		CD	Minn. R. 7007.0800, subp. 5; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Recordkeeping: The Permittee shall keep a record of all VE checks, whether or not any VEs were observed, and of any corrective actions taken.
33.0		CD	Minn. R. 7007.0800, subp. 5; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Recordkeeping: The Permittee shall keep a daily log noting if the generator operated that day, and if so, the number of hours of operation
34.0		CD	Minn. R. 7007.0800, subps. 4 & 5; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Fuel Supplier Certification: The Permittee shall obtain and maintain a fuel supplier certification for each shipment of No. 2 fuel oil, certifying that the sulfur content does not exceed 0.0015% by weight.
35.0		CD	Minn. R. 7007.0800, subp. 5; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	The Permittee shall keep records of fuel type and usage on a monthly basis.
36.0		CD	40 CFR Section 60.4214(a)(2); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	The Permittee shall keep records of the following information: (i) All notifications submitted to comply with this subpart and all documentation supporting any notification. (ii) Maintenance conducted on the engine. (iii) If the stationary CI internal combustion is a certified engine, documentation from the manufacturer that the engine is certified to meet the emission standards. (iv) If the stationary CI internal combustion is not a certified engine, documentation that the engine meets the emission standards.
37.0		CD	40 CFR Section 60.4214(c); Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	If the stationary CI internal combustion engine is equipped with a diesel particulate filter to comply with the emission standards in 40 CFR Section 60.4204, the Permittee must keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high backpressure limit of the engine is approached.
38.0		CD	40 CFR Section 60.4214(a)(1); 40 CFR Section 60.7(a)(1) Minn. R. 7011.3520; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	The notification must include the following information: (i) Name and address of the Permittee; (ii) The address of the affected source; (iii) Engine information including make, model, engine family, serial number, model year, maximum engine power, and engine displacement; (iv) Emission control equipment; and (v) Fuel used.
39.0		CD	hdr	PERFORMANCE TESTING (see SV 002)
40.0		CD	Minn. R. 7007.0800, subps. 2	To verify compliance with the EU 002 emission limits, Performance testing on EU 002 must be performed such that no dilution air enters the process during testing; testing is to be representative of EU 002 alone.
41.0		CD	hdr	NEW SOURCE PERFORMANCE STANDARDS - General Provisions
42.0		S/A	40 CFR Section 60.7(a)(1); Minn. R. 7019.0100, subp. 1; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Notification of the Date Construction Began: due 30 days after Start Of Construction (or reconstruction). Submit the name and number of each unit and the date construction of each unit began.
43.0		S/A	40 CFR Section 60.7(a)(3); Minn. R. 7019.0100, subp. 1; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Notification of the Actual Date of Initial Startup: due 15 days after Initial Startup
44.0		CD	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in 40 CFR Section 60.14(e).
45.0		CD	40 CFR Section 60.7(a)(6); Minn. R. 7019.0100, subp. 1; 40 CFR Section 63.6590(c); Minn. R. 7011.8150; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Notification of Anticipated Date for Conducting Opacity Observations: due 30 day prior to observation date
46.0		CD	40 CFR Section 60.15(d); Minn. R. 7011.0050; 40 CFR 60.7(a), Minn. R. 7007.0800, subp. 2, Minn. R. 7011.3350; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	If an owner or operator of an existing facility proposes to replace components, and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, he shall notify the Administrator of the proposed replacements.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

47.0		CD	40 CFR 60.7(b), Minn. R. 7019.0100, subp. 1; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Recordkeeping: Maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the facility including; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.
48.0		CD	Minn. R. 7007.0800, subp. 5(C); meets requirements of 40 CFR Section 60.7(f); Minn. R. 7019.0100, subp. 1; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Recordkeeping: Maintain a file of all measurements, maintenance, reports and records for at least five years. 40 CFR Section 60.7(f) specifies two years.
49.0		CD	40 CFR Section 60.11; Minn. R. 7017.2015; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	Opacity Compliance: When measuring opacity to demonstrate compliance with opacity standards, using use Reference Method 9.
50.0		CD	40 CFR Section 60.12; Minn. R. 7011.0050; 40 CFR Section 63.6590(c); Minn. R. 7011.8150	No owner or operator shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 001 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F

Associated Items: EU 001 Sand Dryer

GP 004 Fabric Filters

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (see GP 004 for additional requirements)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99.5 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 99.5 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 99.5 percent control efficiency
6.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subps. 4, 5, & 14; Minn. R. 7017.2025, subp. 3	Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 6.0 inches of water column , unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours when in operation.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

7.0		CD	hdr	RE-SETTING OF PRESSURE DROP RANGE LIMIT
8.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit: The Permittee shall conduct performance testing to measure the PM/PM10/PM2.5 emission rate as required elsewhere in this permit. If the established Pressure Drop Range Limit is to be re-set, the re-set shall be based on the pressure drop values recorded during the most recent MPCA-approved performance test where compliance was demonstrated.</p> <p>During the performance test, the Permittee must continuously monitor the pressure drop. The Permittee shall calculate the average pressure drop based on the average exhibited over all three compliant test runs. Downtime of 15 minutes or more is not to be included as operating time.</p>
9.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit, continued,</p> <p>The established Pressure Drop Range Limit shall be re-set as follows:</p> <ul style="list-style-type: none">- if the 3-hr average pressure drop recorded during the test is within the established range, it shall not be re-set and the established values remain the Pressure Drop Range Limit;- if the 3-hr average pressure drop is outside the range specified above, the range limit shall be re-set based upon the minimum and maximum pressure drop values exhibited during the performance test. The new minimum value for the range limit shall be half the lowest recorded reading and the new maximum value for the range limit shall be two times the highest recorded value. <p>The new Pressure Drop Range Limit shall be effective upon receipt of the Notice of Compliance letter that approves the test results and shall be incorporated into the permit when the permit is next amended.</p>
10.0		CD	Minn. R. 7007.1500, subp. 1	The Permittee must apply for and obtain a major permit amendment if the Permittee wishes to deviate from the Protocol for Re-setting the Pressure Drop Range Limit required by this permit.
11.0		CD	Minn. R. 7017.2025	Notwithstanding the Protocol detailed above, the MPCA reserves the right to set operational limits and requirements as allowed under Minn. R. 7017.2025. If the MPCA sets limits, the new limits shall be implemented upon receipt of the Notice of Compliance letter that notifies the Permittee of preliminary approval. The limits set according to Minn. R. 7017.2025 are final upon issuance of a permit amendment incorporating the change.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 002 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 003 Gyrotory Sifter System

GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

GP 004 Fabric Filters

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (see GP 004 for additional requirements)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 99 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 95 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 90 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

6.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subps. 4, 5, & 14; Minn. R. 7017.2025, subp. 3	Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 6.0 inches of water column, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours when in operation.
7.0		CD	hdr	RE-SETTING OF PRESSURE DROP RANGE LIMIT
8.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit: The Permittee shall conduct performance testing to measure the PM/PM10/PM2.5 emission rate as required elsewhere in this permit. If the established Pressure Drop Range Limit is to be re-set, the re-set shall be based on the pressure drop values recorded during the most recent MPCA-approved performance test where compliance was demonstrated.</p> <p>During the performance test, the Permittee must continuously monitor the pressure drop. The Permittee shall calculate the average pressure drop based on the average exhibited over all three compliant test runs. Downtime of 15 minutes or more is not to be included as operating time.</p>
9.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit, continued,</p> <p>The established Pressure Drop Range Limit shall be re-set as follows:</p> <ul style="list-style-type: none"> - if the 3-hr average pressure drop recorded during the test is within the established range, it shall not be re-set and the established values remain the Pressure Drop Range Limit; - if the 3-hr average pressure drop is outside the range specified above, the range limit shall be re-set based upon the minimum and maximum pressure drop values exhibited during the performance test. The new minimum value for the range limit shall be half the lowest recorded reading and the new maximum value for the range limit shall be two times the highest recorded value. <p>The new Pressure Drop Range Limit shall be effective upon receipt of the Notice of Compliance letter that approves the test results and shall be incorporated into the permit when the permit is next amended.</p>
10.0		CD	Minn. R. 7007.1500, subp. 1	The Permittee must apply for and obtain a major permit amendment if the Permittee wishes to deviate from the Protocol for Re-setting the Pressure Drop Range Limit required by this permit.
11.0		CD	Minn. R. 7017.2025	Notwithstanding the Protocol detailed above, the MPCA reserves the right to set operational limits and requirements as allowed under Minn. R. 7017.2025. If the MPCA sets limits, the new limits shall be implemented upon receipt of the Notice of Compliance letter that notifies the Permittee of preliminary approval. The limits set according to Minn. R. 7017.2025 are final upon issuance of a permit amendment incorporating the change.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 003 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 005 Rail Load-Out

GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

GP 004 Fabric Filters

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (see GP 004 for additional requirements)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 79 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 76 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 72 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

6.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subps. 4, 5, & 14; Minn. R. 7017.2025, subp. 3	Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 6.0 inches of water column, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours when in operation.
7.0		CD	hdr	RE-SETTING OF PRESSURE DROP RANGE LIMIT
8.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit: The Permittee shall conduct performance testing to measure the PM/PM10/PM2.5 emission rate as required elsewhere in this permit. If the established Pressure Drop Range Limit is to be re-set, the re-set shall be based on the pressure drop values recorded during the most recent MPCA-approved performance test where compliance was demonstrated.</p> <p>During the performance test, the Permittee must continuously monitor the pressure drop. The Permittee shall calculate the average pressure drop based on the average exhibited over all three compliant test runs. Downtime of 15 minutes or more is not to be included as operating time.</p>
9.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit, continued,</p> <p>The established Pressure Drop Range Limit shall be re-set as follows:</p> <ul style="list-style-type: none"> - if the 3-hr average pressure drop recorded during the test is within the established range, it shall not be re-set and the established values remain the Pressure Drop Range Limit; - if the 3-hr average pressure drop is outside the range specified above, the range limit shall be re-set based upon the minimum and maximum pressure drop values exhibited during the performance test. The new minimum value for the range limit shall be half the lowest recorded reading and the new maximum value for the range limit shall be two times the highest recorded value. <p>The new Pressure Drop Range Limit shall be effective upon receipt of the Notice of Compliance letter that approves the test results and shall be incorporated into the permit when the permit is next amended.</p>
10.0		CD	Minn. R. 7007.1500, subp. 1	The Permittee must apply for and obtain a major permit amendment if the Permittee wishes to deviate from the Protocol for Re-setting the Pressure Drop Range Limit required by this permit.
11.0		CD	Minn. R. 7017.2025	Notwithstanding the Protocol detailed above, the MPCA reserves the right to set operational limits and requirements as allowed under Minn. R. 7017.2025. If the MPCA sets limits, the new limits shall be implemented upon receipt of the Notice of Compliance letter that notifies the Permittee of preliminary approval. The limits set according to Minn. R. 7017.2025 are final upon issuance of a permit amendment incorporating the change.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 004 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 006 Truck Load-Out

GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

GP 004 Fabric Filters

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (see GP 004 for additional requirements)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 79 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 76 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 72 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

6.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subps. 4, 5, & 14; Minn. R. 7017.2025, subp. 3	Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 6.0 inches of water column, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours when in operation.
7.0		CD	hdr	RE-SETTING OF PRESSURE DROP RANGE LIMIT
8.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit: The Permittee shall conduct performance testing to measure the PM/PM10/PM2.5 emission rate as required elsewhere in this permit. If the established Pressure Drop Range Limit is to be re-set, the re-set shall be based on the pressure drop values recorded during the most recent MPCA-approved performance test where compliance was demonstrated.</p> <p>During the performance test, the Permittee must continuously monitor the pressure drop. The Permittee shall calculate the average pressure drop based on the average exhibited over all three compliant test runs. Downtime of 15 minutes or more is not to be included as operating time.</p>
9.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit, continued,</p> <p>The established Pressure Drop Range Limit shall be re-set as follows:</p> <ul style="list-style-type: none">- if the 3-hr average pressure drop recorded during the test is within the established range, it shall not be re-set and the established values remain the Pressure Drop Range Limit;- if the 3-hr average pressure drop is outside the range specified above, the range limit shall be re-set based upon the minimum and maximum pressure drop values exhibited during the performance test. The new minimum value for the range limit shall be half the lowest recorded reading and the new maximum value for the range limit shall be two times the highest recorded value. <p>The new Pressure Drop Range Limit shall be effective upon receipt of the Notice of Compliance letter that approves the test results and shall be incorporated into the permit when the permit is next amended.</p>
10.0		CD	Minn. R. 7007.1500, subp. 1	The Permittee must apply for and obtain a major permit amendment if the Permittee wishes to deviate from the Protocol for Re-setting the Pressure Drop Range Limit required by this permit.
11.0		CD	Minn. R. 7017.2025	Notwithstanding the Protocol detailed above, the MPCA reserves the right to set operational limits and requirements as allowed under Minn. R. 7017.2025. If the MPCA sets limits, the new limits shall be implemented upon receipt of the Notice of Compliance letter that notifies the Permittee of preliminary approval. The limits set according to Minn. R. 7017.2025 are final upon issuance of a permit amendment incorporating the change.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 005 Other

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 012 Storage Silo 1
EU 013 Storage Silo 2
EU 014 Storage Silo 3
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 005 requirements are related to the silo loading operation but is the same piece of equipment as CE 009; CE 009 requirements are related to the silo unloading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 82 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 87 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 76 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 006 Other

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 015 Storage Silo 4
EU 016 Storage Silo 5
EU 017 Storage Silo 6
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 006 requirements are related to the silo loading operation but is the same piece of equipment as CE 010; CE 010 requirements are related to the silo unloading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 82 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 87 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 76 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 007 Other

