

**AIR EMISSION PERMIT NO. 05301050- 001**

**IS ISSUED TO**

University of Minnesota

**UNIVERSITY OF MN - TWIN CITIES**

Board of Regents

202 Morrill Hall

Minneapolis, Hennepin County, MN 55455-0100

The emission units, control equipment and emission stacks at the stationary source authorized in this permit are as described in the following permit application(s):

Permit Type	Application Date
Total Facility Operating Permit	8/1/94 with numerous supplements

This permit authorizes the Permittee to operate the stationary source at the address listed above unless otherwise noted in Table A. The Permittee must comply with all the conditions of the permit. Any changes or modifications to the stationary source must be performed in compliance with Minn. R. 7007.1150 to 7007.1500. Terms used in the permit as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

**Permit Type:** Federal; Pt 70/Major for NSR

**Issue Date:** May 16, 2006

**Expiration:** May 16, 2011  
All Title I Conditions do not expire.

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for Sheryl A. Corrigan  
Commissioner  
Minnesota Pollution Control Agency

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**NOTICE TO THE PERMITTEE:**

Your stationary source may be subject to the requirements of the Minnesota Pollution Control Agency's (MPCA) solid waste, hazardous waste, and water quality programs. If you wish to obtain information on these programs, including information on obtaining any required permits, please contact the MPCA general information number at:

Metro Area	(651) 296-6300
Outside Metro Area	1-800-657-3864
TTY	(651) 282-5332

The rules governing these programs are contained in Minn. R. chs. 7000-7105. Written questions may be sent to: Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

Questions about this air emission permit or about air quality requirements can also be directed to the telephone numbers and address listed above.

**PERMIT SHIELD:**

Subject to the limitations in Minn. R. 7007.1800, compliance with the conditions of this permit shall be deemed compliance with the specific provision of the applicable requirement identified in the permit as the basis of each condition. Subject to the limitations of Minn. R. 7007.1800 and 7017.0100, subp. 2, notwithstanding the conditions of this permit specifying compliance practices for applicable requirements, any person (including the Permittee) may also use other credible evidence to establish compliance or noncompliance with applicable requirements.

## **FACILITY DESCRIPTION:**

### **Total Facility Operating Permit (Permit Action 001):**

The University of Minnesota is a teaching and research college with two campuses in the Twin Cities: the Minneapolis campus and the St. Paul campus. The two campuses are approximately three miles apart and are connected by a transitway 80 feet wide owned by the University. In a May 13, 1993 letter, U.S. Environmental Protection Agency (EPA) Region V issued an opinion that the two campuses constitute a single stationary source for Prevention of Significant Deterioration (PSD) permitting purposes. Because of this determination, the two campuses (Facility) are also a single stationary source for purposes of Title V permitting.

The Facility covers an area of approximately 1154 acres and contains approximately 22,000,000 gross square feet of buildings overall. The Facility employs approximately 15,000 people and serves a population of 40,000 full time and 11,000 part time students. The Facility owns and operates, or contracts with other parties who operate, a variety of facilities that support its teaching and research functions.

The University of Minnesota is a teaching and research institution with two campuses in the Twin Cities: the Minneapolis campus and the St. Paul campus. The two campuses are approximately three miles apart and are connected by a transitway 80 feet wide owned by the University. In a May 13, 1993 letter, EPA Region V issued an opinion that the two campuses constitute a single stationary source for Prevention of Significant Deterioration (PSD) permitting purposes. Because of this determination, the two campuses (Facility) are also a single stationary source for purposes of Title V permitting.

The Minneapolis Campus consists of the East and West Bank locations adjacent to the industrial downtown Minneapolis stretch of the Mississippi River. The campus has a variety of teaching and research facilities in the areas of engineering, liberal arts, business, health sciences, and athletics. The Minneapolis Campus provides dormitory and other facilities that are operated by the Facility. A central steam plant (Southeast Plant), which directly provides steam for heating and cooling to the Minneapolis Campus, is located on the East Bank. The Southeast Plant is owned by the Facility, but is currently operated by Foster Wheeler Twin Cities, Inc. (Foster Wheeler). The Southeast Plant provides steam to most on-campus buildings and to several off-campus customers through the University system.

The St. Paul Campus is generally located east of Cleveland Avenue, south of Larpenteur Avenue, west of the Minnesota State Fairgrounds, and north of Como Avenue in St. Paul. The campus has its primary teaching and research emphasis in agricultural studies. Prominent facilities include a veterinary medicine teaching and research facility, biological sciences complex, agricultural engineering building, agronomy and plant research facilities, and animal husbandry facilities. Married student housing buildings are located at the south end of the campus and are operated by the Commonwealth Terrace Cooperative. The St. Paul Campus is served by a central steam plant (St. Paul Plant) owned by the Facility, but operated by Foster Wheeler.

### **Southeast Plant Emissions Units**

The Southeast Plant has five operational boilers. One is a fluidized bed boiler capable of burning coal, wood, oat hulls or natural gas (No. 2 fuel oil is allowed to be used for startup purposes) [EU001]. Two boilers are natural gas- or No. 2 fuel oil-fired package boilers [EU002 and EU003]. The fourth boiler is a pulverized coal boiler also capable of firing No. 2 fuel oil [EU004]. The fifth boiler is a spreader stoker coal boiler, also capable of burning No. 2 fuel oil and oat hulls dependent upon performance test results [EU005]. The Permittee is planning to burn oat hulls primarily in the Circulating Fluid Bed (CFB) boiler except during periods of low steam demand in May and October when the CFB boiler is not utilized. During these times, oat hulls will continue to be received and will be burned in EU005 due to limited storage capacity. The fluidized bed boiler uses limestone injection to control acid gases (i.e., sulfur dioxide, hydrogen chloride, and hydrogen fluoride) and a fabric filter to control Particulate Matter (PM). The two package boilers are not equipped with any control equipment, but incorporate flue gas recirculation to limit nitrogen oxide emissions. The pulverized coal and spreader stoker boilers are each equipped with dry gas scrubbers (spray dryers) to control acid gas emissions and with fabric filters to control PM. The pollutants of concern emitted by the boilers include all of the criteria pollutants (i.e., carbon monoxide, nitrogen oxides, sulfur dioxide, PM, volatile organic compounds, and lead) as well as a number of Hazardous Air Pollutants (HAP) (including hydrogen chloride, hydrogen fluoride, and a variety of other organic and metal HAPs).

The coal used by the Facility is unloaded in a totally enclosed rail car unloading terminal. From the unloading terminal, the coal is transferred via totally enclosed conveyors to the coal storage building for later reclamation and transfer to the outdoor coal bunker located adjacent to the Southeast Plant. Another potential destination, is a truck unloading station, silo and handling system equipped with baghouse filters to be used only for biofuels destined for EU001, which will be located at the Southeast Plant. The unloading terminal, enclosed conveyors, internal transfer points, and coal storage building vent are all equipped with baghouses to control emissions of PM. The outdoor coal bunker, is surrounded by concrete retaining walls that minimize fugitive emissions by shielding the stockpiled coal from the wind. Coal is placed in the outdoor bunker via a telescopic chute, which helps to minimize fugitive dust generation by the material transfer process. Dust suppressants may also be used to minimize fugitive dust. PM is the pollutant of concern for the coal handling and storage process.

The Southeast Plant utilizes limestone, sand and lime for pollution control purposes and handles the ash generated by the coal boilers. Each of these materials is pneumatically conveyed to its own storage silo to await disposal, further processing or use. Each of the storage silos is equipped with fabric filters to reduce the PM emissions associated with the material transfers. The main pollutant of concern for the storage silos is PM.

The Southeast Plant building has been listed on the National Register of Historic Places due to its association with the electric streetcar system once operated in the Twin Cities area. Due to the listing on the National Register, alterations to the building are subject to the provisions of the National Historic Preservation Act.

### **St. Paul Plant Emissions Units**

The St. Paul Plant has six operational boilers. Two boilers are natural gas- or No. 2 fuel oil-fired package boilers. Two of the boilers are pulverized coal boilers also capable of firing natural gas and No. 2 fuel oil. Two of the boilers are spreader stoker coal boilers, also capable of burning natural gas and No. 2 fuel oil.

The two package boilers are not equipped with any control equipment but incorporate flue gas recirculation for nitrogen oxides control. The exhaust from each of the coal boilers vents to separate cyclones. The exhaust from the two pulverized coal boiler cyclones vents to a common fabric filter. The exhaust from each of the spreader stoker boiler cyclones vent to separate fabric filters. The pollutants of concern emitted by the boilers include all of the criteria pollutants as well as a number of hazardous air pollutants (including hydrogen chloride, hydrogen fluoride, and a variety of other organic and metal HAPs).

The coal used at the St. Paul Plant is trucked from the Southeast Plant storage facility and dumped directly onto a coal pile. Fugitive emissions are managed in a manner similar to the Southeast Plant.

The Southeast Plant pneumatically transfers the ash generated by the coal boilers to two storage silos to await further processing and load out. The storage silo is equipped with fabric filters to reduce the PM emissions associated with the material transfers. The main pollutant of concern for the storage silos is PM.

### **Campus Sources**

The Facility has a number of diesel-fired generators and pumps, natural gas-fired generators, and natural gas-fired boilers. The majority of the generators are used only for emergency purposes, although eleven are operated as peak shaving units. Most of the emergency generators and small boilers qualify as insignificant activities based on either their potential emissions or their actual emissions. However, because a number of them were included in a netting analysis associated with the installation of the fluidized bed boiler, they are included in the permit along with their associated netting-related operating limits. The pollutants of concern emitted by these sources include all of the criteria pollutants, along with small emissions of a number of HAPs.

### **Laboratory Emissions**

The Facility has 1,152 laboratories, including a number classified as health care labs. Based on information submitted to the EPA as part of the comment period for the R&D NESHAP, the Facility used emission factors from the University of California system. These emission factors were developed from a range of methods including surveys, interviews, purchase record review, and stack sampling to estimate emissions. The emission factors range from 0.004 lb/day/lab for the Santa Cruz campus to 0.029 lb/day/lab for the San Francisco – Parnassus campus. Using these emission factors, the potential to emit for each laboratory would range from 1.5 lb/yr to 10.6 lb/yr. Therefore, each laboratory is an insignificant activity.

## **Insignificant Activities**

### Thompson Center for Environmental Management (TCEM) [previously known as Integrated Waste Management Facility (IWMF)]

The TCEM consists of storage tanks, waste solvent transfer operations, and a small scale laboratory distillation operation. The storage tanks are nitrogen blanketed, are equipped with breather valves that releases vapor only when the positive pressure reaches 3 psig, and are emptied from the bottom. The Facility submitted calculations demonstrating that the TCEM storage tanks qualify for classification as insignificant activities. In addition, although not accounted for in the emission calculations, carbon canisters are located on the relief valves that will remove any hydrocarbon vapor that does pass through them.