Associated Items: EU 007 Storage Silo Elevator 1

EU 010 Storage Silo Elevator 2

EU 011 Storage Silo Elevator 3

EU 018 Storage Silo 7

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 007 requirements are related to the silo loading operation but is the same piece of equipment as CE 011; CE 011 requirements are related to the silo unloading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 82 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 87 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 76 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 008 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 008 Gyrotory Sifter System Phase II

GP 001 Non-combustion Equipment not Subject to NSPS (Sifter System Conveyor System, Rail and Truck Load-Out)

GP 004 Fabric Filters

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (see GP 004 for additional requirements)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 90 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 95 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 99 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

6.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subps. 4, 5, & 14; Minn. R. 7017.2025, subp. 3	Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 6.0 inches of water column, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours when in operation.
7.0		CD	hdr	RE-SETTING OF PRESSURE DROP RANGE LIMIT
8.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit: The Permittee shall conduct performance testing to measure the PM/PM10/PM2.5 emission rate as required elsewhere in this permit. If the established Pressure Drop Range Limit is to be re-set, the re-set shall be based on the pressure drop values recorded during the most recent MPCA-approved performance test where compliance was demonstrated.</p> <p>During the performance test, the Permittee must continuously monitor the pressure drop. The Permittee shall calculate the average pressure drop based on the average exhibited over all three compliant test runs. Downtime of 15 minutes or more is not to be included as operating time.</p>
9.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	<p>Protocol for Re-Setting the Pressure Drop Range Limit, continued,</p> <p>The established Pressure Drop Range Limit shall be re-set as follows:</p> <ul style="list-style-type: none"> - if the 3-hr average pressure drop recorded during the test is within the established range, it shall not be re-set and the established values remain the Pressure Drop Range Limit; - if the 3-hr average pressure drop is outside the range specified above, the range limit shall be re-set based upon the minimum and maximum pressure drop values exhibited during the performance test. The new minimum value for the range limit shall be half the lowest recorded reading and the new maximum value for the range limit shall be two times the highest recorded value. <p>The new Pressure Drop Range Limit shall be effective upon receipt of the Notice of Compliance letter that approves the test results and shall be incorporated into the permit when the permit is next amended.</p>
10.0		CD	Minn. R. 7007.1500, subp. 1	The Permittee must apply for and obtain a major permit amendment if the Permittee wishes to deviate from the Protocol for Re-setting the Pressure Drop Range Limit required by this permit.
11.0		CD	Minn. R. 7017.2025	Notwithstanding the Protocol detailed above, the MPCA reserves the right to set operational limits and requirements as allowed under Minn. R. 7017.2025. If the MPCA sets limits, the new limits shall be implemented upon receipt of the Notice of Compliance letter that notifies the Permittee of preliminary approval. The limits set according to Minn. R. 7017.2025 are final upon issuance of a permit amendment incorporating the change.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 009 Other

Associated Items: EU 012 Storage Silo 1

EU 013 Storage Silo 2

EU 014 Storage Silo 3

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 009 requirements are related to the silo unloading operation but is the same piece of equipment as CE 005; CE 005 requirements are related to the silo loading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 78.4 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 78.4 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 77.6 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 010 Other

Associated Items: EU 015 Storage Silo 4

EU 016 Storage Silo 5

EU 017 Storage Silo 6

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 010 requirements are related to the silo unloading operation but is the same piece of equipment as CE 006; CE 006 requirements are related to the silo loading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 78.4 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 78.4 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 77.6 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 011 Other

Associated Items: EU 018 Storage Silo 7

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 011 requirements are related to the silo unloading operation but is the same piece of equipment as CE 007; CE 007 requirements are related to the silo loading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 78.4 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 78.4 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 77.6 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 012 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 004 Conveyor System

GP 004 Fabric Filters

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (see GP 004 for additional requirements)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 79 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 76 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 72 percent control efficiency
6.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subps. 4, 5, & 14; Minn. R. 7017.2025, subp. 3	Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 6.0 inches of water column, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours when in operation.
7.0		CD	hdr	RE-SETTING OF PRESSURE DROP RANGE LIMIT
8.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	Protocol for Re-Setting the Pressure Drop Range Limit: The Permittee shall conduct performance testing to measure the PM/PM10/PM2.5 emission rate as required elsewhere in this permit. If the established Pressure Drop Range Limit is to be re-set, the re-set shall be based on the pressure drop values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. During the performance test, the Permittee must continuously monitor the pressure drop. The Permittee shall calculate the average pressure drop based on the average exhibited over all three compliant test runs. Downtime of 15 minutes or more is not to be included as operating time.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

9.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	<p>Protocol for Re-Setting the Pressure Drop Range Limit, continued,</p> <p>The established Pressure Drop Range Limit shall be re-set as follows:</p> <ul style="list-style-type: none">- if the 3-hr average pressure drop recorded during the test is within the established range, it shall not be re-set and the established values remain the Pressure Drop Range Limit;- if the 3-hr average pressure drop is outside the range specified above, the range limit shall be re-set based upon the minimum and maximum pressure drop values exhibited during the performance test. The new minimum value for the range limit shall be half the lowest recorded reading and the new maximum value for the range limit shall be two times the highest recorded value. <p>The new Pressure Drop Range Limit shall be effective upon receipt of the Notice of Compliance letter that approves the test results and shall be incorporated into the permit when the permit is next amended.</p>
10.0		CD	Minn. R. 7007.1500, subp. 1	The Permittee must apply for and obtain a major permit amendment if the Permittee wishes to deviate from the Protocol for Re-setting the Pressure Drop Range Limit required by this permit.
11.0		CD	Minn. R. 7017.2025	Notwithstanding the Protocol detailed above, the MPCA reserves the right to set operational limits and requirements as allowed under Minn. R. 7017.2025. If the MPCA sets limits, the new limits shall be implemented upon receipt of the Notice of Compliance letter that notifies the Permittee of preliminary approval. The limits set according to Minn. R. 7017.2025 are final upon issuance of a permit amendment incorporating the change.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 013 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

Associated Items: EU 009 Conveyor System Phase II

GP 004 Fabric Filters

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (see GP 004 for additional requirements)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 79 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 76 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 72 percent control efficiency
6.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R. 7007.0200; Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subps. 4, 5, & 14; Minn. R. 7017.2025, subp. 3	Pressure Drop: greater than or equal to 0.5 inches of water column and less than or equal to 6.0 inches of water column, unless a new range is set pursuant to Minn. R. 7017.2025, subp. 3 based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The new range shall be implemented upon receipt of the Notice of Compliance letter granting preliminary approval. The range is final upon issuance of a permit amendment incorporating the change. The Permittee shall record the pressure drop at least once every 24 hours when in operation.
7.0		CD	hdr	RE-SETTING OF PRESSURE DROP RANGE LIMIT
8.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	<p>Protocol for Re-Setting the Pressure Drop Range Limit: The Permittee shall conduct performance testing to measure the PM/PM10/PM2.5 emission rate as required elsewhere in this permit. If the established Pressure Drop Range Limit is to be re-set, the re-set shall be based on the pressure drop values recorded during the most recent MPCA-approved performance test where compliance was demonstrated.</p> <p>During the performance test, the Permittee must continuously monitor the pressure drop. The Permittee shall calculate the average pressure drop based on the average exhibited over all three compliant test runs. Downtime of 15 minutes or more is not to be included as operating time.</p>



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

9.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21 & Minn. R. 7007.3000; to avoid major source classification under 40 CFR Section 70.2 and Minn. R.	<p>Protocol for Re-Setting the Pressure Drop Range Limit, continued,</p> <p>The established Pressure Drop Range Limit shall be re-set as follows:</p> <ul style="list-style-type: none">- if the 3-hr average pressure drop recorded during the test is within the established range, it shall not be re-set and the established values remain the Pressure Drop Range Limit;- if the 3-hr average pressure drop is outside the range specified above, the range limit shall be re-set based upon the minimum and maximum pressure drop values exhibited during the performance test. The new minimum value for the range limit shall be half the lowest recorded reading and the new maximum value for the range limit shall be two times the highest recorded value. <p>The new Pressure Drop Range Limit shall be effective upon receipt of the Notice of Compliance letter that approves the test results and shall be incorporated into the permit when the permit is next amended.</p>
10.0		CD	Minn. R. 7007.1500, subp. 1	The Permittee must apply for and obtain a major permit amendment if the Permittee wishes to deviate from the Protocol for Re-setting the Pressure Drop Range Limit required by this permit.
11.0		CD	Minn. R. 7017.2025	Notwithstanding the Protocol detailed above, the MPCA reserves the right to set operational limits and requirements as allowed under Minn. R. 7017.2025. If the MPCA sets limits, the new limits shall be implemented upon receipt of the Notice of Compliance letter that notifies the Permittee of preliminary approval. The limits set according to Minn. R. 7017.2025 are final upon issuance of a permit amendment incorporating the change.



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 014 Other

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 019 Storage Silo 8 Phase II
EU 020 Storage Silo 9 Phase II
EU 021 Storage Silo 10 Phase II
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 014 requirements are related to the silo loading operation but is the same piece of equipment as CE 017; CE 017 requirements are related to the silo unloading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 82 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 87 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 76 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 015 Other

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 022 Storage Silo 11 Phase II
EU 023 Storage Silo 12 Phase II
EU 024 Storage Silo 13 Phase II
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 015 requirements are related to the silo loading operation but is the same piece of equipment as CE 018; CE 018 requirements are related to the silo unloading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 82 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 87 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 76 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 016 Other

Associated Items: EU 007 Storage Silo Elevator 1
EU 010 Storage Silo Elevator 2
EU 011 Storage Silo Elevator 3
EU 025 Storage Silo 14 Phase II
GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 016 requirements are related to the silo loading operation but is the same piece of equipment as CE 019; CE 019 requirements are related to the silo unloading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 82 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 87 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 76 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 017 Other

Associated Items: EU 019 Storage Silo 8 Phase II

EU 020 Storage Silo 9 Phase II

EU 021 Storage Silo 10 Phase II

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 017 requirements are related to the silo unloading operation but is the same piece of equipment as CE 014; CE 014 requirements are related to the silo loading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 78.4 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 78.4 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 77.6 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 018 Other

Associated Items: EU 022 Storage Silo 11 Phase II

EU 023 Storage Silo 12 Phase II

EU 024 Storage Silo 13 Phase II

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 018 requirements are related to the silo unloading operation but is the same piece of equipment as CE 015; CE 015 requirements are related to the silo loading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 78.4 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 78.4 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 77.6 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: CE 019 Other

Associated Items: EU 025 Storage Silo 14 Phase II

GP 002 Storage Silos

	NC/ CA	Type	Citation	Requirement
1.0		CD	hdr	OPERATIONAL REQUIREMENTS (CE 019 requirements are related to the silo unloading operation but is the same piece of equipment as CE 016; CE 016 requirements are related to the silo loading operation.)
2.0		CD	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall meet the requirements of GP 004 as specified in this permit.
3.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for Total Particulate Matter: greater than or equal to 78.4 percent control efficiency
4.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 10 micron: greater than or equal to 78.4 percent control efficiency
5.0		LIMIT	Title I Condition: To avoid classification as major source under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 70.2 and Minn. R. 7007.0200; 40 CFR Section 52.21(j) through (r)(5); 40 U.S.C section 7475(a); Minn. Stat. 116.081, subdivision 1; Minn. R. 7007.0150, Subp. 1; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2	The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM < 2.5 micron: greater than or equal to 77.6 percent control efficiency



COMPLIANCE PLAN **CD-01**

Facility Name: Tiller - North Branch

Permit Number: 02500056 - 001

Subject Item: FS 005 Paved Haul Road Emissions

	NC/ CA	Type	Citation	Requirement
1.0		CD	Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2	Daily Inspection and Recordkeeping: On each day of operation, the Permittee shall visually inspect all paved surfaces to minimize or eliminate fugitive emissions. The facility shall maintain records of this inspection that include the date of the inspection, whether fugitive dust was observed, what corrective actions were taken, when the corrective actions were taken, and whether the corrective actions eliminated the fugitive dust.
2.0		CD	Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2	Anytime fugitive emissions are observed on facility roadways, the Permittee shall immediately eliminate fugitive emissions by sweeping those road segments and/or apply water or a chemical dust suppressant.
3.0		CD	Minn. R. 7011.0150; Minn. R. 7007.0800, subp. 2	Facility-Wide Speed Limit: Vehicle Traffic speeds shall not exceed 15 mph on all facility roads or parking surfaces. The Permittee shall post the speed limit in a highly visible location near the facility entrance.

Attachment 3:

MPCA's Assessment of Application and Additional Points

MPCA's Assessment of Application and Additional Points								
1) AQ Facility ID No.:	02500056				Total Points	240		
2) Facility Name:	Tiller - North Branch							
3) Small business? y/n?	n							
4) DQ Numbers (including all rolled) :	3890							
5) Date of each Application Received:	April 04, 2012 and subsequently updated through the notice date of the permit action.							
6) Final Permit No.	02500056-001							
7) Permit Staff	Steve Gorg							
8) "Work completed" in which .xls file (i.e. unit 2b, unit 1a, biofuels)?			NA					
				Total				
Application Type	DQ No.	Qty.	Points	Points	Details			
Administrative Amendment			1	0				
Minor Amendment			4	0				
Applicability Request			10	0				
Moderate Amendment			15	0				
Major Amendment			25	0				
Individual State Permit (not reissuance)		1	50	50				
Individual Part 70 Permit (not reissuance)			75	0				
Additional Points								
Modeling Review			15	0				
BACT Review		8	15	120	PM, PM10, PM2.5, Pb, NOx, CO, VOC, SO2			
LAER Review			15	0				
CAIR/Part 75 CEM analysis			10	0				
NSPS Review		2	10	20	UUU, IIII			
NESHAP Review		1	10	10	ZZZZ			
Case-by-case MACT Review			20	0				
Netting			10	0				
Limits to remain below threshold		4	10	40	AERA, EAW, Part 70 and NSR			
Plantwide Applicability Limit (PAL)			20	0				
AERA review			15	0				
Variance request under 7000.7000			35	0				
Confidentiality request under 7000.1300			2	0				
EAW review								
Part 4410.4300, subparts 18, item A; and 29			15	0				
Part 4410.4300, subparts 8, items A & B; 10, items A to C; 16, items A & D; 17, items A to C & E to G; and 18, items B & C			35	0				
Part 4410.4300, subparts 4; 5 items A & B; 13; 15; 16, items B & C; and 17 item D			70	0				
			Add'l Points	190				

Attachment 4:

Tiller's BACT Equivalent Analysis

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS

Tiller's North Branch facility is located in Chisago County which is designated as "attainment" or "unclassifiable" for all criteria pollutants with respect to the National Ambient Air Quality Standards (NAAQS).¹ New construction or modifications that result in net emission increases in attainment areas are potentially subject to Prevention of Significant Deterioration (PSD) permitting requirements.