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities  
 Permit Number: 05301050 - 001

**Table A contains limits and other requirements with which your facility must comply. The limits are located in the first column of the table (What To do). The limits can be emission limits or operational limits. This column also contains the actions that you must take and the records you must keep to show that you are complying with the limits. The second column of Table A (Why to do it) lists the regulatory basis for these limits. Appendices included as conditions of your permit are listed in Table A under total facility requirements.**

**Subject Item: Total Facility**

What to do	Why to do it
SOURCE-SPECIFIC REQUIREMENTS	hdr
Comply with Fugitive Emission Control Plan: The Permittee shall follow the actions and recordkeeping specified in the control plan received by the Commissioner on December 23, 1996 and amended by Permit Application Form GI-05D Fugitive Emission Source Information received by the Commissioner on April 8, 2004. The plan may be amended by the Permittee with the Commissioner's approval. If the Commissioner determines that the Permittee is out of compliance with Minn. R. 7011.0150 or the fugitive control plan, the Permittee may be required to amend the control plan and/or install and operate particulate matter ambient monitors as requested by the Commissioner.	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 currently uses ozone-depleting substances as defined in 40 CFR pt. 82. Sections 601-618 of the 1990 Clean Air Act Amendments and 40 CFR pt. 82 may apply to your facility. Read Sections 601-618 and 40 CFR pt. 82 to determine all the requirements that apply to your facility.	40 CFR pt. 82
Inapplicable Requirement: Standards of Performance for Commercial and Industrial Solid Waste Incineration Units, 40 CFR pt. 60, subp. CCCC do not apply to this facility. The permit shield applies in accordance with Minn. R. 7007.1800, subp. A(2).	Minn. R. 7007.1800, subp. (A)(2); 40 CFR pt. 60, subp. CCCC
Inapplicable Requirement: Standards of Performance for Grain Elevators, 40 CFR pt. 60, subp. DD do not apply to this facility. The permit shield applies in accordance with Minn. R. 7007.1800, subp. A(2).	Minn. R. 7007.1800, subp. (A)(2); 40 CFR pt. 60, subp. DD
Inapplicable Requirement: Minnesota Standards of Performance for Waste Combustors do not apply to this facility. The permit shield applies in accordance with Minn. R. 7007.1800, subp. A(2).	Minn. R. 7007.1800, subp. (A)(2); Minn. Rules 7011.1201 through 7011.1285
DETERMINING IF A PROJECT/MODIFICATION IS SUBJECT TO NEW SOURCE REVIEW	hdr
<p>These requirements apply where there is a reasonable possibility that a proposed project, analyzed using the actual-to-projected-actual (ATPA) test and found to not be part of a major modification, may result in a significant emissions increase. If the ATPA test is not used for a particular project, or if there is not a reasonable possibility that the proposed project could result in a significant emissions increase, then these requirements do not apply to that project.</p> <p>Even though a particular modification is not subject to New Source Review, a permit amendment, recordkeeping, or notification may still be required under Minn. R. 7007.1150 - 7007.1500.</p>	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000
<p>Preconstruction Documentation -- Before beginning actual construction on a project, the Permittee shall document the following information:</p> <ol style="list-style-type: none"> <li>1. A description of the project</li> <li>2. Identification of the emission unit(s) whose emissions of an NSR pollutant could be affected</li> <li>3. A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including the baseline actual emissions, the potential emissions, the projected actual emissions, the amount of emissions excluded due to increases not associated with the modification and that the unit(s) could have accommodated during the baseline period, an explanation of why the amounts were excluded, and any creditable contemporaneous increases and decreases that were considered in the determination.</li> </ol> <p>The Permittee shall maintain records of this documentation.</p>	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5
The Permittee shall monitor the actual emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using the ATPA test, and the potential emissions of any regulated NSR pollutant that could increase as a result of the project and that were analyzed using potential emissions. The Permittee shall calculate and maintain a record of the sum of the actual and potential (if used in the analysis) emissions of the regulated pollutant, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit of any unit associated with the project.	Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 & 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>The Permittee must submit a report to the Agency if the annual summed (actual plus potential, if applicable) emissions differ from the preconstruction projection and exceed the baseline actual emissions by a significant amount as listed at 40 CFR Section 52.21(b)(23). Such report shall be submitted to the Agency within 60 days after the end of the year in which the exceedances occur. The report shall contain:</p> <p>a. The name and ID number of the facility, and the name and telephone number of the facility contact person</p> <p>b. The annual emissions (actual plus potential, if any part of the project was analyzed using potential emissions) for each pollutant for which the preconstruction projection and significant emissions increase are exceeded.</p> <p>c. Any other information, such as an explanation as to why the summed emissions differ from the preconstruction projection.</p>	<p>Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 &amp; 5</p>
<p>The Permittee shall monitor the actual emissions of any regulated NSR pollutant that could increase as a result of a project that was analyzed using the baseline actual to projected actual emissions test, and the potential emissions of any regulated NSR pollutant that could increase as a result of the project and that was analyzed using potential emissions. The Permittee shall calculate and maintain a record of the sum of the actual and potential (if used in the analysis) emissions of the regulated pollutant, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit of any unit associated with the project.</p>	<p>Title I Condition: 40 CFR Section 52.21(r)(6) and Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 &amp; 5</p>
<p><b>OPERATIONAL REQUIREMENTS</b></p>	<p>hdr</p>
<p>Ambient Air Quality Standards: The Permittee shall comply, and upon written request demonstrate compliance, 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.</p>	<p>40 CFR pt. 50; Minn. Stat. Sec. 116.07, subds. 4a and 9; Minn. R. 7007.0100, subps. 7A, 7L and 7M; Minn. R. 7007.0800, subps. 1, 2, and 4; Minn. R. 7009.0010-7009.0080</p>
<p>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.</p>	<p>Minn. R. 7011.0020</p>
<p>Air Pollution Control Equipment: Operate all pollution control equipment whenever the corresponding process equipment and emission units are operated, unless otherwise noted in Table A.</p>	<p>Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)</p>
<p>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 &amp; M plan shall identify all air pollution control equipment and shall include a preventative maintenance program for that equipment, a description of (the minimum but not necessarily the only) corrective actions to be taken to restore the equipment 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 the records kept to demonstrate plan implementation.</p>	<p>Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)</p>
<p>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.</p>	<p>Minn. R. 7019.1000, subp. 4</p>
<p>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.</p>	<p>Minn. R. 7011.0150</p>
<p>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.</p>	<p>Minn. R. 7030.0010 - 7030.0080</p>
<p>Inspections: The Permittee shall comply with the inspection procedures and requirements as found in Minn. R. 7007.0800, subp. 9(A).</p>	<p>Minn. R. 7007.0800, subp. 9(A)</p>
<p>The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.</p>	<p>Minn. R. 7007.0800, subp. 16</p>
<p><b>PERFORMANCE TESTING</b></p>	<p>hdr</p>
<p>Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.</p>	<p>Minn. R. ch. 7017</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>Performance Test Notifications and Submittals:</p> <p>Performance Tests are due as outlined in Tables A and B of the permit. See Table B for additional testing requirements.</p> <p>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</p> <p>The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.</p>	<p>Minn. Rs. 7017.2030, subp. 1-4, 7017.2018 and Minn. R. 7017.2035, subp. 1-2</p>
<p>Limits set as a result of a performance test (conducted before or after permit issuance) apply until superseded as specified by Minn. R. 7017.2025 following formal review of a subsequent performance test on the same unit.</p>	<p>Minn. R. 7017.2025</p>
<p><b>MONITORING REQUIREMENTS</b></p>	<p>hdr</p>
<p>Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).</p>	<p>Minn. R. 7007.0800, subp. 4(D)</p>
<p>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.</p>	<p>Minn. R. 7007.0800, subp. 4(D)</p>
<p><b>MODELING REQUIREMENT</b></p>	<p>hdr</p>
<p><b>RECORDKEEPING</b></p>	<p>hdr</p>
<p>Record keeping: Retain all records at the stationary source 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).</p>	<p>Minn. R. 7007.0800, subp. 5(C)</p>
<p>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.</p>	<p>Minn. R. 7007. 0800, subp. 5(B)</p>
<p><b>REPORTING/SUBMITTALS</b></p>	<p>hdr</p>
<p>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.</p> <p>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.</p>	<p>Minn. R. 7019.1000, subp. 3</p>
<p>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.</p> <p>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.</p>	<p>Minn. R. 7019.1000, subp. 2</p>
<p>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.</p>	<p>Minn. R. 7019.1000, subp. 1</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-4

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>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:</p> <ol style="list-style-type: none"> <li>1. the cause of the deviation;</li> <li>2. the exact dates of the period of the deviation, if the deviation has been corrected;</li> <li>3. whether or not the deviation has been corrected;</li> <li>4. the anticipated time by which the deviation is expected to be corrected, if not yet corrected; and</li> <li>5. steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.</li> </ol>	Minn. R. 7019.1000, subp. 1
<p>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.</p>	Minn. R. 7007.1150 through Minn. R. 7007.1500
<p>Application for Permit Reissuance: due 180 days before expiration of existing permit.</p>	Minn. R. 7007.0400, subp. 2
<p>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).</p>	Minn. R. 7007.1400, subp. 1(H)
<p>Emission Inventory Report: due 91 days after end of each calendar year following permit issuance (April 1). To be submitted on a form approved by the Commissioner.</p>	Minn. R. 7019.3000 through Minn. R. 7019.3100
<p>Emission Fees: due 60 days after receipt of an MPCA bill.</p>	Minn. R. 7002.0005 through Minn. R. 7002.0095

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 001 New and modified boilers (annual limits to avoid mod)**

- Associated Items:**
- EU 001 SG201 - Circulating Fluidized Bed Boiler
  - EU 002 SG202 - Medium Pressure Package Boiler
  - EU 003 SG203 - High Pressure Package Boiler
  - EU 004 SE3 - Pulverized Coal Boiler
  - EU 005 SE4 - Spreader Stoker Boiler
  - EU 006 SG231 - Medium Pressure Package Boiler (new St. Paul boiler)
  - SV 001 SG201 - CFB Boiler
  - SV 002 SG202/SG203 - Med/High Pressure Package Boilers
  - SV 003 SE3 - Pulverized Coal Boiler
  - SV 004 SE4 - Spreader Stoker Boiler
  - SV 005 SG231 - Med. pressure package boiler (new St. Paul boiler)

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 32.9 tons/year using 12-month Rolling Sum , not including condensible emissions to be calculated by the 15th day of each month for the previous 12-month period.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Particulate Matter < 10 micron: less than or equal to 91.7 tons/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 248.9 tons/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Nitrogen Oxides: less than or equal to 734.8 tons/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
Carbon Monoxide: less than or equal to 280.9 tons/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21, 40 CFR Section 51 Appendix S and Minn. R. 7007.3000
Volatile Organic Compounds: less than or equal to 31.2 tons/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21 and Minn. R. 7007.3000
OPERATIONAL REQUIREMENTS	hdr
Daily Coal Sampling: Sample and analyze for the sulfur content and heating value of the coal daily for EU001, EU004 and EU005 according to the procedures specified in GP008 of this permit. [Please be aware that further analysis of the coal is specified in other parts of this permit to comply with other requirements contained within this permit.]	Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)
Fuel Oil Sulfur Content Certification: Obtain and maintain at the facility fuel receipts from the fuel supplier which certify the sulfur content of the fuel does not exceed 0.5% by weight. Records shall be maintained for 5 years. This information may be used to calculate sulfur emissions for EU002, EU003 and EU006.	Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)
CALCULATIONS	hdr
Daily Emissions Calculations: Calculate daily the amount of Total PM, PM10, SO2, Nitrogen Oxides (NOx), Carbon Monoxide (CO) and Volatile Organic Compounds (VOC) emitted from the amount of fuel combusted in the emission units listed above. Calculate emissions using the emission factors below except that the daily average CEMS value shall be used for calculation of actual SO2 and NOx emissions where available.	Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>Daily Emissions Calculation: The following equation shall be used for this calculation:  <math>F = \text{SUM} \text{SUM}j [EFij \times \text{TH}lij]</math>                      where:                      F = the total emission in tons/year of a specific pollutant                      SUM = sum over all values of i or j                      i = a number from 1 to 6 identifying each emission unit in the group                      j = identifies the type of fuel combusted                      EFij = emission factor as listed below or as determined by performance testing for emission unit i when combusting fuel j, or for pollutants monitored by CEMS in lb/MMBtu, the average value for each day                      THlij = the total heat input to the emission unit in a day in MMBtu, based on fuel consumption for fuel of type j in emission unit i,                      (or for pollutants monitored by a CEMS in lb/MMBtu)</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>Monthly Emissions Calculations: By the 15th day of each month, the Permittee shall calculate the 12-month rolling sum value for each pollutant.</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p><b>EMISSION FACTORS</b></p>	<p>hdr</p>
<p>Emission factors for total PM, lb/MMBtu:                      EU001: all fuels, 0.018                      EU002: fuel oil, 0.036; natural gas, 0.005                      EU003: fuel oil, 0.036; natural gas, 0.005                      EU004: coal, 0.034; fuel oil, 0.014                      EU005: coal and approved biomass, 0.038; fuel oil, 0.014                      EU006: fuel oil, 0.036; natural gas, 0.005</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>Emission factors for PM &lt; 10 micron, lb/MMBtu                      EU001: all fuels, 0.033                      EU002: fuel oil, 0.056; natural gas, 0.020                      EU003: fuel oil, 0.056; natural gas, 0.020                      EU004: coal, 0.106; fuel oil, 0.029                      EU005: coal and approved biomass, 0.084; fuel oil, 0.029                      EU006: fuel oil, 0.056; natural gas, 0.020</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>Emission factors for SO2, lb/MMBtu                      EU001: coal, fuel oil and approved biomass, CEMS data; natural gas, 0.0006                      EU002: fuel oil, fuel oil receipts; natural gas, 0.0006                      EU003: fuel oil, fuel oil receipts; natural gas, 0.0006                      EU004: coal, CEMS data; fuel oil, CEMS data                      EU005: coal and approved biomass, CEMS data; fuel oil, CEMS data                      EU006: fuel oil, fuel oil receipts; natural gas, 0.0006</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>Emission factors for nitrogen oxides, lb/MMBtu                      EU001: all fuels, CEMS data                      EU002: all fuels, CEMS data                      EU003: all fuels, CEMS data                      EU004: coal, 1.18; fuel oil, 0.200                      EU005: coal and approved biomass, 0.783; fuel oil, 0.200                      EU006: CEMS data</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>Emission factors for carbon monoxide, lb/MMBtu                      EU001: coal, 0.100; fuel oil, 0.200; natural gas, 0.200; wood and approved biomass 0.267 when operating at Maximum Continuous Rating (MCR). Emission of CO is not expected to exceed 30 lb/hr at 50% or more of MCR when firing coal only.                      EU002: all fuels, 0.040                      EU003: all fuels, 0.040                      EU004: coal, 0.034; fuel oil, 0.036                      EU005: coal and approved biomass, 0.280; fuel oil, 0.036                      EU006: all fuels, 0.040</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>Emission factors for volatile organic compounds, lb/MMBtu                      EU001: coal, 0.015; fuel oil, 0.015; natural gas, 0.001; approved biomass, 0.036                      EU002: all fuels, 0.004                      EU003: all fuels, 0.004                      EU004: coal, 0.003; fuel oil, 0.001                      EU005: coal, 0.003; fuel oil, 0.001; approved biomass, 0.036                      EU006: all fuels, 0.004</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>Emission Factor Adjustments: The Permittees may propose adjustments to the emission factors. Submit the appropriate modification request for approval and subsequent permit amendment.</p>	<p>Minn. R. 7007.0800, subp. 4 and 6</p>
<p>RECORDKEEPING REQUIREMENTS</p>	<p>hdr</p>
<p>Recordkeeping: Record daily the amount of coal combusted in emission units EU001, EU004, and EU005 and the sulfur content and heating value of the coal.</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>Recordkeeping: Record daily the amount of fuel other than coal combusted in emission units EU001, EU002, EU003, EU004, EU005, and EU006 and the heating value of the fuel.</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>Recordkeeping: Maintain a record of the daily emissions of each pollutant and a 12-month rolling sum of emissions for each pollutant that has a limit within GP001.</p>	<p>Title I Condition: To avoid classification as a major modification under 40 CFR Section 52.21, Minn. R. 7007.3000 and 40 CFR Section 51 Appendix S (for CO)</p>
<p>PERFORMANCE TESTING</p>	<p>hdr</p>
<p>Performance Testing Required: Test each emission unit within this group (EU001-EU006) by the date stated within the approved Testing Frequency Plan for PM, PM10, SO2, NOx, CO and VOC to verify emission factors. If the emission factor requirement for a unit specifies that CEMS or fuel receipts are to be used, then a performance test is not required for that pollutant at that unit. A specific testing frequency for each required pollutant for each boiler is located at the Stack/Vent level of this permit for each boiler in this group. The purpose of the testing is to verify that the emission factors listed in GP001 are not exceeded. They are not to be adjusted downward as a result of performance testing unless the procedures in the "Emission Factor Adjustments" requirement are followed. Calculations of actual emissions for Emission Inventory shall follow the process and hierarchy described in Minn. R. 7019.3020.</p>	<p>Minn. R. 7017.2020, subp. 1</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 002 All steam service facilities steam boilers (HAP and heat input limits)**

- Associated Items:**
- EU 001 SG201 - Circulating Fluidized Bed Boiler
  - EU 002 SG202 - Medium Pressure Package Boiler
  - EU 003 SG203 - High Pressure Package Boiler
  - EU 004 SE3 - Pulverized Coal Boiler
  - EU 005 SE4 - Spreader Stoker Boiler
  - EU 006 SG231 - Medium Pressure Package Boiler (new St. Paul boiler)
  - EU 007 SP1 - Pulverized Coal Boiler
  - EU 008 SP2 - Pulverized Coal Boiler
  - EU 009 SP5 - Spreader Stoker Boiler
  - EU 010 SP6 - Spreader Stoker Boiler
  - EU 011 SP7 - Oil/Gas Package Boiler

What to do	Why to do it
<b>EMISSION LIMITS</b>	hdr
Hydrochloric acid: less than or equal to 7 tons/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period (emissions as Hydrogen Chloride) for emissions units within GP002. See requirements labeled Hydrogen Chloride Monitoring and Monthly Hydrogen Chloride Emissions Calculations below.	Title I Condition: Limit to avoid classification as a major source under 40 CFR Section 63.2 and Minn. R. 7011.7000
Hexane: less than or equal to 7780 million cubic feet/year using 12-month Rolling Sum of natural gas to be calculated by the 15th day of each month for the previous 12-month period for emissions units within GP002. Use current emission factors from AP-42 and/or emission factors derived from MPCA-approved stack testing to calculate emissions.	Title I Condition: Limit to avoid major source classification under 40 CFR Section 63.2 and Minn. R. 7011.7000
HAPs - Total: less than or equal to 15 tons/year using 12-month Rolling Sum to be calculated by the 15th day of each month for the previous 12-month period. HAP emissions for each fuel shall be calculated by use of current AP-42 emission factors based upon actual fuel usage and/or by use of emission factors derived from MPCA-approved stack testing.	Title I Condition: Limit to avoid major source classification under 40 CFR Section 63.2 and Minn. R. 7011.7000
<b>OPERATIONAL LIMITS</b>	hdr
Heat input from natural gas and approved biomass: Natural gas and approved biomass shall account for greater than or equal to 70% of the total fuel heat input to steam generators in GP002, based on a 12-month rolling average to be calculated by the 15th day of each month for the previous 12-month period. Approved biomass is defined within EU001 and EU005. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. Stat. Section 116.07, subd. 4a
<b>MONITORING REQUIREMENTS</b>	hdr
Hydrogen Chloride Monitoring: Determine hydrogen chloride emissions by collecting daily coal and/or biomass samples in an as-fired condition at the inlet to the steam generating units according to the procedures in GP008 for EU001, EU004, EU005, and EU007-010 found within GP002. Combine the samples into a monthly composite, and analyze the monthly composite for chlorine content. For all emission units that burn fuel oil, collect a fuel oil sample from the fuel oil storage tank after each delivery of fuel oil and analyze for chlorine and heating value. Instead of by fuel analyses, the Permittee may determine hydrogen chloride emissions from solid fuels at EU001 with an emission factor of 0.054 lb HCl/ton fuel (the emission factor shall be adjusted if testing of any solid fuel indicates a fuel chlorine content greater than 1900 mg/kg or an HCl control efficiency less than 99%). The Permittee may propose HCl emission factors based on performance test results for other emission units.	Title I Condition: Limit to avoid major source classification under 40 CFR Section 63.2 and Minn. R. 7011.7000
<b>CALCULATIONS</b>	hdr
Monthly Hydrogen Chloride Emissions Calculations: Calculate monthly the amount of Hydrogen Chloride emitted from the emission units listed within GP002. For coal, fuel oil and biomass fuels, calculate emissions using the amount and type of fuel combusted, the heating value of the fuel combusted and the results of chlorine content sampling, and/or MPCA-approved emission factors derived from stack-testing results.	Title I Condition: Limit to avoid major source classification under 40 CFR Section 63.2 and Minn. R. 7011.7000

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>Monthly Total HAPs Emissions Calculations: Calculate daily the amount of Hydrogen Chloride and Total HAPs emitted from the amount of fuel combusted in the emission units listed within GP002. Calculate emissions using current AP-42 emission factors or MPCA-approved stack-testing results.</p> <p>Calculate monthly the amount of Total HAPs emitted from the emission units listed within GP002. Calculate emissions using the amount and type of fuel combusted, the heat content of the fuel combusted, current AP-42 factors, and/or MPCA-approved emission factors derived from stack-testing results.</p>	<p>Title I Condition: Limit to avoid major source classification under 40 CFR Section 63.2 and Minn. R. 7011.7000</p>
<p>Monthly Fuel Usage Calculations: By the 15th day of each month, the Permittee shall calculate the 12-month rolling sum value for natural gas usage within GP002 boilers (to ensure Hexane emissions are below major source threshold limits for a single HAP).</p>	<p>Title I Condition: To avoid classification as a major source under 40 CFR Section 63.2 and Minn. R.</p>
<p><b>RECORDKEEPING</b></p>	<p>hdr</p>
<p>Daily Recordkeeping: Maintain records of the type, amount and heating value of each fuel combusted daily including clear indication of the type and quantity of any alternative biomass fired during a test burn.</p>	<p>Title I Condition: To avoid classification as a major source under 40 CFR Section 63.2; Minn. R. 7007.0800, subp. 4 and 5</p>
<p>Recordkeeping: Maintain records of the monthly calculation for Heating Value limit, the hydrogen chloride limit, the fuel usage limit and the total HAPs limit.</p>	<p>Minn. R. 7007.0800, subp. 4 and 5</p>
<p>Recordkeeping: Maintain records of the sampling and analysis of coal and fuel oil for chlorine content.</p>	<p>Minn. R. 7007.0800, subp. 4 and 5</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 003 Db Boilers - General and CEMS/COMS requirements**

- Associated Items:**
- EU 001 SG201 - Circulating Fluidized Bed Boiler
  - EU 002 SG202 - Medium Pressure Package Boiler
  - EU 003 SG203 - High Pressure Package Boiler
  - EU 006 SG231 - Medium Pressure Package Boiler (new St. Paul boiler)
  - SV 001 SG201 - CFB Boiler
  - SV 002 SG202/SG203 - Med/High Pressure Package Boilers
  - SV 005 SG231 - Med. pressure package boiler (new St. Paul boiler)

What to do	Why to do it
CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)	hdr
Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment. [EU001- Sulfur Dioxide and NOx CEMS; EU002, EU003 and EU006 - NOx CEMS, see EU level requirements]	40 CFR Section 60.13(e), Minn. R. 7017.1090, subp. 1
Excess Emissions/Downtime Reports (EERs): due 30 days after end of each calendar quarter following Permit Issuance (Submit Deviations Reporting Form DRF-1 as amended).. The EER shall indicate all periods of monitor bypass and all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions.	Minn. R. 7017.1110, subp. 1; 40 CFR Section 60.7(c)
QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40 CFR Section 60, App. F, section 3.	Minn. R. 7017.1170, subp. 2; 40 CFR pt. 60, App. F; section 3, Minn. R. 7017.1010, subp. 1(C)
CEMS QA/QC: The owner or operator of an affected facility is subject to the performance specifications listed in 40 CFR 60, Appendix B and shall operate, calibrate, and maintain each CEMS according to the QA/QC procedures in 40 CFR pt. 60, Appendix F as amended and maintain a written QA/QC program available in a form suitable for inspection.	40 CFR pt. 60, Appendix F; 40 CFR Section 60.13(a), Minn. R. 7017.1717, subp. 1
CEMS Daily Calibration Drift Check: Permittees must automatically check the zero (low level value between 0 and 20 percent of span value) and span (50 to 100 percent of span value) calibration drifts at least once daily. The zero and span must, at a minimum, be adjusted whenever the drift exceeds two times the limit specified in 40 CFR pt. 60, Appendix B. 40 CFR pt. 60, Appendix F shall be used to determine out-of-control periods for CEMS.  Additional citation: Minn. R. 7107.1010, subp. 1	40 CFR pt. 60, Appendix F, section 4.1; 40 CFR Section 60.13(d)(1) regarding CEMS; Minn. R. 7017.1170, subp. 3
Cylinder Gas Audit (CGA): due before end of each calendar quarter following CEMS certification test. A CGA is not required during any calendar quarter in which a RATA was performed.	40 CFR pt. 60, Appendix F, section 5.1.2; Minn. R. 7017.1170, subp. 4; Minn. R. 7017.1010, subp. 1(C)
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar year following CEMS Certification Test. Follow the procedures in 40 CFR pt. 60, Appendix F.	40 CFR pt. 60, Appendix F, section 5.1.1; Minn. R. 7017.1170, subp. 5; Minn. R. 7017.1010, subp. 1(C)
Cylinder Gas Audit (CGA) Results Summary: due 30 days after end of each calendar quarter following Cylinder Gas Audit (CGA).	Minn. R. 7017.1180, subp.1
Relative Accuracy Test Audit (RATA) Notification: due 30 days before CEMS RATA.	Minn. R. 7017.1180, subp. 2
Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after end of each calendar quarter in which the CEMS RATA was conducted.	Minn. R. 7017.1180, subp. 3
Recordkeeping: The owner or operator must retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7017.1130; meets requirements of 40 CFR Section 60.7(f)
Monitoring Data: Reduce all NOx and SOx data to 1-hour averages, in accordance with 40 CFR Section 60.13(h). 1-hour averages shall be computed from four or more data points equally spaced over each 1-hour period.	40 CFR Section 60.13(h) regarding continuous monitoring systems other than COMS.
CONTINUOUS OPACITY MONITORING SYSTEM (COMS)	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