During a meeting between Tiller and the Minnesota Pollution Control Agency (MPCA),² the MPCA suggested the preparation of a permit application following EPA guidance.³ This guidance suggests that sources and modifications that were constructed without a valid construction permit, and that would be considered major sources or major modifications under the PSD rules in 40 CFR 52.21 are required to install BACT. For subject sources that have started construction but not exceeded the applicable major source threshold or significant emission rate, EPA requires that BACT-equivalent pollution controls be installed. Substantial portions of the proposed North Branch facility have been constructed. However, the facility has not begun operation and therefore does not have any emissions attributable to this stationary source. Accordingly, following the 1998 Schaeffer guidance, the MPCA has authority to exercise discretion in what elements need to be incorporated into the permit application to satisfy the source's permitting obligations. The MPCA has stated that the only PSD element which is required as part of the revised permit application is a BACT analysis for all criteria pollutants.⁴ While the MPCA anticipates that the North Branch facility will be issued an Individual State Permit, Tiller is providing a BACT analysis for particulate matter (PM), particulate matter with an aerodynamic diameter of less than or equal to 10 microns and 2.5 microns (PM₁₀ and PM_{2.5}, respectively), lead (Pb), nitrogen oxides (NO_x), volatile organic compounds (VOCs), carbon monoxide (CO), and sulfur dioxide (SO₂) at the request of the MPCA.⁵ The BACT for VOC and CO is included as a combined analysis based on the commonalities between the control technologies used for VOCs and CO.

BACT EVALUATION PROCEDURE

The requirement to conduct a BACT analysis is set forth in the PSD regulations at 40 CFR 52.21(j):

... an emissions limitation, including a visible emission standard, based on the maximum degree of reduction for each air contaminant subject to regulations under the act which would be emitted from any proposed major stationary source or major modification which the department, on a case-by-case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques...

In a memorandum dated December 1, 1987, the United States Environmental Protection Agency (U.S. EPA) stated its preference for a "top-down" BACT analysis.⁶ After determining if any New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAP) is applicable, the first step in this approach is to determine, for the emission unit in question, the most stringent control available for a

¹ 40 CFR 81.335

² Meeting between MPCA, Tiller Corporation, and Trinity Consultants on June 13, 2012.

³ Schaeffer, Eric V., "Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements," November 17, 1998. Hereafter referred to as 1998 Schaeffer guidance.

⁴ All criteria pollutants includes particulate matter (PM), particulate matter with an aerodynamic diameter of less than or equal to 10 microns and 2.5 microns (PM₁₀ and PM_{2.5}, respectively), lead (Pb), nitrogen oxides (NO_x), volatile organic compounds (VOCs), carbon monoxide (CO), and sulfur dioxide (SO₂).

⁵ Telephone conversation between Mr. Steve Gorg, MPCA, and Mr. Clay Raasch, Trinity Consultants, July 24, 2012.

⁶ U.S. EPA, Office of Air and Radiation. Memorandum from J.C. Potter to the Regional Administrators. Washington, D.C. December 1, 1987.

similar or identical source or source category. If it can be shown that this level of control is technically, environmentally, or economically infeasible for the emission unit in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections. The five basic steps of a top-down BACT review as identified by the U.S. EPA are presented below.⁷

Step 1 - Identify All Control Technologies

Available control technologies are identified for each emission unit in question. The following methods are used to identify potential technologies: (1) researching the Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC) database, (2) surveying regulatory agencies, (3) drawing from similar experience in assessing emissions control strategies, (4) surveying air pollution control equipment vendors, and/or (5) researching available literature.

Step 2 - Eliminate Technically Infeasible Options

After the identification of control options, an analysis is conducted to eliminate technically infeasible options. A control option is eliminated from consideration if there are process specific conditions that prohibit the implementation of the control technology or if the highest control efficiency of the option would result in an emission level that is higher than any applicable regulatory limits, such as an NSPS or NESHAP.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Once technically infeasible options are removed from consideration, the remaining options are ranked based on their control effectiveness. If there is only one remaining option or if all of the remaining technologies could achieve equivalent control efficiencies, ranking based on control efficiency is not required.

Step 4 - Evaluate Most Effective Controls and Document Results

Beginning with the most efficient control option in the ranking, detailed economic, energy, and environmental impact evaluations are performed. If a control option is determined to be economically feasible without adverse energy or environmental impacts, it is not necessary to evaluate the remaining options with lower control efficiencies.

The economic evaluation centers on the cost effectiveness of the control option. Costs of installing and operating control technologies are estimated and annualized following the methodologies outlined in the EPA's Control Technology Fact Sheets and other industry resources.

Step 5 - Select BACT

In the final step, one pollutant-specific control option and/or limit is proposed as BACT for each emission unit under review based on evaluations from the previous step.

The U.S. EPA has consistently interpreted the statutory and regulatory BACT definitions as containing two core requirements that the agency believes must be met by any BACT determination, regardless of whether the "top-down" approach is used. First, the BACT analysis must include consideration of the most stringent available control technologies, i.e., those which provide the "maximum degree of emissions reduction." Second, any decision to require a lesser degree of emissions reduction must be justified by an objective analysis of "energy, environmental, and economic impacts."⁸

⁷ U.S. EPA. *Draft New Source Review Workshop Manual*, Chapter B. Research Triangle Park, North Carolina. October, 1990.

⁸ Five basic steps of a top-down BACT analysis are outlined in "U.S. EPA, Draft BACT Guidelines" (Research Triangle Park, NC). March 15, 1990.

A BACT analysis has been conducted on the sand handling/processing equipment at the site as well as the stand-by generator that is utilized for peak shaving (and occasional emergency use).

It should be noted that the stand-by generator is subject to NSPS Subpart IIII and is certified to the emission standards of a tier 2 engine. Therefore, this engine can be considered to have the most stringent combustion efficiency as is reasonably available for this size of engine without the addition of post-engine control technology. The NSPS Subpart IIII limits for which the engine is certified are assumed to be the base case throughout the BACT analysis.

BACT FOR PM/PM₁₀/PM_{2.5}/PB EMISSIONS

The following sections describe the BACT analysis and results for PM/PM₁₀/PM_{2.5}/Pb emissions from the North Branch facility including the sand handling and processing equipment as well as the stand-by generator. The detailed summary of the 5-step BACT analysis can be found in Attachment A-2, cost analyses of control technologies can be found in Attachment A-3, and the summary of the RBLC search results can be found in Attachment A-4.

Industrial Sand Handling/Processing

The drying and handling of industrial sand causes PM to become suspended in the air. Due to the value of the particulate matter material emitted from the industrial sand processing equipment, Tiller has designed each industrial sand handling/processing emissions unit to be equipped with a baghouse or bin vent filter. The storage silos are equipped with bin vent filters which are a passive control device that collects particulate when the air is displaced from the filling and emptying of the silo. The bin vent filter is equipped with bags for control so for purposes of this BACT analysis, they are assumed to be equivalent to fabric filters. The use of baghouses and bin vent filters to collect this valuable material is common among this industry, but is even more appropriate in Tiller's scenario given the condition of the sand received and the inherent value to maintaining collected material in a dry state.

Nevertheless, Tiller has arranged this BACT analysis to consider baghouses as a candidate PM control technology along with other candidate PM control technologies. No preference is initially given to baghouses versus other candidate control technologies.

Given the large number of industrial sand handling/processing emissions units, and their similarity to one another, Tiller has completed a single BACT analysis for all such PM emitting units (Attachment A-2). Of the industrial sand handling and processing emission units, Pb emissions are expected to be miniscule, and only from the dryer; however, the control technologies (and control efficiencies) are expected to be identical for Pb as it is considered a sub-set of PM. Therefore, the results of the PM BACT analysis are considered to be identical for Pb, and no additional analysis was performed.

Sand Dryer (SV-001)

A baghouse is shown to be the most effective, technically feasible PM control technology. While a review of the RBLC did not find any industrial sand dryers, dryers for wood and diatomaceous earth showed previous BACT determinations ranging from 0.03-0.1 grains per dry standard cubic foot (gr/dscf). Tiller proposes as BACT a total PM grain loading rate of 0.009 gr/dscf. This value is derived from the methodology suggested by MPCA, and represents a filterable PM emission rate comparable to that of other BACT sources suggested by MPCA combined with the expected condensable emission rate resulting from fuel combustion.

Gyrotory Sifter/Conveyors (SV-003 and SV-009) and Rail & Truck Loadout (SV 004-005)

As is shown in the BACT analysis, baghouses are shown to be the most effective, technically feasible PM control technology. While no industrial sand processing facilities were found in the RBLC, several different industries have sand handling processes. Tiller proposes a BACT grain loading rate of 0.0020 gr/dscf from each of the baghouses associated with the gyrotory sifter/conveyor system as well as the rail and truck loadout system. This is consistent with recently issued permits for similar emission sources in the taconite industry and is lower than BACT limits represented in the RBLC for similar industrial sand handling processes.

Storage Silos (SV-006-008 and SV-010-012)

As is shown in the BACT analysis, baghouses are shown to be the most effective, technically feasible PM control technology. As previously discussed, the bin vent filters associated with the storage silos are passive control devices and operate during periods of filling and unloading the silos. They are equipped with bags and will have comparable control efficiency to a baghouse when in operation. Based on the configuration of the bin vents, Tiller does not believe these sources can be tested for PM; therefore, to establish an emissions limit that can be demonstrated with an EPA Reference Method test, Tiller proposes as a surrogate for PM an opacity limit of 5% from the storage silos. No similar industrial sand storage silos were found in the RBLC.

It is important to note that the proposed BACT emission limits detailed above include only the captured particulate emissions from each process. The Fugitive Dust Plan incorporates work practice standards which minimize uncaptured emissions from processes which are not totally enclosed (a portion of the conveyor system, storage silo load outs, truck and rail load outs).

Stand-by Generator (SV-002)

The combustion of diesel fuel in the stand-by generator is a source of particulate matter. As previously stated, the engine is subject to NSPS Subpart IIII and is certified to the emission standards of a tier 2 engine. Therefore, this engine can be considered to have the most stringent combustion efficiency as is reasonably available for this size of engine without the addition of post-engine control technology. Additionally, Tiller has requested a limit on the operation of the stand-by generator of 600 hours per year, such that potential emissions from the generator are less than 0.05 tpy. Tiller also reviewed the feasibility of installing a tier 4 interim (4i) engine in place of a tier 2 engine due to lower NO_x emissions. The tier 4i engine was deemed economically infeasible and would result in slightly higher PM emissions. Therefore, Tiller proposes the tier 2 engine manufacturer's guaranteed PM emission rate of 0.021 gram per horsepower-hour (g/hp-hr) and limited hours of operation as BACT.

As mentioned above, Pb is considered a subset of PM; therefore, the proposed PM BACT can be considered to apply to Pb as well.

Fugitive Sources (FS-001-005)

Tiller has several sources of emissions that cannot reasonably be captured and routed to a stack/control device (e.g. material handling and transfer, wind erosion of storage piles, and emissions from vehicle traffic). Tiller proposes a Fugitive Dust Plan to minimize the emissions from these fugitive emission sources as BACT. The Fugitive Dust Plan contains measures to reduce PM emissions including but not limited to watering storage piles as needed, performing daily visible observations, using covered conveyors and hooded drop points, and weekly sweeping of haul roads. The Fugitive Dust Plan is provided as an attachment to this submittal.

BACT FOR NO_x EMISSIONS

The following sections describe the BACT analysis and results for NO_x emissions from the North Branch facility. The detailed summary of the 5-step BACT analysis can be found in Attachment A-2, the cost analysis of the various control technologies for the generator can be found in Attachment A-3, and the summary of the RBLC search results can be found in Attachment A-4.

Industrial Sand Dryer (SV-001)

Combustion of fuel for the operation of the industrial sand dryer results in the production NO_x (including NO₂). Tiller has investigated potential technologies for the control of emissions from the worst case scenario of burning purely natural gas or distillate oil for a full year of operation (8,760 hours). An RBLC search was conducted, but did not reveal NO_x limits for industrial sand dryers. While BACT limits for other dryers were found, Tiller is hesitant to compare to these numbers, since they are not for sand dryers, and Tiller is concerned that the non-sand dryers may be indirect fired emission units which are not similar to the proposed industrial sand dryer at the North Branch facility (a direct-fired unit). Nonetheless, an RBLC search was conducted and showed large scale wood pulp and industrial sized dryers commonly are equipped with a “low NO_x burner”. As Tiller will operate a dryer equipped with a low NO_x burner regardless of the BACT determination, it is included as an element of each technically feasible candidate technology. Tiller also reviewed the feasibility of flue gas recirculation (FGR), selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR) for control of NO_x from the dryer. As the BACT analysis shows (Attachment A-2), FGR is shown to be the most effective, technically feasible NO_x control technology. Therefore, Tiller proposes to install FGR and apply the manufacturer’s guaranteed NO_x emission rate of 0.08 lb/MMBtu for natural gas and a NO_x emission rate of 0.16 lb/MMBtu for fuel oil.