All COMS shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data for each successive 6-minute period.	Minn. R. 7017.1200, subp. 1, 2 & 3; 40 CFR Section 60.13(e)(1)
Continuous Operation: COMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A COMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment.	Minn. R. 7017.1090, subp. 1; 40 CFR Section 60.13(e)
Excess Emissions/Downtime Reports (EERs): due 30 days after end of each calendar quarter following initial startup of COMS.	Minn. R. 7017.1110, subp. 1; 40 CFR Section 60.7(c)
QA Plan Required: Develop and implement a written quality assurance plan which covers each COMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain the written procedures listed in Minn. R. 7017.1210, subp. 1.	Minn. R. 7017.1210
COMS QA/QC: The owner or operator of an affected facility is subject to the performance specifications listed in 40 CFR pt. 60, Appendix B and shall operate, calibrate, and maintain each COMS according to the QA/QC procedures in Minn. R. 7017.1210.	40 CFR Section 60.13(a); Minn. R. 7017.1210
COMS Daily Calibration Drift Check: The Permittee must automatically, intrinsic to the opacity monitor, check the zero and upscale (span) calibration drifts at least once daily. The span value shall be between 60% and 80%. The optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds 4 percent opacity. Minimum procedures must include an automated method for producing a simulated zero opacity condition and an upscale opacity condition as specified in 40 CFR 60.13(d)(2).	Minn. R. 7017.1210, subp. 2; 40 CFR Section 60.13(d)(1) regarding COMS and 60.13(d)(2)[40CFR48(e)(2)]
COMS Calibration Error Audit: due before end of each calendar half-year following COMS Certification Test. Conduct three point calibration error audits at least 3 months apart but no greater than 8 months apart. Conduct audits in accordance with Minn. R. 7017.1210, subp. 3.	Minn. R. 7017.1210, subp. 3
Attenuator Calibration: The Permittee shall have an independent testing company conduct calibrations of each of the neutral density filters used in the calibration error audit according to the procedure in Code of Federal Regulations, Title 40, Part 60, Appendix B, Section 7.1.3., within the time frame of opacity stability guaranteed by the attenuator manufacturer. The manufacturer's guarantee of stability shall be on site available for inspection.	Minn. R. 7017.1210, subp. 4
COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar quarter in which the COMS calibration error audit was completed.	Minn. R. 7017.1220
COMS Monitoring Data: Owners or operators of all COMS shall reduce all data to 6 minute averages. Opacity averages shall be calculated from all equally spaced consecutive 10-second (or shorter) data points in the 6 minute averaging period.	Minn. R. 7007.0800, subp. 2; 40 CFR Section 60.13(h)
Recordkeeping: The owner or operator must retain records of all COMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7017.1130

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-12

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** GP 004 Boilers SG231 and SP7 - fuel oil usage limit**Associated Items:** EU 006 SG231 - Medium Pressure Package Boiler (new St. Paul boiler)

EU 011 SP7 - Oil/Gas Package Boiler

<b>What to do</b>	<b>Why to do it</b>
Fuel Usage: less than or equal to 45,200 gallons/day of distillate fuel oil. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
Daily Recordkeeping and Calculation: maintain a daily record of the amount of fuel oil combusted in these emission units and the sum of the amount used in each of the units daily. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 005 CEMS req'd by state rule: SE Plant Boilers SE3 and SE4**

**Associated Items:** EU 004 SE3 - Pulverized Coal Boiler

EU 005 SE4 - Spreader Stoker Boiler

SV 003 SE3 - Pulverized Coal Boiler

SV 004 SE4 - Spreader Stoker Boiler

What to do	Why to do it
Emissions Monitoring: The owner or operator shall use a SO <sub>2</sub> and diluent oxygen CEMS to measure SO <sub>2</sub> emissions from each emissions unit after the dry scrubber. [EU004 and EU005 - SO <sub>x</sub> CEMS, see EU level requirements]	Minn. R. 7017.1006
Continuous Operation: CEMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A CEMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment.  Acceptable monitor downtime includes reasonable periods as listed in Items A, B, C and D of Minn. R. 7017.1090, subp. 2.	Minn. R. 7017.1090, subp. 1
QA Plan: Develop and implement a written quality assurance plan that covers each CEMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain all of the information required by 40CFR 60, App. F, section 3.	Minn. R. 7017.1170, subp. 2
CEMS Daily Calibration Drift (CD) Test: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) gas concentrations at least once daily. The CEMS shall be adjusted whenever the CD exceeds twice the specification of 40 CFR pt. 60, Appendix B. 40 CFR pt. 60, Appendix F, shall be used to determine out-of-control periods for CEMS. Follow the procedures in 40 CFR pt. 60, Appendix F.	Minn. R. 7017.1170, subp. 3
Cylinder Gas Audit (CGA): due before end of each calendar half-year following CEMS Certification Test. Conduct CGA at least 3 months apart and not greater than 8 months apart. Follow the procedures in 40 CFR pt. 60, Appendix F.	Minn. R. 7017.1170, subp. 4
CEMS Relative Accuracy Test Audit (RATA): due before end of each year starting 01/01/1997. If the relative accuracy is 15% or less the next CEMS RATA is not due for 24 months. Follow the procedures in 40 CFR pt. 60, Appendix B and Appendix F.	Minn. R. 7017.1170, subp. 5
Relative Accuracy Test Audit (RATA) Results Summary: due 30 days after the end of each calendar quarter in which the CEMS Relative Accuracy Test Audit was conducted.	Minn. R. 7017.1180, subp. 3
Recordkeeping: The owner or operator must retain records of all CEMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7007.1130

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers**

- Associated Items:** EU 004 SE3 - Pulverized Coal Boiler  
 EU 005 SE4 - Spreader Stoker Boiler  
 EU 007 SP1 - Pulverized Coal Boiler  
 EU 008 SP2 - Pulverized Coal Boiler  
 EU 009 SP5 - Spreader Stoker Boiler  
 EU 010 SP6 - Spreader Stoker Boiler  
 EU 011 SP7 - Oil/Gas Package Boiler  
 SV 003 SE3 - Pulverized Coal Boiler  
 SV 004 SE4 - Spreader Stoker Boiler  
 SV 006 SP1/SP2/SP5/SP6 Pulverized coal and spreader stoker boilers  
 SV 007 SP7 - Oil/Gas Package Boiler

What to do	Why to do it
<p>Continuous Operation: COMS must be operated and data recorded during all periods of emission unit operation including periods of emission unit start-up, shutdown, or malfunction except for periods of acceptable monitor downtime. This requirement applies whether or not a numerical emission limit applies during these periods. A COMS must not be bypassed except in emergencies where failure to bypass would endanger human health, safety, or plant equipment.</p> <p>Acceptable monitor downtime includes reasonable periods as listed in Items A, B, C and D of Minn. R. 7017.1090, subp. 2.</p>	<p>Minn. R. 7017.1090, subp. 1; 40 CFR Section 60.13(e)</p>
<p>QA Plan Required: Develop and implement a written quality assurance plan which covers each COMS. The plan shall be on site and available for inspection within 30 days after monitor certification. The plan shall contain the written procedures listed in Minn. R. 7017.1210, subp. 1.</p>	<p>Minn. R. 7017.1210, subp. 1</p>
<p>COMS QA/QC: The owner or operator of an affected facility is subject to the performance specifications listed in 40 CFR pt. 60, Appendix B and shall operate, calibrate, and maintain each COMS according to the QA/QC procedures in Minn. R. 7017.1210.</p>	<p>40 CFR Section 60.13(a); Minn. R. 7017.1210</p>
<p>COMS Daily Calibration Drift Check: The Permittee must automatically, intrinsic to the opacity monitor, check the zero and upscale (span) calibration drifts at least once daily. The span value shall be between 60% and 80%. The optical surfaces shall be cleaned when the cumulative automatic zero compensation exceeds 4 percent opacity.</p> <p>Minimum procedures must include an automated method for producing a simulated zero opacity condition and an upscale opacity condition as specified in 40 CFR 60.13(d)(2).</p>	<p>Minn. R. 7017.1210, subp. 2; 40 CFR Section 60.13(d)(l) regarding COMS and 60.13(d)(2)</p>
<p>COMS Calibration Error Audit: due before end of each calendar half-year following COMS Certification Test Conduct three point calibration error audits at least 3 months apart but no greater than 8 months apart. Conduct audits in accordance with Minn. R. 7017.1210, subp. 3.</p>	<p>Minn. R. 7017.1210, subp. 3</p>
<p>Attenuator Calibration: The Permittee shall have an independent testing company conduct calibrations of each of the neutral density filters used in the calibration error audit according to the procedure in Code of Federal Regulations, Title 40, Part 60, Appendix B, Section 7.1.3., within the time frame of opacity stability guaranteed by the attenuator manufacturer. The manufacturer's guarantee of stability shall be on site available for inspection.</p>	<p>Minn. R. 7017.1210, subp. 4</p>
<p>COMS Calibration Error Audit Results Summary: due 30 days after end of each calendar quarter in which the COMS calibration error audit was completed.</p>	<p>Minn. R. 7017.1220</p>
<p>All COMS shall complete a minimum of one cycle of sampling and analyzing for each successive 10-second period and one cycle of data for each successive 6-minute period.</p>	<p>Minn. R. 7017.1200, subp. 1, 2 &amp; 3; 40 CFR Section 60.13(e)(1); 40 CFR Section 60.13(h)</p>
<p>COMS monitoring data: The owners or operators of all COMS shall reduce all data to 6-minute averages. Opacity averages shall be calculated from all equally spaced consecutive 10-second (or shorter) data points in the 6-minute averaging period.</p>	<p>Minn. R. 7017.1200</p>
<p>Recordkeeping: The owner or operator must retain records of all COMS monitoring data and support information for a period of five years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.</p>	<p>Minn. R. 7017.1130</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 007 Low-temperature Fabric Filters (GP009, GP010, FS001)**

- Associated Items:**
- CE 023 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 024 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 025 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 026 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 027 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 028 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 029 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 030 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 031 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 032 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 033 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 034 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 035 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 036 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 037 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 038 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - EU 017 SE Plant Coal Receiving Hopper and Coneyor System with Two Transfer Points - Carter Day #1
  - EU 018 SE Plant Coal Receiving Hopper and Conveyor System with Three Transfer Points - Carter Day #2
  - EU 019 SE Plant Coal Conveyors with Six Transfer Points - F-111 Carter Day
  - EU 020 SE Plant CFB Coal Handling - F-104 MAC
  - EU 021 SE Plant Coal Transfer System with Three Transfer Points - F-109
  - EU 022 SE Plant Coal Transfer System with Three Transfer Points - F-110
  - EU 023 SE Plant Limestone Bin - F-202
  - EU 024 SE Plant Sand Bin - F-203
  - EU 025 SE Plant Lime Silo
  - EU 026 SE Plant New Ash Silo - F-106
  - EU 027 SE Plant New Ash Silo Vent - F-108
  - EU 028 SE Plant Ash Silo
  - EU 029 SE Plant Ash Silo Breather Vent
  - EU 030 St. Paul Plant Ash Silo
  - EU 031 St. Paul Plant Ash Silo Breather Vent
  - EU 040 Coal Storage Bldg Exhaust
  - FS 001 Southeast Coal and Biomass Bunker

What to do	Why to do it
Total Particulate Matter: greater than or equal to 99 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 99 percent. This limit applies to each unit individually.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 99 percent. This limit applies to each unit individually.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-16

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 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.</p>	<p>Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000</p>
<p>Visible Emissions: The Permittee shall check the associated fabric filter stacks (SV013-SV027, SV029) for any visible emissions once each day of operation during daylight hours. During inclement weather, the Permittee shall read and record the pressure drop across the fabric filter, once each day of operation.</p>	<p>Title I Condition: Monitoring for Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5</p>
<p>Recordkeeping of Visible Emissions and Pressure Drop. The Permittee shall record the time and date of each visible emission inspection and pressure drop reading, and whether or not any visible emissions were observed, and whether or not the observed pressure drop was within the range specified in this permit</p>	<p>Title I Condition: Monitoring for Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 4 and 5</p>
<p>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.</p>	<p>Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000; Minn. R. 7007.0800, subp. 2 and 14</p>
<p>Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur:                  - 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.                  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 &amp; 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>	<p>Minn. R. 7007.0800, subp. 4, 5, and 14</p>
<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>	<p>Minn. R. 7007.0800, subp. 4, 5 and 14</p>
<p>The Permittee shall operate and maintain the fabric filter in accordance with the Operation and Maintenance (O &amp; M) Plan. The Permittee shall keep copies of the O &amp; M Plan available onsite for use by staff and MPCA staff.</p>	<p>Minn. R. 7007.0800, subp. 14</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 008 Boilers subject to coal sampling and analysis**