Stand-by Generator (SV-002)

Diesel fuel combustion from the stand-by generator is also a source of NO_x. As outlined under PM/PM₁₀/PM_{2.5} emissions for the stand-by generator, the tier 2 certified engine can be considered to contain the most stringent combustion efficiency reasonably available without the addition of post-engine control technology. Additionally, Tiller has requested a limit on the operation of the stand-by generator of 600 hours per year. However, given the potential emissions are approximately 4 tpy, the addition of an SCR was reviewed for technical and economical feasibility. The addition of an SCR was deemed economically infeasible. Tiller also reviewed the feasibility of installing a tier 4i engine in place of a tier 2 engine due to lower NO_x emissions. The tier 4i engine was deemed economically infeasible. Therefore, Tiller proposes the tier 2 engine manufacturer’s guaranteed NO_x emission rate of 5.25 g/hp-hr and limited hours of operation as BACT.

BACT FOR VOC/CO EMISSIONS

The following sections describe the BACT analysis and results for VOC/CO emissions from the North Branch facility. The detailed summary of the 5-step BACT analysis can be found in Attachment A-2, the cost analysis of the various control technologies can be found in Attachment A-3, and the summary of the RBLC search results can be found in Attachment A-4.

Industrial Sand Dryer (SV-001)

Combustion of fuel for the operation of the industrial sand dryer results in the production of several criteria air pollutants, including VOCs and CO from incomplete combustion. Tiller has investigated potential technologies for the control of emissions from the worst case scenario of burning purely natural gas or distillate oil for a full year of operation (8,760 hours). An RBLC search on similar large scale wood pulp and industrial sized dryers showed the most common type of control technology was “good combustion practices”. However, for the purposes of the BACT analysis, several additional technologies were examined, including a thermal oxidizer

(TO), regenerative thermal oxidizer (RTO), regenerative catalytic oxidizer (RCO), catalytic oxidizer, flare and FGR. As the BACT analysis shows (Attachment A-2), FGR is shown to be the most effective, technically feasible CO control technology. Each control technology evaluated for VOC control was determined to be economically infeasible. Therefore, Tiller proposes good combustion practices and the installation of FGR with the manufacturer's guaranteed CO emission rate of 0.3 lb/MMBtu⁹ and a VOC emission rate of 0.38 lb/hr as BACT.

Stand-by Generator (SV-002)

Diesel fuel combustion from the stand-by generator is also a source of VOCs and CO. As previously stated, the tier 2 certified engine can be considered to contain the most stringent combustion efficiency reasonably available without the addition of post-engine control technology. Additionally, Tiller has requested a limit on the operation of the stand-by generator of 600 hours per year, such that potential emissions from the generator are less than 0.05 tpy for VOC and less than 0.2 tpy for CO. Tiller also reviewed the feasibility of installing a tier 4i engine in place of a tier 2 engine due to lower NO_x emissions. The tier 4i engine was deemed economically infeasible and would result in slightly higher VOC and CO emissions. Therefore, Tiller proposes the tier 2 engine manufacturer's guarantee of 0.25 g/hp-hr for CO and 0.03 g/hp-hr for VOC as well as the limited hours of operation as BACT.

BACT FOR SO₂ EMISSIONS

The following sections describe the BACT analysis and results for SO₂ emissions from the North Branch facility. The detailed summary of the 5-step BACT analysis can be found in Attachment A-2, the cost analysis of the various control technologies can be found in Attachment A-3, and the summary of the RBLC search results can be found in Attachment A-4.

Industrial Sand Dryer (SV-001)

Sulfur dioxide is another byproduct of combustion; however, as SO₂ emissions are extremely low from natural gas consumption, the fuel oil backup supply is considered for this BACT analysis. As Tiller uses ultra low-sulfur distillate oil as its fuel source (15 ppm), emissions of SO₂ are relatively low when compared to similar equipment in the RBLC. In fact, the main control technology mentioned in the RBLC is the use of a low sulfur fuel oil, which Tiller plans to use. Other control technologies not included in the RBLC were examined for the BACT analysis including wet and dry scrubbers but were deemed economically infeasible. Therefore, Tiller proposes an SO₂ emission rate of 0.11 lb/hr as BACT.

Stand-by Generator (SV-002)

Diesel fuel combustion from the stand-by generator is also a source of SO₂ emissions. As previously mentioned, Tiller plans to use ultra-low sulfur diesel fuel (15 ppm) as is required by the stringent NSPS Subpart IIII standards. Additionally, Tiller has requested a limit on the operation of the stand-by generator of 600 hours per year, such that potential emissions from the generator are less than 0.005 tpy. Tiller also reviewed the feasibility of installing a tier 4i engine in place of a tier 2 engine due to lower NO_x emissions. The tier 4i engine was deemed economically infeasible. Therefore, Tiller proposes the use of ultra-low sulfur diesel (0.014 lb/hr) and limited hours of operation as BACT.

⁹ The proposed BACT limit assumes worst case (i.e., highest CO emissions) of fuel oil use in dryer. A lower emission rate of 0.25 lb/MMBtu is expected during normal operation (i.e., natural gas usage).

SUMMARY OF BACT

The following table summarizes the BACT determinations for each emission unit and pollutant of concern. As previously noted the PM BACT is considered to adequately control Pb emissions as Pb is a subset of PM. Additionally, the PM₁₀/PM_{2.5} and the filterable PM emission limits consider only the captured emissions.

Table 1: Summary of BACT*

Stack Vent	Description	Proposed BACT					Averaging Period
		PM/PM ₁₀ /PM _{2.5} /Pb	NO _x	CO	VOC	SO ₂	
SV 001	Sand Dryer	0.009 gr/dscf	0.08 lb/MMBtu (natural gas) 0.16 lb/MMBtu (fuel oil)	0.3 lb/MMBtu	0.38 lb/hr	0.11 lb/hr	3-hour
SV 002	Stand-by Generator	0.021 g/hp-hr	5.25 g/hp-hr	0.25 g/hp-hr	0.03 g/hp-hr	0.014 lb/hr	3-hour
SV 003	Gyrotory Sifter and Conveyors	0.0020 gr/dscf	N/A	N/A	N/A	N/A	3-hour
SV 004	Rail Load Out	0.0020 gr/dscf	N/A	N/A	N/A	N/A	3-hour
SV 005	Truck Load Out	0.0020 gr/dscf	N/A	N/A	N/A	N/A	3-hour
SV 006	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
SV 007	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
SV 008	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
SV010	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
SV011	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
SV012	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
SV 009	Gyrotory Sifter and Conveyors (Phase 2)	0.0020 gr/dscf	N/A	N/A	N/A	N/A	3-hour
FS 001-005	Fugitive Sources	Fugitive Dust Plan	N/A	N/A	N/A	N/A	N/A

* Summary of BACT limits considers only the portion of emission from the specified units that can be reasonably routed to a stack.

Tiller Corporation - North Branch Facility
A-2 PM/PM₁₀/PM_{2.5}/Pb BACT

[illegible]

1. HEPA filter information based on EPA Control Technology Fact Sheet EPA-452/F-03-023. A control efficiency of 99.97% is listed as a minimum efficiency rating.

1. HEPA filter information based on EPA Control Technology Fact Sheet EPA-452/T-03-025. A control efficiency of 99.97% is listed as a minimum efficiency rating.
2. Fabric filter information based on EPA Control Technology Fact Sheet EPA-452/T-03-025 (Fabric Filter - Pulse-Jet Cleaned Type). Control efficiency for typical new equipment is listed as 99-99.9%.

3. Dry ESP information based on EPA Control Technology Fact Sheet EPA-452/F-01-028 (Dry ESP - Wire-Plate Type). Control efficiency for typical new equipment is listed as 99-99.9%.

4. Wet ESP information based on EPA Control Technology Fact Sheet EPA-452/F-03-030 (Wet ESP - Wire-Plate Type). Control efficiency for typical new equipment is listed as 99.9/9.9%.

5. Venturi's rubber information based on EPA Control Technology Fact Sheet EPA-452/F-03-017. Control efficiency range provided is 70 to greater than 99%.

6. Cyclones information based on EPA Control Technology Brief Sheet EPA-453-B-01-005. Control efficiency ranges provided for a single cyclone is 70-90%. This control efficiency for a high efficiency cyclone is 90-95%.

6. Cyclone information based on EPA Control Technology Fact Sheet EPA-452-J-01-005. Control efficiency range provided for a single cyclone is 70-90%. The control efficiency for a high efficiency cyclone is 90-99%. The control efficiency range provided for EPA Energy Strategies Group, March 5, 2010. <<http://www.epa.gov/atsa>>

7. CDPH and FHP information based on Archdiocese Control Techniques Document. Strategically Linked Engines prepared for EPA Ecology Strategies Group, March 5, 2010, <http://www.epa.gov/mars>

Tiller Corporation - North Branch Facility

A-3 PM/PM₁₀/PM_{2.5}/Pb BACT Cost Analysis¹

Control Technology			HEPA with Fabric Filter		Tiller's Analysis		HEPA with Fabric Filter			
SV	EU	Description	Emissions ⁴ (tpy)	Airflow Rate ^{5,6} (dscfm)	Annualized Cost		Annualized Cost			
					\$/yr	Incremental \$/ton ⁷	\$/yr	Incremental \$/ton ⁷	\$/yr	Incremental \$/ton ⁷
1	1	Sand Dryer -PM ₁₀ /PM _{2.5} emissions	16.28	48,182	\$ 289,091	\$ 17,763	\$ 889,719	\$ 54,667	\$ 1,493,636	\$ 91,774
3	3&4	Gyrotory Sifter and Conveyors	1.63	21,721	\$ 130,328	\$ 79,980	\$ 401,103	\$ 246,149	\$ 673,361	\$ 413,229
4	5	Rail Load Out	0.1	1,359	\$ 8,154	\$ 81,563	\$ 25,095	\$ 251,022	\$ 42,128	\$ 421,408
5	6	Truck Load Out	0.1	1,359	\$ 8,154	\$ 81,563	\$ 25,095	\$ 251,022	\$ 42,128	\$ 421,408
6	7, 10-25	Storage Silos	0.32	1,500	\$ 9,000	\$ 28,430	\$ 27,699	\$ 87,496	\$ 46,500	\$ 146,886
7	7, 10-25	Storage Silos	0.32	1,500	\$ 9,000	\$ 28,430	\$ 27,699	\$ 87,496	\$ 46,500	\$ 146,886
8	7, 10-25	Storage Silos	0.32	1,500	\$ 9,000	\$ 28,430	\$ 27,699	\$ 87,496	\$ 46,500	\$ 146,886
10	7, 10-25	Storage Silos	0.32	1,500	\$ 9,000	\$ 28,430	\$ 27,699	\$ 87,496	\$ 46,500	\$ 146,886
11	7, 10-25	Storage Silos	0.32	1,500	\$ 9,000	\$ 28,430	\$ 27,699	\$ 87,496	\$ 46,500	\$ 146,886
12	7, 10-25	Storage Silos	0.32	1,500	\$ 9,000	\$ 28,430	\$ 27,699	\$ 87,496	\$ 46,500	\$ 146,886
9	8&9	Gyrotory Sifter and Conveyors	1.63	21,721	\$ 130,328	\$ 79,980	\$ 401,103	\$ 246,149	\$ 673,361	\$ 413,229
Minimum \$/ton					\$ 130,328	\$ 17,763	\$ 54,667	\$ 91,774		

1. The BACT/Cost analysis for PM is considered to be adequate for the control of Pb.

2. Control technology cost estimate based on EPA's Control Technology Fact Sheet's. The HEPA filter fact sheet (EPA-452/F-03-023) does not include an annualized cost range, it only provides a capital cost for the equipment; however, it states that HEPA filter operation and maintenance (O&M) costs "tend to be much higher" than fabric filter O&M costs. Therefore, for purposes of this cost analysis, the HEPA filter cost was estimated based on the fabric filter EPA Factsheet (EPA-452/F-03-023 - Fabric Filter - Pulse-Jet Cleaned Type), fabric filter O&M costs. The midpoint of the O&M cost range provided was used. The midpoint was assumed to be representative based on the application and the dryer exhaust stream characteristics (flow, pollutant concentration, etc). Additionally, the costs shown in the Control Technology Fact Sheets are in 2002 dollars so they have been scaled using the consumer price index per <http://ftp.bls.gov/pub/special.requests/cpi/cpia1.txt> (the average value from 2002 was used along with the July 2012 value).

3. The HEPA filter control efficiency of 99.97% is per EPA Control Technology Fact Sheet EPA-452/F-03-023.

4. The emissions shown reflect the controlled (captured) emissions after the installation of a baghouse/bin vent filter. The emissions are based on the BACT limits for grain loading rates submitted to the MPCA on 8/31/12 and the maximum airflow rates.

5. Actual airflow rates for each baghouse were provided to Trinity Consultants from Tiller via email on March 20, 2012. As the storage silos are currently equipped with passive bin vents/filters, the airflow rate shown is the assumed airflow needed if additional control equipment is installed.

6. Airflow rates were converted from ACFM to DSCFM according to the equation shown below. Temperatures were taking from form GI-04, actual pressure (P) is assumed to equal standard pressure (14.7 psi) and the volumetric fraction of water vapor is conservatively assumed to be zero.

$$DSCFM = ACFM * (460 \text{ }^{\circ}R + 70)/(460 \text{ }^{\circ}R + \text{temp}) * (1 - B_{wv})$$

7. The \$/ton for the HEPA with fabric filter is calculated as the incremental cost associated with the addition of a HEPA filter downstream of the baghouse/bin vent filter.

Tiller Corporation - North Branch Facility
A-3 PM/PM₁₀/PM_{2.5}/Pb BACT Cost Analysis for Stand-by Generator¹

SV	EU	Description	Criteria Pollutant	Control Technology		Restrict Hours to 600		CDPF		FTF	
				Engine Size ² (HP)	Emissions ² (tpy)	Cost ^{3,4}	Control Efficiency ^{3,5}	\$/yr	%	\$/yr	%
2	2	Stand-by Generator	PM/PM ₁₀ /PM _{2.5} /Pb	1,141	0.23		93.15	0	93.15	15,589	85
				Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost	
				\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton
				0	0	15,589	79,737	1,164,165	404,049	27,675	404,049

1. The BACT/Cost analysis for PM is considered to be adequate for the control of Pb.
2. Engine size and emissions calculated in Emissions Calculations spreadsheet, EU002 - Engine. Maximum theoretical emissions were used (i.e., proposed hourly restriction was not considered).
3. Control Technologies costs and control efficiencies (except hour restriction) were obtained from "Alternative Control Techniques Document: Stationary Diesel Engines" prepared for EPA Energy Strategies Group, March 5, 2010, <http://www.epa.gov/ttn/atw/rice/diesel_eng_act.pdf>. The costs provided for the CDPF are in 2008 dollars and the FTF is 2005 dollars so they have been scaled using the consumer price index per [ftp://ftp.bls.gov/pub/special.requests/cpi/cpiat.txt](http://ftp.bls.gov/pub/special.requests/cpi/cpiat.txt) (the average value from 2008 and 2005 was used along with the July 2012 value).
4. Cost of restricting hours of operation on the generator is assumed to be zero.
5. Control efficiency of restricting hours of operation on the generator to 600 hours is calculated by the following equation:
Control efficiency = 1-proposed hours/potential hours = 1-600/8760
6. Incremental cost is used to determine the economical feasibility of adding the listed control device if the proposed hour restriction is implemented.

Tiller Corporation - North Branch Facility
A-4 Summary of RBLC Research - PM/PM₁₀/PM_{2.5}/Pb - Sand Dryer

Company Name & Location	Process Name	Primary Fuel	Permit Issuance Date	PM limit	Control Method Description	Basis	RBLC Search Criteria
Thyssen Krupp [Waupaca, WI]	Sand Handling	See note 1	1/12/2006	0.005 gr/acf	Baghouse	BACT-PSD	From 1/1/2001-6/12/2012, Process Name Contains: Sand.
Auburn Nugget [Dekalb, IN]	Rotary Hearth Furnace	Natural Gas	5/31/2005	0.03 gr/dscf	Wet Scrubber	BACT-PSD	From 1/1/2001-6/18/2012, Process Name Contains: Dryer.
Weyerhaeuser [Crawford, MI]	Dryers and Burners, Wood Chip	Wood	6/11/2002	0.03 gr/dscf	Wet ESP and RTO	BACT-PSD	From 1/1/2001-6/18/2012, Process Name Contains: Dryer.
Eagle-Picher Filtration & Minerals, Inc. [Malheur, OR]	Dryer 2/Calciner 2	Natural Gas	5/23/2003	0.04 gr/dscf	Baghouse	NSPS	From 1/1/2001-6/18/2012, Process Name Contains: Dryer.
Eagle-Picher Filtration & Minerals, Inc. [Malheur, OR]	Dryer 2/Calciner 2	Natural Gas	5/23/2003	0.1 gr/dscf	Fabric Filter	SIP	From 1/1/2001-6/18/2012, Process Name Contains: Dryer.

1. The Thyssen Krupp limit listed is for sand handling at a foundry. The limit is not for a combustion source and would not be considered comparable to Tiller's sand dryer.

Tiller Corporation - North Branch Facility
A-4 Summary of RBLC Research - PM/PM₁₀/PM_{2.5}/Pb - Generator

Company Name & Location	Process Name	Primary Fuel	Permit Issuance Date	PM Limit	PM (Common Basis) ^{1,2}	Control Method Description	Basis	RBLC Search Criteria
Associated Electric Cooperative Inc. [Mayes, OK]	Emergency Diesel Generator (2200 HP)	Diesel	1/23/2009	0.72 lb/hr	0.129	Good Combustion	NSPS	From 1/1/2001-7/25/2012, Process Name Contains: Generator.
Idaho Power Company [Payette, ID]	Emergency Generator Engine (750 KW)	Diesel	6/25/2010	0.2 g/kW-hr	0.129	Tier 2 Engine Based, <input type="checkbox"/> Good Combustion Practices (GCP)	NSPS	

1. Associated Electric Cooperative Inc. PM limit is calculated based on 1.55 lb/hour emission limit and throughput of 2,200 HP. Conversion factor 1 BTU/hr = 3.9275E-4 HP
2. Idaho Power Company PM limit is calculated based on 6.4 g/kW-hr emission limit. Conversion factor of 1 BTU/hr = 2.929E-4 kW

Tiller Corporation - North Branch Facility

PROCESS	STEP 1: IDENTIFY AIR POLLUTION CONTROL TECHNOLOGIES	STEP 2: ELIMINATE TECHNICALLY INFEASIBLE TECHNOLOGIES	STEP 3: RANK REMAINING CONTROL TECHNOLOGIES	STEP 4: EVALUATE AND DOCUMENT MOST EFFECTIVE CONTROLS	STEPS 3 & 4 RATIONALE
Equipment	Technology	Control Technology Description	BMAC Search Results	Treated Pollutants	Typical Percent Control Efficiency
Pollutants	Thermal Oxidizer (TO)	Thermal oxidizers incinerate combustible materials at high temperatures (1800 to 2000 degrees Fahrenheit) to destroy hazardous air pollutants and to increase energy efficiency.	Listed for none of the comparable sources	Operation temperature range from 1000 to 1200 °F. In order to reach these temperatures, more natural gas would have to be burned to offset the increased energy consumption. Additionally, the TO/PA fleet fleet only has one unit that is scheduled for replacement in the next 10 years. While it is technically feasible, there are negative environmental impacts associated with this additional fuel usage.	99.9
	Regenerative Thermal Oxidizer (RTO)	RTOs use a ceramic packed bed to preheat an incoming VOC-laden waste stream, then combust the waste at high temperatures (1800 to 2000 degrees Fahrenheit) by an auxiliary fuel (natural gas) to temperatures high enough to destroy VOCs. Energy is conserved by passing the waste stream through a heat exchanger that preheats the incoming VOC-laden waste stream.	Listed for none of the comparable sources	Operation temperature range from 1400-1500 °F, and may even go as high as 1800 °F. In order to reach these temperatures, more natural gas would have to be burned to offset the increased energy consumption. Additionally, the RTO/PA fleet fleet only has one unit that is scheduled for replacement in the next 10 years. While it is technically feasible, there are negative environmental impacts associated with this additional fuel usage.	99
	Flare	Primarily used as a safety device to control large volumes of pollutants that are VOC-contaminated gases when VOC waste gas is burned in an open flame in the open air.	Not listed for any of the comparable sources	Not a feasible option due to the safety concerns of an open flame around the facility. The cost of this unit has not yet been determined to be in range.	99
	Regenerative Thermal Oxidizer (RTO)	RTOs are similar to RTOs, except that they use a catalytic material instead of a ceramic packed bed. This lets them operate at lower temperatures (1200 to 1400 degrees Fahrenheit) and provides the heat exchanger gas through a heat exchanger with the cool incoming VOC waste stream.	Not listed for any of the comparable sources	The operation temperature is around 800 °F. In order to reach these temperatures, more natural gas would have to be burned to offset the increased energy consumption. While this is technically defensible, there are negative environmental impacts associated with this additional fuel usage.	98
VOC	Catalytic Oxidizer	Similar to a TO, with the addition of a catalytic (usually platinum or palladium) material, making operation more efficient and increases the combustion efficiency thereby reducing CO formation.	Not listed for any of the comparable sources	Operation temperature range from 600 to 800 °F. In order to reach these temperatures, more natural gas would have to be burned to offset the increased energy consumption. Additionally, the Catalytic Oxidizer/PA fleet fleet only has one unit that is scheduled for replacement in the next 10 years. While it is technically feasible, there are negative environmental impacts associated with this additional fuel usage.	98
	Flue Gas Recirculation (FGR) (only)	FGR recirculates a portion of the flue gas back to the primary combustion zone. This lowers the peak flame temperature, and increases the combustion efficiency thereby reducing CO formation.	Although not listed in the RTRC, FGR is not used by any of the comparable sources	This is technically feasible	17-43
	Coal Combustion Particles	Base Case	Listed for none of the comparable sources	Yes, technically feasible	N/A
	Heater Recirculation	The process to limit the heat loss of operations to 600 hours per year to minimize thermal emissions from the facility.	Listed for none of the comparable sources	This technology is technically feasible	91-10%
CO	Direct Oxidation Catalyst (DOC)	The DOC unit contains a honeycomb-like structure or substrate with a large surface area that is coated with an active catalyst layer. Such as platinum, palladium, and rhodium. The DOC works by oxidizing CO, gaseous hydrocarbons and liquid hydrocarbons particles (emissions) from the exhaust gas to CO ₂ and H ₂ O. The DOC is located in the exhaust gas stream, depending on the catalyst formulation in the DOC.	Listed for none of the comparable sources	This technology is technically feasible	90%
	Partial Oxidation Catalyst (POC)	The POC is generally designed around a wall flow substrate that operates at 1800 to 2000 degrees Fahrenheit. The POC is a fixed bed reactor that uses a catalyst to oxidize CO, gaseous hydrocarbons and liquid hydrocarbons particles (emissions) from the exhaust gas to CO ₂ and H ₂ O. The POC is located in the exhaust gas stream, depending on the catalyst formulation in the POC.	Not listed for any of the comparable sources	This technology is technically feasible	90%
	Flue-Through Filter (FTF)	The FTF contains a network of fine-diameter channels consisting of a unitized woven mesh or conical metal foil. The channel gas flows through the FTF, which is then oxidized by the catalyst coating. The FTF provides a PM reduction across a wide range of collection efficiencies, depending on the FTF design and the dust loading. The FTF requires no maintenance and can operate in a number of operating conditions (non-toxic).	Not listed for any of the comparable sources	This technology is technically feasible	90%
	Non-Flue-Through Filter (NFT)	The NFT is similar to the FTF, but the filter is located downstream of the catalyst coating. The NFT provides a PM reduction across a wide range of collection efficiencies, depending on the NFT design and the dust loading. The NFT requires no maintenance and can operate in a number of operating conditions (non-toxic).	Not listed for any of the comparable sources	This technology is technically feasible	90%
Scrubber generator	NPS Subpart III Degradation	Base Case	Listed for none of the comparable sources	This technology is technically feasible	N/A

1. Thermal Oxidizer information based on EPA Control Technology Fact Sheet EPA-452/F-03-022.

3. Flare information based on EPA Control Technology Fact Sheet EPA-452/P-03-019.

5. FGR information based on vendor information provided to Trinity by Paul Schultze.

**Tiller Corporation - North Branch Facility
A-3 CO/VOC BACT Cost Analysis**

SV	EU	Description	Criteria Pollutant	Throughput (DSCFM) ³	Emission ^a (tpy)	Tiller's Analysis		Tiller's Analysis		Tiller's Analysis		Tiller's Analysis		Tiller's Analysis		Tiller's Analysis		Tiller's Analysis							
						TO		RTO		Flare		RTO		Flare		RTO		RTO		RTO		RTO			
						\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton
1	1	Sand Dryer	VOC	48,182	1.66	\$481,818	\$290,542	\$3,252,075	\$1,961,042	\$481,818	\$293,184	\$1,257,878	\$765,412	\$192,727	\$118,470	\$9,296,026	\$5,714,302	\$674,545	\$414,646	\$1,626,038	\$999,531	\$481,818	\$293,184	\$1,779,437	\$1,082,778
1	1	Sand Dryer	CO	48,182	163.58	\$481,818	\$2,948	\$3,252,075	\$19,901	\$481,818	\$2,975	\$1,257,878	\$7,767	\$192,727	\$1,202	\$9,296,026	\$57,988	\$674,545	\$4,208	\$1,626,038	\$10,143	\$481,818	\$2,975	\$1,779,437	\$10,988
1	1	Sand Dryer	VOC and CO	48,182	165.24	\$481,818	\$2,919	\$3,252,075	\$19,701	\$481,818	\$2,945	\$1,257,878	\$7,689	\$192,727	\$1,190	\$9,296,026	\$57,406	\$674,545	\$4,166	\$1,626,038	\$10,041	\$481,818	\$2,945	\$1,779,437	\$10,878
						Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost	
						\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton

1. Control technology cost estimates were taken at the midpoint of the range provided in EPA's Control Technology Fact Sheets, found here <http://www.epa.gov/ttnatc1/products/hm1/facilities>, June, 2012. The midpoint was assumed to be representative based on the application and the dryer exhaust stream characteristics (flow, pollutant concentration, etc). Additionally, the costs shown in the Control Technology Fact Sheets are in 2002 dollars so they have been scaled using the consumer price index per ftp://ftp.bls.gov/pub/special.requests/cpi/cpiat.txt (the average value from 2002 was used along with the July 2012 value).
2. The control efficiencies are based on EPA's Control Technology Fact Sheets. This analysis assumes the VOC control efficiency listed in the EPA fact sheet is applicable to both CO and VOC emissions despite the fact that the TO, RTO, Flare and Cat Ox fact sheet do not indicate control of CO emissions.
3. Airflow rate of 60,000 ACFM was converted to DSCFM according to the equation shown below. Temperature is 200 degrees Fahrenheit, actual pressure (P) is assumed to equal standard pressure (14.7 psi) and the volumetric fraction of water vapor is conservatively assumed to be zero.

$$DSCFM = ACFM * (460 + ^\circ R + temp) * (actual P / 14.7) * (1 - B_{wv})$$
4. The emissions shown for CO assume no flue gas recirculation (FGR). The maximum emissions rate for each pollutant of the two operating conditions (i.e., natural gas and fuel oil) was used. For CO, fuel oil emissions are presented (163.58 tpy); for VOC, natural gas emissions are presented (1.66 tpy). Emissions calculated in Emissions Calculations spreadsheet.