**Associated Items:** EU 001 SG201 - Circulating Fluidized Bed Boiler

EU 004 SE3 - Pulverized Coal Boiler

EU 005 SE4 - Spreader Stoker Boiler

EU 007 SP1 - Pulverized Coal Boiler

EU 008 SP2 - Pulverized Coal Boiler

EU 009 SP5 - Spreader Stoker Boiler

EU 010 SP6 - Spreader Stoker Boiler

What to do	Why to do it
COAL SAMPLING AND ANALYSIS	hdr
Coal Sampling: collect coal samples according to the most recent version of ASTM D-2234 as described following. Samples collected according to this methodology for EU001 may include allowable alternate fuels.	Minn. R. 7007.0800, subp. 2 and 14
Increment Sample Frequency: Collect a sample every 2 hours from each operating boiler from the coal scale for each boiler, by cutting (sweeping) the full width of the free-falling coal stream from the scale feeder belt.	Minn. R. 7007.0800, subp. 2 and 14
Increment Sample Size: the weight of each increment sample size shall be 2 lb.	Minn. R. 7007.0800, subp. 2 and 14
Gross Sample Preparation: Combine the gross samples from each operating boiler to make a total plant gross (composite) sample each day for each steam service facility. Crush and reduce the gross sample as specified in ASTM Method D 2013, Sample Preparation, to form the sample for laboratory analysis.	Minn. R. 7007.0800, subp. 2 and 14
Coal Analysis: analyze the composite sample daily for sulfur content using ASTM D 3177, moisture content using ASTM D 3173 and as-received heating value using ASTM D-2015 or D-3286.	Minn. R. 7007.0800, subp. 2 and 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-18

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 009 Coal handling operations**

- Associated Items:**
- CE 023 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 024 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 025 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 026 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 027 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 028 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 038 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - EU 017 SE Plant Coal Receiving Hopper and Coneyor System with Two Transfer Points - Carter Day #1
  - EU 018 SE Plant Coal Receiving Hopper and Conveyor System with Three Transfer Points - Carter Day #2
  - EU 019 SE Plant Coal Conveyors with Six Transfer Points - F-111 Carter Day
  - EU 020 SE Plant CFB Coal Handling - F-104 MAC
  - EU 021 SE Plant Coal Transfer System with Three Transfer Points - F-109
  - EU 022 SE Plant Coal Transfer System with Three Transfer Points - F-110
  - EU 040 Coal Storage Bldg Exhaust

What to do	Why to do it
EMISSION LIMITS	hdr
Fugitive PM: Apply chemical binding agent during unloading and conveying of coal to stockpile. This limit applies to each unit individually.	Minn. R. 7011.1105, subp. G, H
Total Particulate Matter: less than or equal to 0.020 grains/dry standard cubic foot . This limit applies to each unit individually.	Minn. R. 7011.1105, subp. G(1)
Opacity: less than or equal to 20 percent opacity . This limit applies to each unit individually.	Minn. R. 7011.1105, subp. G(2)
POLLUTION CONTROL EQUIPMENT	hdr
Operate and maintain low temperature fabric filters (CE023-CE028) at all times that any emission unit controlled by the fabric filters is in operation in accordance with the requirements of GP007. The Permittee shall document periods of non-operation of the control equipment.	Minn. R. 7007.0800, subp. 2 and 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 010 Miscellaneous material handling operations**

- Associated Items:**
- CE 029 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 030 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 031 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 032 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 033 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 034 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 035 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 036 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - CE 037 Fabric Filter - Low Temperature, i.e., T<180 Degrees F
  - EU 023 SE Plant Limestone Bin - F-202
  - EU 024 SE Plant Sand Bin - F-203
  - EU 025 SE Plant Lime Silo
  - EU 026 SE Plant New Ash Silo - F-106
  - EU 027 SE Plant New Ash Silo Vent - F-108
  - EU 028 SE Plant Ash Silo
  - EU 029 SE Plant Ash Silo Breather Vent
  - EU 030 St. Paul Plant Ash Silo
  - EU 031 St. Paul Plant Ash Silo Breather Vent

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.3 grains/dry standard cubic foot if not required to meet the less stringent limit of either Minn. R. 7011.0730 or Minn. R. 7011.0735. Applies to each emissions unit individually.	Minn. R. 7011.0715, subp. 1(A)
Opacity: less than or equal to 20 percent opacity . Applies to each emission unit individually.	Minn. R. 7011.0715, subp. 1(B)
OPERATING LIMITS	hdr
Operate and maintain low temperature fabric filters (CE029-CE037) at all times that any emission unit controlled by the fabric filters is in operation in accordance with the requirements of GP007. The Permittee shall document periods of non-operation of the control equipment.	Minn. R. 7007.0800, subp. 2 and 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-20

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 011 Peaking Unit Generators: Pre-PSD (EU041-043)****Associated Items:** EU 041 142GEN001 - Moos Tower

EU 042 142GEN002 - Moos Tower

EU 043 142GEN003 - Moos Tower

<b>What to do</b>	<b>Why to do it</b>
OPERATIONAL LIMITS	hdr
Operating Hours: less than or equal to 300 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month. This limit applies to each unit individually.	Minn. R. 7007.0800, subp. 2
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained. This limit applies to each unit individually.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input . This limit applies to each unit individually.	Minn. R. 7011.2300, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Maintain records of the hours of operation for each calendar month and a record of the 12-month rolling sum of hours of operation.	Minn. R. 7007.0800, subp. 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 012 Peaking Unit Generators: Annual Limits to Avoid PSD**

- Associated Items:**
- EU 044 144GEN003 - Phillips-Wang Bldg
  - EU 046 158GEN002 - Washington Ave Ramp
  - EU 047 165GEN001 - EE/Comp Sci Bldg
  - EU 048 178GEN001 - Basic Science
  - EU 049 178GEN002 - Basic Science
  - EU 050 160GEN002 - 4th Street Switch
  - EU 051 160GEN003 - 4th Street Switch
  - EU 145 144GEN002 - Phillips-Wang Bldg

What to do	Why to do it
OPERATIONAL LIMITS	hdr
Operating Hours: less than or equal to 300 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month. This limit applies to each unit individually.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained. This limit applies to each unit individually.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input . This limit applies to each unit individually.	Minn. R. 7011.2300, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Maintain records of the hours of operation for each calendar month and a record of the 12-month rolling sum of hours of operation.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Fuel Oil Sulfur Content Certification: Obtain and maintain at the facility fuel receipts from the fuel supplier which certify the sulfur content of the fuel does not exceed 0.5% by weight. Records shall be maintained for 5 years.	Minn. R. 7007.0800, subps. 4 & 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 013 Emergency Generators: Part of Netting**

- Associated Items:**
- EU 054 172GEN001 - RR Weis Art Museum
  - EU 055 335GEN001 - Aquaculture
  - EU 060 050GEN001 - Williams Arena
  - EU 061 174GEN001 - Lions Research Center
  - EU 062 176GEN001 - Hockey Arena
  - EU 063 177GEN001 - IWMF
  - EU 064 180GEN001 - Magnetic Resonance Facility
  - EU 065 208GEN001 - Middlebrook Hall
  - EU 066 217GEN001 - 19th Ave Parking Ramp
  - EU 067 249GEN001 - Carlson School
  - EU 142 143GEN002 - Cancer Center

<b>What to do</b>	<b>Why to do it</b>
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained. This limit applies to each unit individually.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input . This limit applies to each unit individually.	Minn. R. 7011.2300, subp. 2
OPERATING CONDITIONS	hdr
Fuel type: Natural gas/propane/No. 2 fuel oil only. Use a fuel type limit if you are basing compliance with the SO2 standards on the sulfur content of the fuel.	Minn. R. 7005.0100, subp. 35a
Operating Hours: less than or equal to 300 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month. Applies to each unit individually.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S; Minn. R. 7007.0800, subp. 5
RECORDINGKEEPING REQUIREMENTS	hdr
Fuel Oil Sulfur Content Certification: Obtain and maintain at the facility fuel receipts from the fuel supplier which certify the sulfur content of the fuel does not exceed 0.5% by weight. Records shall be maintained for 5 years.	Minn. R. 7007.0800, subps. 4 & 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 014 Boilers: Part of Netting**

- Associated Items:** EU 056 180-BO-002 - Magnetic Resonance Boiler  
 EU 057 180-BO-003 - Magnetic Resonance Boiler  
 EU 058 478-BO-001 - Ag Chemical Building  
 EU 059 478-BO-002 - Ag Chemical Building  
 EU 068 180-BO-001 - Magnetic Resonance Boiler  
 EU 069 177-BO-001 - IWMF  
 EU 070 177-BO-002 - IWMF  
 EU 071 174-BO-001 - Lions Research Center  
 EU 072 174-BO-002 - Lions Research Center  
 EU 073 174-BO-003 - Lions Research Center

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input . This limit applies to each unit individually.	Minn. R. 7011.0515, subp. 1
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input . This limit applies to each unit individually.	Minn. R. 7011.0515, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity. This limit applies to each unit individually.	Minn. R. 7011.0515, subp. 2
OPERATING CONDITIONS	hdr
Fuel type: Natural gas only	Minn. R. 7005.0100, subp. 35a
Operating Hours: less than or equal to 5840 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month.	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S; Minn. R. 7007.0800, subp. 5
RECORDINGKEEPING REQUIREMENTS	hdr
Maintain records of the hours of operation for each calendar month and a record of the 12-month rolling sum of hours of operation.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: GP 015 Diesel Emergency Generators**

- Associated Items:**
- EU 052 186GEN001 - MCB
  - EU 053 174GEN002 - Translation Research
  - EU 104 042GEN001 - Walter Library
  - EU 105 124GEN001 - East River Ramp
  - EU 106 144GEN001 - Phillips-Wang Bldg
  - EU 107 144GEN002 - Phillips-Wang Bldg
  - EU 108 183GEN001 - East River Ramp
  - EU 109 220GEN001 - Archive
  - EU 110 298GEN001 - MLAC
  - EU 111 436GEN001 - MALG Facility
  - EU 112 439GEN001 - Cargill Building - Microbial & Plant Genomics
  - EU 113 485GEN001 - Plant Growth

What to do	Why to do it
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained. This limit applies to each unit individually.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input . This limit applies to each unit individually.	Minn. R. 7011.2300, subp. 2
OPERATING CONDITIONS	hdr
Fuel type: Natural gas//No. 2 fuel oil only. Use a fuel type limit if you are basing compliance with the SO2 standards on the sulfur content of the fuel.	Minn. R. 7005.0100, subp. 35a
Hours of Operation: The Permittee shall maintain documentation on site that the unit is an emergency generator by design that qualifies under the U.S. EPA memorandum entitled "Calculating Potential to Emit (PTE) for Emergency Generators" dated September 6, 1995, limiting operation to 500 hours per year.	Minn. R. 7007.0800, subp. 4 & 5
RECORDINGKEEPING REQUIREMENTS	hdr
Fuel Oil Sulfur Content Certification: Obtain and maintain at the facility fuel receipts from the fuel supplier which certify the sulfur content of the fuel does not exceed 0.5% by weight. Records shall be maintained for 5 years.	Minn. R. 7007.0800, subps. 4 & 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** SV 001 SG201 - CFB Boiler

**Associated Items:** EU 001 SG201 - Circulating Fluidized Bed Boiler

GP 001 New and modified boilers (annual limits to avoid mod)