Tiller Corporation - North Branch Facility
A-4 Summary of RBL/C Research - CO - Sand Dryer

Company Name & Location	Permit Issuance Date	Process Name	Primary Fuel	CO Limit	CO Limit (Standard Basis) ¹	Control Method Description	Basis	RBL/C Search Criteria
Martco Limited Partnership [Allen, LA]	6/13/2005	Rotary Dryer Nos. 1-3	Wood	11.46 lb/hr	0.006 LB/MMBTU	RTO	BACT-PSD	From 1/1/2001 to 7/25/2012, Process Name Contains: Dryer.
Appleton Coated LLC [Outagamie, WI]	8/13/2003	Off-machine Coater, Dryer (P51/S51)	Natural Gas	0.024 lb/MMBTU	0.024 LB/MMBTU	Low NO _x IR Burners; Good Combustion Control	BACT-PSD	
Iron Dynamics Inc. (IDD) [Dekalb, IN]	4/13/2005	Ore Dryer	Natural Gas	0.082 lb/MMBTU	0.082 LB/MMBTU	Good Combustion Practices; Good Work Practices	BACT-PSD	

Tiller Corporation - North Branch Facility
A-4 Summary of RBL/C Research - VOC - Sand Dryer





Company Name & Location	Permit Issuance Date	Process Name	Primary Fuel	VOC Limit	VOC (Common Basis) ²	Control Method Description	Basis	RBL/C Search Criteria
Iron Dynamics Inc. (IDD) [Dekalb, IN]	4/13/2005	Ore Dryer	Natural Gas	0.0053 lb/MMBTU	0.005 lb/MMBTU	Assumed to be Good Operating Practices	BACT-PSD	From 1/1/2001 to 7/25/2012, Process Name Contains: Dryer.
North American Stainless [Carroll, KY]	12/1/2003	Dryers, Natural Gas	Natural Gas	0.0167 lb/hr	0.005 lb/MMBTU	Assumed to be Good Operating Practices	BACT-PSD	
Homeland Energy Solutions LLC, PN 06-672 [Chickasaw, LA]	8/8/2007	Thermal Oxidizer for HRSG from Dryers and Gasification	Syngas	0.006 lb/MMBTU	0.006 lb/MMBTU	Thermal Oxidizer	BACT-PSD	
Graphic Packaging International, Inc. [Ouachita, LA]	9/14/2004	Dryer Burner (13.3 MMBtu/hr)	Natural Gas	0.095 lb/hr	0.007 lb/MMBTU	Good Combustion Practices Consisting of Use of Pipeline Natural Gas and Proper Operating and Maintenance Techniques	BACT-PSD	

Tiller Corporation - North Branch Facility
A-4 Summary of RBL/C Research - VOC - Generator

Company Name & Location	Permit Issuance Date	Process Name	Primary Fuel	VOC Limit ²	VOC (Common Basis) ^{4,5}	Control Method Description	Basis	RBL/C Search Criteria
Associated Electric Cooperative Inc. [Mayes, OK]	1/23/2009	Emergency Diesel Generator (2200 HP)	Diesel	1.55 lb/hr	0.277 lb/MMBTU	Good Combustion	NSPS	From 1/1/2001 to 7/25/2012, Process Name Contains: Generator.
Idaho Power Company [Payette, ID]	6/25/2010	Emergency Generator Engine (750 KW)	Diesel	6.4 g/kW-hr	4.133 lb/MMBTU	Tier 2 Engine Based, <input type="checkbox"/> Good Combustion Practices (GCP)	NSPS	

1. Use 174 Btu/hr/dryer (3 dryers) to convert emissions limit of lb/hr to lb/MMBTU.
2. Idaho Power Company limit of 6.4 g/kW-hr is a combined NO_x + NMHC limit.
3. VOC emission limit calculated from energy throughput and VOC limit in lb/hr.
4. Associated Electric Cooperative Inc. VOC limit is calculated based on 1.55 lb/hour emission limit and throughput of 2,200 HP. Conversion factor 1 BTU/hr = 3.9275E-4 HP
5. Idaho Power Company VOC limit is calculated based on 6.4 g/kW-hr emission limit. Conversion factor of 1 BTU/hr = 2.929E-4 kW

Tiller Corporation - North Branch Facility
A-2 SO₂ BACT

PROCESS		STEP 1. IDENTIFY AIR POLLUTION CONTROL TECHNOLOGIES		STEP 2. ELIMINATE TECHNICALLY INFEASIBLE OPTIONS		STEP 3. RANK REMAINING CONTROL TECHNOLOGIES	STEP 4. EVALUATE AND DOCUMENT MOST EFFECTIVE CONTROLS	STEP 5. SELECT BACT
Equipment	Pollutant	Control Technology	Control Technology Description	RBL/C Search Results	Technical Feasibility	Typical Overall Control Efficiency	Cost Effectiveness, \$/ton	
Industrial Sand Dryer	SO ₂	Wet Scrubber ¹	SO ₂ is scrubbed from the exhaust gas by the reaction with slurred lime or limestone. The slurred lime or limestone reacts with the SO ₂ to form synthetic gypsum, which are removed.	Not listed for comparable emissions.	Wet scrubbers require the addition of a spray tower and require a large amount of water to be operational. For the emissions levels of SO ₂ being looked at, and the size of the dryer unit (71 MMBtu/hr), a wet scrubber is most likely ineffective. It will still be included in the cost analysis.	99	Per the Wet Scrubber EPA Factsheet, Wet Scrubber costs range from \$17/scfm to \$78/scfm annually. When considering these costs, the most effective cost to control SO ₂ using a Wet Scrubber is <u>\$6,133,408/ton</u> pollutant removed. This control equipment is deemed economically infeasible.	
		Dry Scrubber ²	Powdered sorbent is directly injected into the furnace or downstream of it. The dry waste produce is removed using particulate control equipment such as a baghouse or ESP.	Not listed for comparable emissions.	Dry scrubbing requires the addition either a baghouse or ESP in order to collect the dry waste. The furnace temperature must be kept at between 1740 and 1830 F, and efficiencies are generally lower than wet scrubbers. Possibility to emit more PM than without.	90	Per the Dry Scrubber EPA Factsheet, Dry Scrubber costs range from \$10,000/MMBtu to \$50,000/MMBtu annually. When considering these costs, the most effective cost to control SO ₂ using a Dry Scrubber is <u>\$6,378,374/ton</u> pollutant removed. This control equipment is deemed economically infeasible.	
		Low Sulfur Fuel/Good Combustion Practices	Base Case, using 15 ppm sulfur fuel	Listed for some comparable sources	Yes, technically feasible.	N/A	N/A	
Stand-by generator	SO ₂	NSPS Subpart IIII generator/low sulfur fuel	Base Case, using 15 ppm sulfur fuel	Listed for some comparable sources	Yes, technically feasible.	N/A	N/A	

1. Wet scrubber information based on EPA Control Technology Fact Sheet EPA-452/F-03-015.
2. Dry scrubber information based on EPA Control Technology Fact Sheet EPA-452/F-03-034.

Tiller Corporation - North Branch Facility

A-3 SO₂ BACT Cost Analysis

SV		EU	Description	Criteria Pollutant	Throughput (DSCFM) ²	Control Technology		Tiller's Analysis				Tiller's Analysis			
						Heat Input (MMBtu/hr)	Emissions ³ (tpy)	Wet Scrubber		Wet Scrubber		Dry Scrubber		Dry Scrubber	
								22-99 \$/scfm		22-99 \$/scfm		65000 \$/MMBtu		13000-65000 \$/MMBtu	
								22 \$/scfm		60 \$/scfm		13,000 \$/MMBtu		38,809 \$/MMBtu	
1	1	Sand Dryer	SO _x	48,182	71	0.48		99 %		99 %		90 %		90 %	
						Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost		Annualized Cost	
						\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton	\$/yr	\$/ton
						\$1,060,000	\$2,230,640	\$2,914,596	\$6,133,408	\$923,000	\$2,136,574	\$2,755,457	\$6,378,374		

1. Control technology cost estimates were taken at the midpoint of the range provided in EPA's Control Technology Fact Sheet's, found here <<http://www.epa.gov/tncatc1/products.html#aptecfacts>>, June, 2012. The midpoint was assumed to be representative based on the application and the dryer exhaust stream characteristics (flow, pollutant concentration, etc.). Additionally, the costs shown in the Control Technology Fact Sheets are in 2002 dollars for the wet scrubber and 2001 dollars for the dry scrubber so they have been scaled using the consumer price index per [ftp://ftp.bls.gov/pub/special.requests/cpi/cpiiai.txt](http://ftp.bls.gov/pub/special.requests/cpi/cpiiai.txt) (the average value from 2002 and 2001 was used, respectively along with the July 2012 value).

2. Airflow rate of 60,000 ACFM was converted to DSCFM according to the equation shown below. Temperature is 200 degrees Fahrenheit, actual pressure (P) is assumed to equal standard pressure (14.7 psi) and the volumetric fraction of water vapor is conservatively assumed to be zero.

$$DSCFM = ACFM * (460 + R + 70) / (460 + \text{temp}) * (\text{actual } P / 14.7) * (1 - B_{wv})$$

3. The maximum emissions rate of the two operating conditions (i.e., natural gas and fuel oil usage) was used. For fuel oil emissions calculations, the emission factor is from AP-42 Chapter 1.3 (5/10), Table 1.3-1 for boilers < 100 MMBtu/hr heat input. The SO₂ emission factor (in lb/10³ gal) is calculated by multiplying an emission factor by the percent sulfur in the fuel oil (142S where S indicates that the weight % of the sulfur in the oil should be multiplied by the value given (e.g., if 1%, S=1)). Ultra-low sulfur diesel contains 15 ppm sulfur content which is 0.000015 (or 0.0015%) so S = 0.0015. Emissions calculated in Emissions Calculations spreadsheet.

Tiller Corporation - North Branch Facility

A-4 Summary of RBL C Research - SO₂

Company Name & Location	Permit Issuance Date	Process Name	SO₂ Limit lb/MMBtu	SO₂ (Standard Basis)¹	Control Method Description	Basis	RBL C Search Criteria
Iron Dynamics, Inc. (IDI) [Dekalb IN]	4/13/2005	Ore Dryer	0.0006 lb/MMBtu	0.0006 lb/MMBtu	Good Combustion; Good Work Practices	BACT-PSD	From 1/1/2001- 7/25/2012, Process Name Contains: Dryer.
Martco Limited Partnership [Allen, LA]	6/13/2005	Rotary Dryer Nos. 1-3	4.18 lb/hr	0.0022 lb/MMBtu	See Note 2	-	