GP 003 Db Boilers - General and CEMS/COMS requirements

What to do	Why to do it
EMISSION LIMITS	6hdr
Carbon Monoxide: less than or equal to 0.267 lbs/million Btu heat input and less than or equal to 70.75 lb/hr as a 1-hr average. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
Sulfur Dioxide: less than or equal to 0.38 lbs/million Btu heat input and less than or equal to 96.1 lb/hr as determined by a CEMS as a 1-hour average when combusting coal. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020
Nitrogen Oxides: less than or equal to 0.222 lbs/million Btu heat input and less than or equal to 58.96 lb/hr as determined by a CEMS as a 30-day rolling average. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020
PERFORMANCE TESTING	hdr
Performance Test: due before end of each calendar 60 months starting 08/21/2003 (next test on or before 8/21/08) to verify emission factors for PM, PM10, CO and VOC emissions within GP001. Also, to verify compliance with CO limit set within SV001.	Minn. R. 7017.2020, subp. 1
PERFORMANCE TESTING - OAT HULLS	hdr
Oat Hull Performance Test: due 60 days after achieving the maximum oat hull firing rate, but no later than 180 days after initial startup of the biomass truck unloading station, biomass storage silo, and biomass transfer system to measure CO, PM, PM10, VOC, HCl, and hexane emissions, to monitor NOx and SO2 emissions, and to determine fuel chlorine content for calculating HCl control efficiency.	Minn. R. 7017.2020, subp. 1
Oat Hull Performance Test Notification and Submittals; Performance Test Notification (written): due 30 days before Performance Test Performance Test Plan: due 30 days before Performance Test Performance Test Pre-Test Meeting: due 7 day before Performance Test Performance Test Report: due 45 days after Performance Test Performance Test Report - Microfiche Copy or CD: due 105 days after Performance Test. The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.	Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018 and Minn. R. 7017.2035, subp. 1-2
Revised PSD Analysis based on Oat Hull Performance Test: Within 60 days of submitting the Oat Hull Performance Test Report, the Permittee shall perform a revised PSD analysis based on the results of the performance test. If the results of the analysis continue to demonstrate that projected actual emission do not exceed baseline actual emissions for any regulated NSR pollutant by a significant amount, the Permittee may burn oat hulls up to the tested rate and shall maintain records of the revised PSD analysis. If the results of the analysis demonstrate that a significant emissions increase would occur, the Permittee may not operate the biomass truck unloading station, biomass storage silo, and biomass transfer system without obtaining a permit amendment in compliance with Minn. R. 7007.1150 through Minn. R. 7007.1500.	Title I Condition: Limit to avoid major modification under 40 CFR Section 52.21; Minn. R. 7007.1150 through Minn. R. 7007.1500
ALTERNATIVE BOIMASS FUEL TESTING AND SUBMITTALS	hdr
Alternative Biomass Fuel Testing Authorization: The Permittee is authorized to conduct test burns of the following alternative biomass fuels: agricultural crops; herbs, nuts, by-products or waste; vegetable oils, by-products or waste; crop field residue or field processing by-products; shells, husks, seed, dust, screenings and other agricultural by-products; cultivated grasses or grass by-products; wood, wood waste including wood processing by-products; and leaves. Acceptable biomass fuels do not include peat, wood that has been painted, stained or pressure treated, waste oil, farm chemicals, pesticide containers, demolition waste except for wood, waste from farms from an open dump, tire derived fuels, non-agricultural industrial process wastes, animal manures and wastes, or any material meeting the definition of a hazardous waste.	Minn R. 7007.0800, subp. 2
Alternative Biomass Fuel Testing Restrictions: Test burns for any potential biomass fuel shall be limited to 4,000 tons, no more than 45 days of operation using the fuel, and a test period not to exceed 180 days.	Minn R. 7007.0800, subp. 2

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-26

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

Alternative Biomass Fuel Testing Requirements: Test burns shall be conducted to measure CO, PM, PM10, VOC, HCl, and hexane emissions, to monitor NOx and SO2 emissions, and to determine fuel chlorine content for calculating HCl control efficiency.	Minn R. 7007.0800, subp. 2
Alternative Biomass Fuel Testing Submittals: 30 days prior to testing of a biomass fuel, the Permittee shall submit a written performance test notification and test plan. The test plan shall meet the requirements of Minn. R. 7017.2030 and shall also include the type(s) and estimated amount of biomass to be tested, 2) operating parameters and anticipated fuel mixes during testing for the boiler to be tested, 3) air pollutants that will be monitored and measured during testing, and 4) a testing schedule.	Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018
Alternative Biomass Fuel Testing Notification and Submittals; Pre-Test Meeting: due 7 day before Performance Test Test Report: due 45 days after Performance Test Test Report - Microfiche Copy or CD: due 105 days after Performance Test. The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.	Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018 and Minn. R. 7017.2035, subp. 1-2

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: SV 002 SG202/SG203 - Med/High Pressure Package Boilers**

**Associated Items:** EU 002 SG202 - Medium Pressure Package Boiler

EU 003 SG203 - High Pressure Package Boiler

GP 001 New and modified boilers (annual limits to avoid mod)

GP 003 Db Boilers - General and CEMS/COMS requirements

What to do	Why to do it
EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 267.6 lbs/hour using 3-hour Block Average as determined by fuel oil vendor certification. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act. This limit applies to simultaneous operation of boilers EU002 and EU003.	Minn. R. 7009.0020
Nitrogen Oxides: less than or equal to 0.140 lbs/million Btu heat input using 30-day Rolling Average for simultaneous operation of both boilers and less than or equal to 35.24 lb/hr for EU002 and less than or equal to 37.51 lb/hr for EU003 for all fuels and fuel combinations as determined by CEMS (NOx CEMS required under EU002 and EU003).	Minn. R. 7009.0020; most stringent limit, meets requirements of 40 CFR Section 60.44b(a)
Carbon Monoxide: less than or equal to 0.040 lbs/million Btu heat input using 1-Hour Average for simultaneous operation of both boilers and less than or equal to 10.07 lb/hr for EU002 and less than or equal to 10.71 lb/hr for EU003 for all fuels and fuel combinations. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020
PERFORMANCE TESTING/TESTING FREQUENCY	hdr
Performance Test: due before end of each calendar 60 months starting 02/03/2004 (on or before 2/3/09) to verify compliance with hourly CO limit for EU002.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 60 months starting 02/04/2004 (on or before 2/4/09) to verify compliance with hourly CO limit for EU003.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 60 months starting 02/03/2004 (on or before 02/03/09) for CO, VOC, PM and PM10 to verify emission factors within GP001 for EU002.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 60 months starting 02/04/2004 (on or before 2/4/09) for CO, VOC, PM and PM10 to verify emission factors within GP001 for EU003.	Minn. R. 7017.2020, subp. 1
OTHER REQUIREMENTS	hdr
Compliance with Sulfur Dioxide limit: See requirements under GP001, EU002 and EU003 that address retaining fuel oil receipts, natural gas emission factors, daily records of fuel type usage and calculation methods.	Recordkeeping for Minn. R. 7009.0020

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** SV 003 SE3 - Pulverized Coal Boiler

**Associated Items:** EU 004 SE3 - Pulverized Coal Boiler

GP 001 New and modified boilers (annual limits to avoid mod)

GP 005 CEMS req'd by state rule: SE Plant Boilers SE3 and SE4

GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers

What to do	Why to do it
EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 0.34 lbs/million Btu heat input and less than or equal to 56.78 lb/hr, as a 1-hr average when combusting coal or No. 2 fuel oil or both as determined by CEMS. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020
Nitrogen Oxides: less than or equal to 1.176 lbs/million Btu heat input and less than or equal to 198.74 lb/hr. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
Carbon Monoxide: less than or equal to 0.030 lbs/million Btu heat input and less than or equal to 5.75 lb/hr. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
PERFORMANCE TESTING	hdr
Performance Test: due before end of each calendar 60 months starting 01/26/2005 (next test on or before 1/26/10) to verify emission factors for PM, PM10, NOx, CO and VOC within GP001.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: SV 004 SE4 - Spreader Stoker Boiler**

**Associated Items:** EU 005 SE4 - Spreader Stoker Boiler

GP 001 New and modified boilers (annual limits to avoid mod)

GP 005 CEMS req'd by state rule: SE Plant Boilers SE3 and SE4

GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers

<b>What to do</b>	<b>Why to do it</b>
EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 0.34 lbs/million Btu heat input and less than or equal to 62.83 lb/hr, as a 1-hr average when combusting coal or No. 2 fuel oil or both with or without approved biomass as determined by CEMS. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	*Minn. R. 7009.0020
Nitrogen Oxides: less than or equal to 0.78 lbs/million Btu heat input and less than or equal to 146.61 lb/hr. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
Carbon Monoxide: less than or equal to 0.28 lbs/million Btu heat input and less than or equal to 52.34 lb/hr. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
PERFORMANCE TESTING	hdr
Performance Test: due before end of each calendar 60 months starting 11/16/2004 (next test on or before 11/16/09 to verify emission factors for PM, PM10, NOx, and VOC within GP001.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 60 months starting 11/25/2003 (next test on or before 11/25/08) to verify emission factors for CO within GP001.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** SV 005 SG231 - Med. pressure package boiler (new St. Paul boiler)

**Associated Items:** EU 006 SG231 - Medium Pressure Package Boiler (new St. Paul boiler)

GP 001 New and modified boilers (annual limits to avoid mod)

GP 003 Db Boilers - General and CEMS/COMS requirements

What to do	Why to do it
EMISSION LIMITS	hdr
Nitrogen Oxides: less than or equal to 0.140 lbs/million Btu heat input and less than or equal to 37.95 lb/hr as determined by CEMS as a 30-day rolling average.	Minn. R. 7009.0020; most stringent limit, meets requirements of 40 CFR Section 60.44b(a); Minn. R. 7011.0565
Carbon Monoxide: less than or equal to 0.040 lbs/million Btu heat input and less than or equal to 10.86 lb/hr. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
PERFORMANCE TESTING	hdr
Performance Test: due before end of each calendar 60 months starting 04/08/2004 (next test on or before 4/8/09) to verify emission factors for PM, PM10, CO and VOC emissions within GP001.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: SV 006 SP1/SP2/SP5/SP6 Pulverized coal and spreader stoker boilers**

**Associated Items:** EU 007 SP1 - Pulverized Coal Boiler

EU 008 SP2 - Pulverized Coal Boiler

EU 009 SP5 - Spreader Stoker Boiler

EU 010 SP6 - Spreader Stoker Boiler

GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers

What to do	Why to do it
EMISSION LIMITS	hdr
Particulate Matter less than 10 microns - Ambient Air Impact Analysis based on Performance Test: If the Performance Test demonstrates an emission rate greater than either 0.1 lb/MMBtu or 25.8 lb/hr PM10 for all boilers operating simultaneously, the Permittees shall submit a protocol for an ambient air impact dispersion model using the measured emission rate. The protocol shall be submitted by 60 days after the last performance test reports for SV006 has been received and accepted by the MPCA. The results of the dispersion model using the measured emission rate shall be submitted as specified in the protocol as approved by the MPCA. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020
Nitrogen Oxides: less than or equal to 0.63 lbs/million Btu heat input and less than or equal to 162.56 lb/hr when emission units EU007, EU008, EU009, and EU010 are all operating at the maximum continuous rating; less than or equal to 0.808 lb/MMBtu when only EU007 and/or EU008 are operating; less than or equal to 0.538 lb/MMBtu when only EU009 and/or EU010 are operating. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020
Sulfur Dioxide: less than or equal to 1.15 lbs/million Btu heat input and less than or equal to 297.48 lb/hr as determined by fuel sampling and analysis. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020; most stringent, meets limits set by Minn. R. 7011.0510, subp. 1
Carbon Monoxide: less than or equal to 0.14 lbs/million Btu heat input and less than or equal to 36.2 lb/hr when all 4 boilers are operating; less than or equal to 0.04 lb/MMBtu when only EU007 and/or EU008 are operating; less than or equal to 0.192 lb/MMBtu when only EU009 and/or EU010 are operating. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020
OPERATIONAL LIMITS	hdr
Opacity CEMS: Maintain and operate a Continuous Opacity Monitoring System (COMS).	Minn. R. 7017.1000, subp. 1
Sulfur Dioxide: See EU007, EU008, EU009, EU010 for required coal sampling and analysis requirement.	Minn. R. 7009.0020; Minn. R. 7017.0200
PERFORMANCE TESTING	hdr
Performance Test: due before end of each calendar 60 months starting 01/15/2002 (next test on or before 1/15/07) for PM10 (to verify emission factor used in modeling analysis), NOx and CO for EU007.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 36 months starting 12/04/2003 (next test on or before 12/04/06) for NOx and CO for EU008.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 60 months starting 12/04/2003 (next test on or before 12/04/08) for PM10 (to verify emission factor used in modeling analysis) for EU008.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 36 months starting 01/16/2002 (next test on or before 1/16/07) for PM10 (to verify emission factor used in modeling analysis) for EU009.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 36 months starting 12/01/2004 (next test on or before 12/1/07) for NOx for EU009.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 60 months starting 12/03/2003 (next test on or before 12/3/08) for CO for EU009.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 36 months starting 12/02/2003 (next test on or before 12/02/06) for NOx for EU010.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-32