1. Use 174 Btu/hr/dryer (3 dryers) to convert emissions limit of lb/hr to lb/MMBtu.

2. Not provided - Assumed to be good operating practices.

**Tiller Corporation - North Branch Facility
A-2, NO, BACT**

PROCESS		STEP 1. IDENTIFY AIR POLLUTION CONTROL TECHNOLOGIES		STEP 2. ELIMINATE TECHNICALLY INFEASIBLE OPTIONS		STEP 3. RANK REMAINING CONTROL TECHNOLOGIES	STEP 4. EVALUATE AND DOCUMENT MOST EFFECTIVE CONTROLS	STEP 5. SELECT BACT
Equipment	Pollutant	Control Technology	Control Technology Description	RBC's Search Results	Technical Feasibility	Typical Overall Control Efficiency or Emission Rate	Cost Effectiveness, \$/ton	
Industrial Sand Dryer	NO _x	Low NO _x Burners (LNB) with Flue Gas Recirculation (FGR)	FGR recycles a portion of the flue gas back to the primary combustion zone. This lowers the peak flame temperature, thereby reducing NO _x formation. Additionally, FGR reduces thermal NO _x formation by lowering the oxygen concentration in the primary flame zone.	Although industrial sand dryers are not listed in RBLC, this technology is listed for dryers in other industries.	This is technically feasible	Natural Gas - 0.08 lb/MMBtu Fuel Oil - 0.16 lb/MMBtu	As LNB with FGR is the most effective, technically feasible control option, it is chosen as BACT.	👍
		Low NO _x Burners (LNB)	LNB inhibits NO _x formation by controlling the mixing of fuel and air. This is typically done by maintaining low excess air, reducing flame temperature, and/or reducing the residence time at peak temperature.	Although industrial sand dryers are not listed in RBLC, this technology is listed for dryers in other industries.	This is technically feasible	Natural Gas - 0.13 lb/MMBtu Fuel Oil - 0.23 lb/MMBtu	N/A - Base Case	👍
		Selective Catalytic Reduction (SCR)	SCR is an exhaust gas treatment process in which ammonia (NH ₃) is injected into the exhaust gas upstream of a catalyst bed. On the catalyst surface, NH ₃ and nitric oxide (NO) or NO ₂ react to form diatomic nitrogen and water.	Not listed for comparable emissions source.	This technology is not technically feasible. SCR requires a temperature range from 480 to 800 °F. The maximum exhaust temperature of the dryer will be 220 °F. Operating at a low temperature also increases the potential for ammonia slip, which can increase the PM emissions. A heat exchanger would be required to heat the exhaust stream to the desired reaction temperature. This heat exchanger would require a fuel source, such as natural gas, which would result in additional combustion emissions including the generation of additional NO _x emissions. Additional concerns include the safety and environmental hazards involved with the storage and usage of large quantities of NH ₃ .	N/A	N/A	👍
		Selective Non-Catalytic Reduction (SNCR)	SNCR uses a reagent of either NH ₃ or urea solution, which is injected into the gas stream, to reduce NO _x to diatomic nitrogen and water.	Not listed for comparable emissions source.	This technology is not technically feasible. SNCR requires a temperature range from 1600 to 2100 °F. The maximum exhaust temperature of the dryer will be 220 °F. Operating at a low temperature also increases the potential for ammonia slip, which can increase the PM emissions. A heat exchanger would be required to heat the exhaust stream to the desired reaction temperature. This heat exchanger would require a fuel source, such as natural gas, which would result in additional combustion emissions including the generation of additional NO _x emissions. Additional concerns include the safety and environmental hazards involved with the storage and usage of large quantities of NH ₃ .	N/A	N/A	👍
Standby generator	NO _x	Hours Restriction	Tiller proposes to limit the hours of operation to 600 hours per year to minimize potential emissions from the facility.	Listed for some comparable sources	This technology is technically feasible	93.15%	The annual costs associated with limiting the hours of operation is assumed to be zero. Therefore, this technology is deemed economically feasible as is selected as BACT.	👍
		Selective Catalytic Reduction (SCR)	SCR is an exhaust gas treatment process in which ammonia (NH ₃) is injected into the exhaust gas upstream of a catalyst bed. On the catalyst surface, NH ₃ and nitric oxide (NO) or NO ₂ react to form diatomic nitrogen and water.	Not listed for comparable emissions source.	This technology is technically feasible	90%	As the restriction to 600 hours was selected as BACT, this technology is merely considered as additional control. Therefore the "Alternative Control Techniques Document: Stationary Diesel Engines" Final Report prepared for EPA was used to estimate costs of this technology. The incremental cost of adding equipment in addition to the restriction was <u>\$35,947/ton</u> and is deemed economically infeasible.	👍
		NSPS Subpart III Tier 4i generator	An engine that is certified to Tier 4i standards will have lower NO _x emissions. Emissions for VOC, PM and CO will all have an increased emission rate.		This technology is technically feasible.	55%	As the restriction to 600 hours was selected as BACT, this technology is merely considered as an additional level of control. Information from the engine manufacturer was used to estimate the cost of this engine in place of the base case tier 2 engine. The incremental cost of replacing the tier 2 base case generator with this tier 4i generator was <u>\$3,181/ton</u> and is deemed economically infeasible.	👍
		NSPS Subpart III generator	Base Case	Listed for some comparable sources	This technology is technically feasible	N/A	N/A	👍
		Selective Non-Catalytic Reduction (SNCR)	SNCR uses a reagent of either NH ₃ or urea solution, which is injected into the gas stream, to reduce NO _x to diatomic nitrogen and water.	Not listed for comparable emissions source.	This technology is not technically feasible. SCR is used for compression ignition engines, while SNCR is used for 4SRB spark ignition engines.	N/A	N/A	👍

1. LNB and FGR data based on vendor information provided to Tiller by Paul Schulz of Tiller 6/18/2012. The control efficiency was estimated based on vendor information for expected emission rates for each fuel.

2. SCR information based on EPA Control Technology Fact Sheet EPA-452/F-03-002.

3. SNCR information based on EPA Control Technology Fact Sheet EPA-452/F-03-002.

4. SCR information for generator based on EPA Control Technology Fact Sheet EPA-452/F-03-002 and "Alternative Control Techniques Document: Stationary Diesel Engines" prepared for EPA Energy Strategies Group, March 5, 2010, <http://www.epa.gov/ttn/aw/rise/diesel_eng_acr.pdf>.

Tiller Corporation - North Branch Facility
A-3 NO_x BACT Cost Analysis for Stand-by Generator

SV	EU	Description	Criteria Pollutant	Control Technology		Restrict Hours to 600		SCR		Tier 4i Engine	
				Cost ^{2,3,6}		0 \$/yr		47 \$/HP		11,613 \$/yr	
				Control Efficiency ^{2,4,7}		93.15 %		90 %		55.24 %	
				Engine Size ¹	Emissions ¹ (tpy)	Annualized Cost		Annualized Cost		Annualized Cost	
				HP		\$/yr	\$/ton	\$/yr	\$/ton ⁵	\$/yr	\$/ton ⁵
2	2	Stand-by Generator	NO _x	1,141	57.72	0	0	53,540	15,047	11,613	5,318

1. Engine size and emissions calculated in Emissions Calculations spreadsheet, EU002 - Engine. Maximum theoretical emissions were used (i.e., proposed hourly restriction was not considered).
2. SCR cost and control efficiency were obtained from "Alternative Control Techniques Document: Stationary Diesel Engines" prepared for EPA Energy Strategies Group, March 5, 2010, <http://www.epa.gov/ttn/atw/rice/diesel_eng_act.pdf>. The cost provided for the SCR are in 2005 dollars so it has been scaled using the consumer price index per <ftp://ftp.bls.gov/pub/special.requests/cpi/cpiiai.txt> (the average value from 2005 was used along with the July 2012 value).
3. Cost of restricting hours of operation on the generator is assumed to be zero.
4. Control efficiency of restricting hours of operation on the generator to 600 hours is calculated by the following equation:
Control efficiency = 1-proposed hours/potential hours = 1-600/8760
5. Economical feasibility of adding the listed control device was determined in light of the proposed restriction on operating hours.
6. The cost of the Tier 4i engine was calculated as the annualized capital cost of the difference in price of a tier 2 and tier 4i engine assuming an interest rate of 13.5% and a useful of 20 years. These calculations are summarized below.
7. The control efficiency for the Tier 4i engine is the additional NO_x control that would be achieved going from a Tier 2 engine to a Tier 4i engine. These calculations are shown below.

EPA Tier Certification	Engine size ⁸ (HP)	NO _x Emission Factor ⁹ (g/hp-hr)	NO _x Emissions (lb/hr)	Engine Capital Cost ¹⁰ (\$)
Tier 2	1,141	5.25	13.21	120,810
Tier 4i		2.35	5.91	200,000

Factor	Value	Units
Hours of Operation	600	hours
Incremental Cost of Tier 4i Engine	79,190	\$
Capital Recovery Factor ¹¹	0.1467	
	Useful Life ¹¹	20 years
	Interest ¹¹	13.5 %
Capital Recovery ¹²	11,613	\$/yr

8. Tier 4i engine specifications was provided by engine manufacturer as a "comparable engine" to the Tier 2 engine specified by Tiller and is, therefore, assumed to be of equal size. The emission factors used (see footnote 9) are assumed to be representative of tier 4i engines at approximately this size.

9. Emission factors taken from manufacturer specification sheets with emission rate at 100% load (as opposed to weighted average used for NSPS certification).

10. Engine costs were provided by Paul Schultz of Tiller to Angie Wanger of Trinity Consultants via email on 11/2/12 and phone call with Paul Schultz of Tiller on 11/5/12 and represent the capital cost of the engines.

11. Capital Recovery Factor is calculated per OAQPS, EPA Air Pollution Control Cost Manual, Sixth Edition, Section 1, Chapter 2, Section 2.4.4.4. Useful life and interest rate provided by Paul Schultz of Tiller to Angie Wanger of Trinity Consultants via email on 11/2/12. The average of the interest rate range provided (12-15%) was used.

12. Capital Recovery is based on the incremental Cost of a Tier 4i engine and the capital recovery factor per OAQPS, EPA Air Pollution Control Cost Manual, Sixth Edition, Section 1, Chapter 2, Section 2.4.4.4.

Tiller Corporation - North Branch Facility
A-4 Summary of RBLC Research - NO_x - Generator

Company Name & Location	Process Name	Primary Fuel	Permit Issuance Date	NO _x limit ¹	Units	Control Method Description	Basis	RBLC Search Criteria
Mid-American Steel and Wire Company [Marshall, OK]	Emergency Generator	Fuel Oil	9/8/2008	5.11	lb/MMBtu	500 hours per year operations	BACT-PSD	From 1/1/2001-7/25/2012, Process Name Contains: Generator.
Mustang Power LLC [Lincoln, OK]	Diesel Engine, Emergency Generator	Fuel Oil	5/6/2004	3.2	lb/MMBtu	Good Combustion Design	None listed	

1. Mid-American Steel and Wire Company NO_x limit is calculated based on 15.6 lb/hour emission limit and throughput of 1,200 HP. Conversion factor 1 BTU/hr = 3.9275E-4 HP

Airflow Calculations

SV	EU	Description	Operating Hours	Airflow ¹ (acfm)	Temperature ² (°F)	Airflow ³ (dscfm)
1	1	Sand Dryer	8760	60,000	200	48,182
3	3&4	Gyrotory Sifter and Conveyors	8760	25,000	150	21,721
4	5	Rail Load Out	8760	1,500	125	1,359
5	6	Truck Load Out	8760	1,500	125	1,359
9	8&9	Gyrotory Sifter and Conveyors	8760	25,000	150	21,721

1. The airflow was taken from the permit application, dated 4/4/2012.

2. The temperature used is the average of the given range from the permit application, dated 4/4/2012.

3. ACFM was converted to DSCFM according to the equation shown below. Temperature is in degrees Fahrenheit, actual pressure (P) is assumed to equal standard pressure (14.7 psi) and the volumetric fraction of water vapor is conservatively assumed to be zero.

$$\text{DSCFM} = \text{ACFM} * (460 \text{ }^{\circ}\text{R} + 70) / (460 \text{ }^{\circ}\text{R} + \text{temp}) * (\text{actual P} / 14.7) * (1 - B_{w0})$$

Attachment 5:
Guidance on the Appropriate Injunctive Relief for Violations of
Major New Source Review Requirements

Guidance on the Appropriate Injunctive Relief for Violations of Major New Source Review Requirements

(Memorandum)

Signed November 17, 1998

MEMORANDUM

SUBJECT:

Guidance on the Appropriate Injunctive Relief for
Violations of Major New Source Review Requirements

FROM:

Eric V. Schaeffer, Director
Office of Regulatory Enforcement

TO:

Addressees

This guidance sets forth the injunctive relief that the U.S. Environmental Protection Agency (EPA) should seek in settlements of major New Source Review (NSR) enforcement actions (1). Monetary penalties should continue to be determined pursuant to the Clean Air Act Stationary Source Penalty Policy and Appendices.

Introduction

To maintain a level playing field for regulated sources across the country, the Office of Regulatory Enforcement (ORE) is issuing this guidance setting forth the injunctive relief it expects to see in judicial Consent Decrees and in administrative case settlements concerning major NSR enforcement cases(2). In particular, this guidance addresses cases where either (1) a source failed to obtain a major NSR permit prior to commencing construction of a major source or a major modification or (2) a source with a synthetic minor limit(3) regularly violated that limit.

As Congress stated in the Prevention of Significant Deterioration (PSD) portion of the Clean Air Act (CAA or Act), the general purpose of the NSR programs is to protect public health and welfare (including air quality) while "insur[ing] that economic growth will occur in a manner consistent with the preservation of existing clean air resources." 42 U.S.C. § 7470. One method relied on to achieve this purpose is to require the use of ever-improving control technology as new sources of air pollution are built. The NSR programs also are a means to phaseout the grandfathering of existing sources created in the 1977 Act. As the D.C. Circuit stated in *Alabama Power v. Costle*, "[t]he statutory scheme intends to 'grandfather' existing industries; but the provisions concerning modifications indicate that

this is not to constitute a perpetual immunity from all standards under the PSD program." 636 F.2d 323, 400 (D.C. Cir. 1979). Thus, the NSR programs are instrumental in implementing the Act and in attaining the goal of clean air throughout the United States.

In order to effectuate the purpose of the NSR programs, EPA generally should, at a minimum, require the installation and operation of control technology or process changes that result in emission reductions equivalent to the best available control technology (BACT) in PSD cases and the lowest achievable emission rate (LAER) in nonattainment cases when resolving NSR enforcement actions(4). When the case involves a source that failed to obtain any type of permit or limit at the time of construction, the source should not be allowed to avoid the installation and operation of pollution control equipment or process changes by obtaining a "synthetic" minor limit (usually a permit) after the fact unless compelling circumstances exist(5) (see below).

Similarly, if a case involves a source that obtained a timely synthetic minor limit, but which regularly violates that limit, this document provides guidance regarding when it is appropriate to allow the source to merely come into compliance with the limit and when it is appropriate to require that the source achieve emissions reduction equivalent to those achieved by BACT/LAER-equivalent air pollution control equipment or process changes.

Failure to Obtain a Permit Prior to Construction

There are two scenarios addressed in this portion of the guidance; both involve a source with potential emissions above the applicable major source threshold that failed to obtain either a major NSR permit or synthetic minor limits prior to construction of a new major source or major modification(6). Under the first scenario, the source's actual emissions exceeded the major source threshold. Under the second, the source's actual emissions never exceeded the major source threshold. This guidance only reflects the position that EPA may adopt in settling the matter and, like the Stationary Source Civil Penalty Policy, considers many factors when resolving an enforcement action. Importantly, under both scenarios, the source has violated the NSR requirements and could be compelled to comply fully with the statutory NSR permitting process. As discussed above, NSR is a key component to ensuring that economic growth and expansion occur in a way that minimizes any adverse impact on air quality. Thus, NSR violations often result in hundred of tons of excess emissions. Moreover, sources that violate major NSR requirements often gain a competitive advantage due to their ability to (1) avoid the time involved with the permitting process and (2) invest money that should have been allocated to emission reduction efforts to other activities. These reasons, as well as others, necessitate strict enforcement of NSR requirements.