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

Performance Test: due before end of each calendar 60 months starting 01/17/2002 (next test on or before 1/17/07) for PM10 (to verify emission factor used in modeling analysis) for EU010.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 60 months starting 12/02/2003 (next test on or before 12/02/08) for CO for EU010.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** SV 007 SP7 - Oil/Gas Package Boiler

**Associated Items:** EU 011 SP7 - Oil/Gas Package Boiler

GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers

What to do	Why to do it
EMISSION LIMITS	hdr
Particulate Matter less than 10 microns - Ambient Air Impact Analysis based on Performance Test: If the Performance Test demonstrates an emission rate greater than either 0.056 lb/MMBtu or 5.54 lb/hr PM10, the Permittees shall submit a protocol for an ambient air impact dispersion model using the measured emission rate. The protocol shall be submitted by 60 days after the last performance test reports for SV007 has been received and accepted by the MPCA. The results of the dispersion model using the measured emission rate shall be submitted as specified in the protocol as approved by the MPCA. This is a state-only requirement and is not enforceable by the EPA Administrator and citizens under the Clean Air Act.	Minn. R. 7009.0020
Nitrogen Oxides: less than or equal to 0.140 lbs/million Btu heat input and less than or equal to 13.86 lb/hr. This is a state-only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
Carbon Monoxide: less than or equal to 0.04 lbs/million Btu heat input and less than or equal to 3.56 lb/hr. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Minn. R. 7009.0020
PERFORMANCE TESTING	hdr
Performance Test: due before end of each calendar 60 months starting 12/05/2003 (next test on or before 12/5/08) for PM10 and CO emissions.	Minn. R. 7017.2020, subp. 1
Performance Test: due before end of each calendar 36 months starting 12/05/2005 (next test on or before 12/5/08) for NOx emissions.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 001 SG201 - Circulating Fluidized Bed Boiler**

**Associated Items:** CE 001 Fabric Filter - High Temperature, i.e., T>250 Degrees F

CE 020 Dry Limestone Injection

GP 001 New and modified boilers (annual limits to avoid mod)

GP 002 All steam service facilities steam boilers (HAP and heat input limits)

GP 003 Db Boilers - General and CEMS/COMS requirements

GP 008 Boilers subject to coal sampling and analysis

SV 001 SG201 - CFB Boiler

What to do	Why to do it
SULFUR DIOXIDE	hdr
<p>Sulfur Dioxide: less than or equal to 10% of the potential sulfur dioxide emission rate according to the following formula:</p> $Es = (KaHa + KbHb)/(Ha+Hb)$ <p>where:                      Es = sulfur dioxide emission limit, in lb/million Btu heat input                      Ka = 1.2 lb/million Btu                      Kb = 0.80 lb/million Btu                      Ha = heat input from the combustion of coal (million Btu)                      Hb = heat input from the combustion of oil (million Btu)</p>	40 CFR Section 60.42b(a); Minn. R. 7011.0565
Annual Capacity Factor for Fuels Other Than Coal: greater than 10%. Annual Capacity Factor shall be calculated as defined in 40 CFR pt. 60, subp. Db.	40 CFR Section 60.43b(a)(2) and 40 CFR Section 60.41b; Minn. R. 7011.0565
Fuel oil sulfur limits and/or percent reduction requirements under this section are determined on a 30-day rolling average.	40 CFR Section 60.42b(e); Minn. R. 7011.0565
Sulfur Dioxide: The Sulfur Dioxide emission limits and percent reduction requirements apply at all times, including periods of startup, shutdown and malfunction, except that percent reduction requirements do not apply when only very low sulfur fuel oil or natural gas is combusted, and further, except that the percent reduction requirement does not apply during startup, shutdown, or malfunction when the fluidized bed temperature is below normal operating level.	40 CFR Section 60.42b(g) and 40 CFR Section 60.42b(j); Minn. R. 7011.0565
Sulfur Dioxide: The Permittee shall obtain and maintain at the facility fuel receipts from the fuel supplier which certify that the fuel oil contains less than or equal to 0.5% sulfur by weight.	40 CFR Section 60.49b(r); Minn. R. 7011.0565
Sulfur Dioxide Monitoring: Determine the average SO2 emissions and percent reduction by collecting coal/biomass samples in as as-fired condition at the inlet to the steam generating unit and analyzing them for sulfur and heating value according to Method 19 and the procedure specified within GP008 and measuring SO2 in stack SV001 by the SO2 CEMS.	40 CFR Section 60.47b(b); Minn. R. 7011.0565
PARTICULATE MATTER	hdr
Total Particulate Matter: less than or equal to 0.10 lbs/million Btu heat input for all fuels and fuel combinations.	40 CFR Section 60.43b(a)(2); Minn. R. 7011.0565
Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one 6-minute period per hour of not more than 27 opacity.	40 CFR Section 60.43b(f); Minn. R. 7011.0565
Opacity Compliance: Demonstrate compliance with opacity standards using COMS data results.	40 CFR Section 60.11(e)(5); Minn. R. 7017.2015, subp. 2(B); Minn. R. 7011.0565
The PM and opacity standards apply at all times, except during periods of startup, shutdown or malfunction.	40 CFR Section 60.43b(g); Minn. R. 7011.0565
NITROGEN OXIDES	hdr
Nitrogen Oxides: less than or equal to 0.200 lbs/million Btu heat input using 30-day Rolling Average (which is equivalent to 53.06 lb/hr at manufacturer's rated capacity) when combusting only natural gas or only fuel oil.	40 CFR Section 60.44b(a)(1); 40 CFR Section 60.44b(a)(2); Minn. R. 7011.0565

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>Nitrogen Oxides: less than or equal to the amount allowed by the following formula when the facility simultaneously combusts coal, oil and/or natural gas or if the facility simultaneously combusts coal or oil, or a mixture of these fuels with natural gas and approved biomass:</p> $E_n = [(EL_{go} \times H_{go}) + (EL_c \times H_c)] / (H_{go} + H_c)$ <p>where:</p> <p><math>E_n</math> = the NO<sub>x</sub> emission limit in lb/MMBtu  <math>EL_{go}</math> = the emission limit for natural gas or fuel oil, lb/MMBtu  <math>H_{go}</math> = the total heat input from natural gas or fuel oil, MMBtu/hr  <math>EL_c</math> = the emission limit for coal in lb/MMBtu  <math>H_c</math> = the total heat input from coal, MMBtu/hr</p>	<p>40 CFR Section 60.44b(b); 40 CFR Section 60.44b(c); Minn. R. 7011.0565</p>
<p>Nitrogen Oxides: The nitrogen oxides standards apply at all times including periods of startup, shutdown and malfunction.</p>	<p>40 CFR Section 60.44b(h); Minn. R. 7011.0565</p>
<p>Nitrogen Oxides: emission rate shall be determined by the NO<sub>x</sub> CEMS as a 30-day rolling average.</p>	<p>40 CFR Section 60.43b(i); Minn. R. 7011.0565</p>
<p><b>OPERATIONAL LIMITS</b></p>	<p>hdr</p>
<p>Startup Fuel: Natural gas only except that No. 2 fuel oil may be used when natural gas is curtailed. No. 2 fuel oil may be used up to 15% of the maximum heat input (40 MMBtu/hr) for startup only.</p>	<p>Minn. R. 7009.0020</p>
<p>Fuel type: Bituminous and Subbituminous Coal, approved biomass, approved biomass mixed with coal, approved biomass mixed with natural gas, and natural gas. No. 2 fuel oil for startup only as stated above.</p>	<p>Minn. R. 7005.0100, subp. 35a</p>
<p>Approved Biomass: Approved biomass includes wood (as limited below) and oat hulls. Alternative biomass may be fired during test burns in compliance with all permit conditions.</p>	<p>Title I Condition: Limit to avoid major modification under 40 CFR Section 52.21</p>
<p>Treated wood and wood waste materials prohibited as fuel: No wood or wood waste which meets the definition of hazardous waste may be used as fuel.</p>	<p>Minn. R. 7007.0800, subp. 2</p>
<p>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.</p>	<p>40 CFR Section 60.12; Minn. R. 7011.0050</p>
<p><b>PERFORMANCE TESTING</b></p>	<p>hdr</p>
<p>See SV001 requirements.</p>	<p>Minn. R. 7017.2020, subp. 1</p>
<p><b>CEMS REQUIREMENTS</b></p>	<p>hdr</p>
<p>Opacity CEMS: The owner or operator shall install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS). Subpart Db COMS requirements are contained in GP003 of the permit.</p>	<p>40 CFR Section 60.48b(a)</p>
<p>Sulfur Dioxide CEMS: The Permittee shall install, calibrate, maintain and operate continuous emission monitoring systems (CEMS) for measuring SO<sub>2</sub> concentrations and either Oxygen (2) or Carbon Dioxide (CO<sub>2</sub>) concentrations. Subp. Db CEMS requirements are contained in GP003 of this permit.</p>	<p>40 CFR Section 60.47b(a)</p>
<p>Nitrogen Oxide CEMS: The Permittee shall install, calibrate, maintain and operate a continuous monitoring system for measuring NO<sub>x</sub>. Subpart Db CEMS requirements are contained in GP003 of this permit.</p>	<p>40 CFR Section 60.48b(b)</p>
<p><b>POLLUTION CONTROL EQUIPMENT</b></p>	<p>hdr</p>
<p>Operate the associated baghouse fabric filter (CE001) whenever unit is operational according to the requirements in CE001.</p>	<p>Minn. R. 7007.0800, subp. 2 and 14</p>
<p><b>RECORDKEEPING</b></p>	<p>hdr</p>
<p>Recordkeeping: For each emission unit, maintain records of the type and amount of fuel combusted each day; calculate the annual capacity factor for each fuel for each calendar quarter.</p>	<p>40 CFR Section 60.49b(d); Minn. R. 7011.0565</p>
<p>Recordkeeping: Maintain a file of all measurements, maintenance, reports and records for at least five years.</p>	<p>40 CFR Section 60.7(f); Minn. R. 7019.0100, subp. 1</p>
<p>Records of Startup, Shutdown, or Malfunction: Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.</p>	<p>40 CFR Section 60.7(b); Minn. R. 7019.0100, subp. 1</p>
<p><b>NOTIFICATIONS</b></p>	<p>hdr</p>
<p>Notification of Anticipated Date for Conducting Opacity Observations: due 30 day prior to observation date</p>	<p>40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>Notification of any physical or operational change which increases emission rate: due 60 days (or as soon as practical) before the change is commenced, unless specifically exempted under an applicable subpart or in section 60.14(e).</p>	<p>40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1</p>
<p>OAT HULL INFORMATION</p>	<p>hdr</p>
<p>Oat Hull Performance Test: due 60 days after achieving the maximum oat hull firing rate, but no later than 180 days after initial startup of the biomass truck unloading station, biomass storage silo, and biomass transfer system to measure CO, PM, PM10, VOC, HCl, and hexane emissions, to monitor NOx and SO2 emissions, and to determine fuel chlorine content for calculating HCl control efficiency.</p>	<p>Minn. R. 7017.2020, subp. 1</p>
<p>Oat Hull Performance Test Notification and Submittals;                  Performance Test Notification (written): due 30 days before Performance Test                  Performance Test Plan: due 30 days before Performance Test                  Performance Test Pre-Test Meeting: due 7 day before Performance Test                  Performance Test Report: due 45 days after Performance Test                  Performance Test Report - Microfiche Copy or CD: due 105 days after Performance Test.                  The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.</p>	<p>Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018 and Minn. R. 7017.2035, subp. 1-2</p>
<p>Revised PSD Analysis based on Oat Hull Performance Test: Within 60 days of submitting the Oat Hull Performance Test Report, the Permittee shall perform a revised PSD analysis based on the results of the performance test. If the results of the analysis continue to demonstrate that projected actual emission do not exceed baseline actual emissions for any regulated NSR pollutant by a significant amount, the Permittee may burn oat hulls up to the tested rate and shall maintain records of the revised PSD analysis. If the results of the analysis demonstrate that a significant emissions increase would occur, the Permittee may not operate the biomass truck unloading station, biomass storage silo, and biomass transfer system without obtaining a permit amendment in compliance with Minn. R. 7007.1150 through Minn. R. 7007.1500.</p>	<p>Title I Condition: Limit to avoid major modification under 40 CFR Section 52.21; Minn. R. 7007.1150 through Minn. R. 7007.1500</p>
<p>Alternative Biomass Fuel Testing Authorization: The Permittee is authorized to conduct test burns of the following alternative biomass fuels: agricultural crops; herbs, nuts, by-products or waste; vegetable oils, by-products or waste; crop field residue or field processing by-products; shells, husks, seed, dust, screenings and other agricultural by-products; cultivated grasses or grass by-products; wood, wood waste including wood processing by-products; and leaves. Acceptable biomass fuels do not include peat, wood that has been painted, stained or pressure treated, waste oil, farm chemicals, pesticide containers, demolition waste except for wood, waste from farms from an open dump, tire derived fuels, non-agricultural industrial process wastes, animal manures and wastes, or any material meeting the definition of a hazardous waste.</p>	<p>Minn R. 7007.0800, subp. 2</p>
<p>Alternative Biomass Fuel Testing Restrictions: Test burns for any potential biomass fuel shall be limited to 4,000 tons, no more than 45 days of operation using the fuel, and a test period not to exceed 180 days.</p>	<p>Minn R. 7007.0800, subp. 2</p>
<p>Alternative Biomass Fuel Testing Requirements: Test burns shall be conducted to measure CO, PM, PM10, VOC, HCl, and hexane emissions, to monitor NOx and SO2 emissions, and to determine fuel chlorine content for calculating HCl control efficiency.</p>	<p>Minn R. 7007.0800, subp. 2</p>
<p>Alternative Biomass Fuel Testing Submittals: 30 days prior to testing of a biomass fuel, the Permittee shall submit a written performance test notification and test plan. The test plan shall meet the requirements of Minn. R. 7017.2030 and shall also include the type(s) and estimated amount of biomass to be tested, 2) operating parameters and anticipated fuel mixes during testing for the boiler to be tested, 3) air pollutants that will be monitored and measured during testing, and 4) a testing schedule.</p>	<p>Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018</p>
<p>Alternative Biomass Fuel Testing Notification and Submittals;                  Pre-Test Meeting: due 7 day before Performance Test                  Test Report: due 45 days after Performance Test                  Test Report - Microfiche Copy or CD: due 105 days after Performance Test.                  The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.</p>	<p>Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018 and Minn. R. 7017.2035, subp. 1-2</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 002 SG202 - Medium Pressure Package Boiler**