When a violation involves the first scenario (the source's actual emissions exceeded the major source threshold) the source should be required to comply fully with all applicable NSR requirements, including major NSR permitting, control technology, air quality impact analysis and offsets. As part of an EPA settlement, the Consent Decree should require a minimum level of control which the Agency believes ensures BACT/LAER-equivalent emission reductions(7). The Consent Decree should be crafted to allow the source the option of installing and operating more effective control equipment if

the permitting agency requires a different (e.g., more stringent) control technology, but it should not allow the source to obtain a permit with controls that are less stringent than required by the Consent Decree.

If a violation involves a source with actual emissions that never exceeded the major source threshold, the source should be required to achieve BACT/ LAER-equivalent emission reductions. If the source's potential emissions are below the applicable major source thresholds after application of BACT/LAER-equivalent controls or process changes, Regions have discretion to determine based on facts of the specific case whether to require full NSR compliance, or whether to allow the source to obtain a synthetic minor permit after it achieves BACT/LAER-equivalent emission reductions.

Moreover, based on the Agency's experience with enforcing the NSR requirements for the past 20 years, ORE has determined that it is no longer appropriate merely to allow a source to "correct" an NSR violation by dismantling an illegal modification, unless emissions from the new or modified unit would essentially become zero (e.g., the entire process line was shutdown). Thus, a source generally should not be able merely to return to pre-violation conditions in order to avoid installation of control equipment or implementation of process changes. For example, a source that illegally began burning tires in a boiler could not avoid NSR review (under scenario 1), or installation and operation of BACT/LAER-equivalent control equipment or process changes (under scenario 2), merely by agreeing to reducing the number of tires burned or by partial SO₂ controls. If the source had properly permitted the boiler at the time it began burning tires, it would most likely have been required to install and operate pollution control equipment that would still be operational and control emissions after the source stopped burning tires because the boiler would still be operating after the "modification" was undone (e.g., there would be emissions from whatever fuel was burned in lieu of tires). Thus, ceasing the burning of tires would not necessarily bring the source to the same level of emissions that could be achieved with additional control equipment.

Nonetheless, as stated above, the appropriate injunctive relief articulated for both scenarios is subject to consideration of compelling circumstances. Because it is a very case-specific, fact-intensive determination, it is not possible to define all potential compelling circumstances. For instance, a source's actual emissions may be so low that imposition of add-on control equipment would constitute economic waste (e.g., in the above example, total SO₂ and PM/PM₁₀ emissions after the source stopped burning tires were too low to control in a cost-effective manner). Or perhaps the source is replacing the violating units with cleaner, energy-efficient new units that emit air pollution at levels near those that would be achieved by the older units with BACT/LAER-equivalent controls or process changes. Other compelling circumstances may involve significant, case-specific litigation risks related to whether a violation of major source requirements actually occurred or whether the injunctive relief set forth in this memorandum is appropriate in a particular case (e.g., permit shield or equity concerns; duration of violation is extremely short). Importantly, because Headquarters must concur on most Consent Decrees involving major NSR violations, Regions are encouraged to coordinate with Headquarters early regarding consideration of compelling circumstances and prior to initiating settlement discussions with a defendant. After this guidance has been implemented for some time, ORE will consider supplementing it with any trends regarding what constitutes a compelling

circumstance that may develop.

Failure to Comply with an Existing Synthetic Minor Limit

Generally, when a source with limits that restrict its potential emissions below major source threshold levels violates those limits, EPA can enforce the limits and/or the major source NSR requirements. This guidance is not meant to restrict the Regions' ability to enforce the terms of an existing synthetic minor limit or permit. However, pursuant to the court's reasoning in *United States v.*

Louisiana-Pacific, 682 F. Supp. 1142, 1161-62 (D. Colo. 1988), when a source "knowingly and regularly" violates a synthetic minor limit, EPA's position is that it need not consider the limit when calculating the source's potential to emit and determining its major source status(8).

EPA should take the position that a source's synthetic minor limit does not effectively limit the source's potential emissions when evidence indicates that the source has knowingly or regularly violated (or currently regularly violates) the limit. Thus, the source cannot simply claim that it has a limit that restricts its potential emissions; obviously this is not the case if the source's actual emissions have exceeded that "limit." A source should not be able to hold a limit up as a shield to major source status when it repeatedly violates the limit. As the court in *Louisiana-Pacific* stated,

to hold that permit limitations which are repeatedly violated should nonetheless be considered in determining potential to emit would give better treatment to sources which knowingly violate such conditions than the treatment currently afforded sources which comply with the law.

Id. at 1161. Allowing sources to merely come into compliance with the synthetic minor limits would encourage sources to make modifications without preconstruction review and even exceed existing permits until they were caught, rather than go through NSR review prior to making modifications. Treating the source as a major source or major modification should be EPA's position even when the source's actual emissions do not exceed major source thresholds or significance levels. To allow a source to violate a limit that restricts potential emissions until its actual emissions exceeded major source or significance levels would collapse potential and actual emissions and ignore the mandate of the Act to consider both.

Nonetheless, there may be circumstances where the appropriate response is enforcement of the synthetic minor permit. Such circumstances may include situations where the permit violations are (a) relatively infrequent, (b) known to be minor in nature and (c) where the synthetic minor limit is significantly lower than the relevant applicability threshold(9). As with the first portion of this guidance, the Regions are encouraged to coordinate early with Headquarters regarding application of these distinctions.

Conclusion

The guidance is effective immediately with respect to all cases in which the first injunctive relief offer has not yet been transmitted to the opposing party. To the extent earlier guidance, memoranda or

other EPA documents imply that injunctive relief requiring a source to come into compliance with existing "synthetic" minor source limits, or obtain synthetic minor limits, is an acceptable resolution of an enforcement case, it is superseded by this guidance. As stated above, many major NSR enforcement cases are already considered "nationally significant," due to either issues in the case or penalty amounts of \$500,000 or more, and thus require Headquarters concurrence. In addition, to ensure consistent implementation of this guidance, each Region should consider the first three major NSR cases (civil and administrative), regardless of the size of the penalty, it begins negotiating after the date of this guidance as "nationally significant" for delegation purposes and include Headquarters in the concurrence chain.

The policies set forth in this memorandum are intended solely as guidance to government personnel to be used to settle enforcement actions. They do not represent final Agency action, are not binding on any party, and cannot be relied upon to create any rights enforceable by any party. The EPA reserves the right to change this guidance at any time without public notice.

Questions concerning specific issues and cases should be directed to Carol Holmes of the Air Enforcement Division,, at 202-564-8709. This document will also be available on AED's Webpage at <http://www.epa.gov/oeca/ore/aed>.

cc: John Seitz, OAQPS
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Addressees:

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Director, Compliance Assurance and Enforcement Division, Region VI
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State, and Tribal Assistance, Region VIII
Enforcement Coordinator, Office of Regional Enforcement
Coordination, Region IX
Director, Office of Air Quality, Region X
Joel Gross, Chief, Environmental Enforcement Section, DOJ

(1) New Source Review includes the Clean Air Act Part D nonattainment NSR and the Part C Prevention of Significant Deterioration (PSD) programs.

(2) Many civil major NSR cases are deemed to be "nationally significant," and hence, require Headquarters concurrence. This guidance also applies to administrative major NSR cases. Thus, any reference to requirements of a "Consent Decree" in the context of a civil case applies equally to the resolution of an administrative major NSR case.

(3) A "synthetic" minor limit restricts potential emissions at an otherwise major source to levels below applicable major source thresholds. These limits generally are in the form of operational or production limits. The term may also refer to limits an existing major source takes to restrict its potential emissions from a modification to levels below applicable significance thresholds (e.g., 40 tpy of SO₂). See 40 C.F.R. § 52.21(b)(23).

(4) Generally, BACT and LAER require the installation of add-on pollution control equipment. There are instances, however, when BACT or LAER may be reflected in a change in processes equipment design or operation (e.g., material usage). References to BACT/LAER in this guidance include both control equipment technology and operational changes.

(5) This reference to synthetic minor permits includes limits solely on operation and production (e.g., hours of operation) as well as limits that require installation and operation of control technology. In other words, a violating source may not avoid the injunctive relief required in this guidance by installing air pollution control equipment or making process changes emissions to the level possible with BACT/LAER-equivalent controls or process changes.

(6) This guidance applies equally to new and existing sources. Thus, any and all references to new source construction and major source thresholds apply equally to modifications at existing sources and the applicable significance thresholds (e.g., 40 tpy of SO₂). See 40 C.F.R. § 52.12(b)(23).

(7) This guidance does not alter EPA's current policy that the BACT or LAER determination is made at the time a source goes through NSR permit review. Thus, if a source violates NSR in 1995 (e.g., by constructing a major source without a major NSR permit) and finally applies for a permit in 1998, whatever technology is BACT or LAER in 1998 should be required in the NSR permit. See, e.g., "BACT/LAER Determination Cut-off Date" (Jan. 11, 1990) (BACT determination cut-off at date of final permit issuance) (document no. 8.43 in New Source Review Guidance Notebook).

(8) Although all permit limits and conditions are enforceable, only operational or production limits that are "practically enforceable" will be used to determine a source's potential to emit. See, e.g., "Guidance on Limiting Potential to Emit in New Source Permitting" (June 13, 1989) (document no. 2.31 in NSR Guidance Notebook). The EPA is in the process of proposing a rule which would codify the elements of a practically enforceable limit.

(9) EPA realizes that in some instances, a new source may not precisely know what its emissions will be until it has constructed and begun operations. Thus, a source which in good faith obtained synthetic minor source limits may find itself unable to meet those limits. Although this is a concern when determining the appropriate penalty, it should not affect the appropriate injunctive relief.

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computer screen. If any discrepancies are found, the file copy (hard copy original) which resides at the U.S. EPA provides the official policy. Information on the file copy may be obtained from the Air Enforcement Division, Stationary Source Program at (202) 564-2414.

Attachment 6:
Summary of BACT Equivalent

Emission unit	Stack Vent	Control Equipment ID	Controls Description	Description	BACT Equivalent					Averaging Period
					PM/PM ₁₀ /PM _{2.5} /Pb	NO _x	CO	VOC	SO ₂	
EU 001 Sand Dryer	SV 001	CE 001 - Baghouse	Baghouse Low NOx Burners Flue Gas Recirculation	Sand Dryer (firing fuel oil)	0.009 gr/dscf 3.72 lb/hr	0.16 lb/MMBtu 11.36 lb/hr	0.3 lb/MMBtu 21.30 lb/hr	0.0014 lb/MMBtu 0.10 lb/hr	0.0015 lb/MMBtu 0.11 lb/hr	3-hour
				Sand Dryer (Natural gas)	0.0065 gr/dscf 2.68 lb/hr	0.08 lb/MMBtu 5.68 lb/hr	0.25 lb/MMBtu 17.75 lb/hr	0.0054 lb/MMBtu 0.38 lb/hr	0.00058 lb/MMBtu 0.040 lb/hr	3-hour
EU 002 - Stand-by Generator	SV 002	None	Tier 2 certified engine	Stand-by Generator	0.021 g/hp-hr 0.05 lb/hr	5.25 g/hp-hr 13.2 lb/hr	0.25 g/hp-hr 0.63 lb/hr	0.03 g/hp-hr 0.075 lb/hr	0.014 lb/hr	3-hour
EU 003 and 004	SV 003	CE 002 and 012 - Baghouse	Baghouse	Gyrotory Sifter and Conveyors	0.0020 gr/dscf 0.37 lb/hr	N/A	N/A	N/A	N/A	3-hour
EU 005	SV 004	CE 003 - Baghouse	Baghouse	Rail Load Out	0.0020 gr/dscf 0.02 lb/hr	N/A	N/A	N/A	N/A	3-hour
EU 006	SV 005	CE 004 - Baghouse	Baghouse	Truck Load Out	0.0020 gr/dscf 0.02 lb/hr	N/A	N/A	N/A	N/A	3-hour
EU 007, 010 - 025	SV 006	CE 005 - 007, 009 - 011, 014 - 016, 017 - 019 - Bin vent filter	Bin vent filter	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
EU 007, 010 - 025	SV 007	CE 005 - 007, 009 - 011, 014 - 016, 017 - 019 - Bin vent filter	Bin vent filter	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
EU 007, 010 - 025	SV 008	CE 005 - 007, 009 - 011, 014 - 016, 017 - 019 - Bin vent filter	Bin vent filter	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
EU 007, 010 - 025	SV010	CE 005 - 007, 009 - 011, 014 - 016, 017 - 019 - Bin vent filter	Bin vent filter	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
EU 007, 010 - 025	SV011	CE 005 - 007, 009 - 011, 014 - 016, 017 - 019 - Bin vent filter	Bin vent filter	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
EU 007, 010 - 025	SV012	CE 005 - 007, 009 - 011, 014 - 016, 017 - 019 - Bin vent filter	Bin vent filter	Storage Silos	5% Opacity	N/A	N/A	N/A	N/A	3-hour
EU 008 and 009	SV 009	CE 008 and 013 - Baghouse	Baghouse	Gyrotory Sifter and Conveyors	0.0020 gr/dscf 0.37 lb/hr	N/A	N/A	N/A	N/A	3-hour
FS 001-005	FS 001-005	FS 001-005	Fugitive Dust Plan to minimize emissions	Fugitive Sources	Fugitive Dust Plan	N/A	N/A	N/A	N/A	N/A