- Associated Items:** GP 001 New and modified boilers (annual limits to avoid mod)  
 GP 002 All steam service facilities steam boilers (HAP and heat input limits)  
 GP 003 Db Boilers - General and CEMS/COMS requirements  
 SV 002 SG202/SG203 - Med/High Pressure Package Boilers

What to do	Why to do it
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one 6-minute period per hour of not more than 27 opacity.	40 CFR Section 60.43b(f)
Nitrogen Oxides: less than or equal to 0.20 lbs/million Btu heat input using 30-day Rolling Average as determined by CEMS. Please note the NOx limit at SV002 for EU002 and EU003 which is more restrictive.	40 CFR Section 60.44b(a); Minn. R. 7011.0565
OPERATIONAL LIMITS	hdr
Fuel type: Natural gas or No. 2 fuel oil only.	Minn. R. 7005.0100, subp. 35a
Sulfur Dioxide: less than or equal to 0.5 percent by weight sulfur in fuel oil; percent reduction requirement of 40 CFR Section 60.42b(a) does not apply to this emission unit.	40 CFR Section 60.42b(j); most stringent, meets limit set by 40 CFR Section 60.42b(a) for fuel oil
Sulfur Dioxide: The Permittee shall obtain and maintain at the facility fuel receipts from the fuel supplier for each shipment which certify that the fuel oil contains less than or equal to 0.5% sulfur by weight.	40 CFR Section 60.49b(r); Minn. R. 7011.0565
The opacity standards apply at all times, except during periods of startup, shutdown or malfunction.	40 CFR Section 60.43b(g)
Opacity CEMS: The owner or operator shall install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS).	40 CFR Section 60.48b(a)
Opacity Compliance: Demonstrate compliance with opacity standards using COMS data results.	40 CFR Section 60.11(e)(5); Minn. R. 7017.2015, subp. 2(B)
Nitrogen Oxides CEMS: The owner or operator shall install, calibrate, maintain, and operate a continuous monitoring system for NOx.	40 CFR Section 60.48b(b)
Nitrogen Oxides: The NOx standards apply at all times including periods of startup, shutdown, and malfunction.	40 CFR Section 60.44b(h)
Nitrogen Oxides: emission rate shall be determined by the NOx CEMS as a 30-day rolling average.	40 CFR Section 60.43b(i); Minn. R. 7011.0565
RECORDKEEPING	hdr
Recordkeeping: For each emission unit, maintain records of the type and amount of fuel combusted each day; calculate the annual capacity factor for each fuel for each calendar quarter.	40 CFR Section 60.49b(d); Minn. R. 7011.0565
Records of Startup, Shutdown, or Malfunction: Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.	40 CFR Section 60.7(b); 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); Minn. R. 7019.0100, subp. 1
NOTIFICATIONS	hdr
Notification of Anticipated Date for Conducting Opacity Observations: due 30 days prior to observation date	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1
Notification of any physical or operational change which increases emission rate: due 60 days (or as soon as practical) before the change is commenced, unless specifically exempted under an applicable subpart or in section 60.14(e).	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1
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.	40 CFR Section 60.12; Minn. R. 7011.0050
PERFORMANCE TESTING	hdr
See SV002 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 003 SG203 - High Pressure Package Boiler

**Associated Items:** GP 001 New and modified boilers (annual limits to avoid mod)

GP 002 All steam service facilities steam boilers (HAP and heat input limits)

GP 003 Db Boilers - General and CEMS/COMS requirements

SV 002 SG202/SG203 - Med/High Pressure Package Boilers

What to do	Why to do it
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one 6-minute period per hour of not more than 27 opacity.	40 CFR Section 60.43b(f)
Nitrogen Oxides: less than or equal to 0.20 lbs/million Btu heat input using 30-day Rolling Average as determined by CEMS. Please note the NOx limit at SV002 for EU002 and EU003 which is more restrictive.	40 CFR Section 60.44b(a); Minn. R. 7011.0565
OPERATIONAL LIMITS	hdr
Fuel type: Natural gas and No. 2 fuel oil only.	Minn. R. 7005.0100, subp. 35a
Sulfur Dioxide: less than or equal to 0.5 percent by weight sulfur in fuel oil; percent reduction requirement of 40 CFR Section 60.42b(a) does not apply to this emission unit.	40 CFR Section 60.42b(j); most stringent, meets limit set by 40 CFR Section 60.42b(a) for fuel oil
Sulfur Dioxide: The Permittee shall obtain and maintain at the facility fuel receipts from the fuel supplier for each shipment which certify that the fuel oil contains less than or equal to 0.5% sulfur by weight.	40 CFR Section 60.49b(r); Minn. R. 7011.0565
The opacity standards apply at all times, except during periods of startup, shutdown or malfunction.	40 CFR Section 60.43b(g)
Opacity CEMS: The owner or operator shall install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS).	40 CFR Section 60.48b(a)
Opacity Compliance: Demonstrate compliance with opacity standards using COMS data results.	40 CFR Section 60.11(e)(5); Minn. R. 7017.2015, subp. 2(B)
Nitrogen Oxides CEMS: The owner or operator shall install, calibrate, maintain, and operate a continuous monitoring system for NOx.	40 CFR Section 60.48b(b)
Nitrogen Oxides: The NOx standards apply at all times including periods of startup, shutdown, and malfunction.	40 CFR Section 60.44b(h)
Nitrogen Oxides: emission rate shall be determined by the NOx CEMS as a 30-day rolling average.	40 CFR Section 60.43b(i); Minn. R. 7011.0565
RECORDKEEPING	hdr
Recordkeeping: For each emission unit, maintain records of the type and amount of fuel combusted each day; calculate the annual capacity factor for each fuel for each calendar quarter.	40 CFR Section 60.49b(d); Minn. R. 7011.0565
Records of Startup, Shutdown, or Malfunction: Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.	40 CFR Section 60.7(b); 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); Minn. R. 7019.0100, subp. 1
NOTIFICATIONS	hdr
Notification of Anticipated Date for Conducting Opacity Observations: due 30 days prior to observation date	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1
Notification of any physical or operational change which increases emission rate: due 60 days (or as soon as practical) before the change is commenced, unless specifically exempted under an applicable subpart or in section 60.14(e).	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1
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.	40 CFR Section 60.12; Minn. R. 7011.0050
PERFORMANCE TESTING	hdr
See SV002 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 004 SE3 - Pulverized Coal Boiler**

- Associated Items:** CE 002 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F  
 CE 003 Gas Scrubber (General, Not Classified)  
 GP 001 New and modified boilers (annual limits to avoid mod)  
 GP 002 All steam service facilities steam boilers (HAP and heat input limits)  
 GP 005 CEMS req'd by state rule: SE Plant Boilers SE3 and SE4  
 GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers  
 GP 008 Boilers subject to coal sampling and analysis  
 SV 003 SE3 - Pulverized Coal Boiler

What to do	Why to do it
EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 3.0 lbs/million Btu heat input when combusting solid fuels only. See next requirement for SO2 limit when simultaneously combusting solid and liquid fuels.	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to the amount allowed by the following formula when the facility simultaneously combusts coal and/or oil:  $Ex = [(ELo \times Ho) + (ELc \times Hc)] / (Ho + Hc)$ where: Es = the SO2 emission limit in lb/MMBtu ELo = the emission limit for fuel oil Ho = the total heat input from fuel oil, MMBtu/hr ELc = the emission limit for coal Hc = the total heat input from coal	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input when combusting liquid fuels only.	Minn. R. 7011.0510, subp. 1
Total Particulate Matter: less than or equal to 0.1 lbs/million Btu heat input	Minn. R. 7007.0800, subp. 2, more stringent than Minn. R. 7011.0510, subp. 1, referencing Minn. R. 7011.0545
Opacity: less than or equal to 20 percent opacity, except for one six-minute period per hour of not more than 33% opacity.	Minn. R. 7007.0800, subp. 2, more stringent than Minn. R. 7011.0510, subp. 1, referencing Minn. R. 7011.0545
OPERATIONAL LIMITS	hdr
Fuel type: Subbituminous and bituminous coal, No. 2 fuel oil and natural gas only.	Minn. R. 7005.0100, subp. 35a
Combustion of EDTA-type boiler cleaning agents is authorized provided the cleaning agents are generated on site and provide less than 5% of heat input to the emission unit per hour.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Opacity CEMS: The owner or operator shall maintain and operate a COMS to measure opacity emissions from the emission unit.	Minn. R. 7017.1006
Sulfur Dioxide CEMS: Maintain and operate CEMS for SO2 and diluent oxygen after the dry scrubber.	Minn. R. 7017.1006
POLLUTION CONTROL EQUIPMENT	hdr
Operate CE002 (med. temp fabric filter) and CE003 (gas scrubber). The Permittee shall operate and maintain the fabric filter and the gas scrubber at all times that any emission unit controlled by the fabric filter and the gas scrubber is in operation in accordance with the requirements of CE002 and CE003, respectively.	Minn. R. 7007.0800, subp. 2 and 14
PERFORMANCE TESTING	hdr
See SV003 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 005 SE4 - Spreader Stoker Boiler**

- Associated Items:** CE 004 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F  
 CE 005 Gas Scrubber (General, Not Classified)  
 GP 001 New and modified boilers (annual limits to avoid mod)  
 GP 002 All steam service facilities steam boilers (HAP and heat input limits)  
 GP 005 CEMS req'd by state rule: SE Plant Boilers SE3 and SE4  
 GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers  
 GP 008 Boilers subject to coal sampling and analysis  
 SV 004 SE4 - Spreader Stoker Boiler

What to do	Why to do it
EMISSION LIMITS	hdr
Sulfur Dioxide: less than or equal to 3.0 lbs/million Btu heat input when combusting solid fuels only. See next requirement for SO2 limit when simultaneously combusting solid and liquid fuels.	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to the amount allowed by the following formula when the facility simultaneously combusts coal and/or oil (with or without approved biomass):  $Ex = [(ELo \times Ho) + (ELc \times Hc)] / (Ho + Hc)$ where: Es = the SO2 emission limit in lb/MMBtu ELo = the emission limit for fuel oil Ho = the total heat input from fuel oil, MMBtu/hr ELc = the emission limit for coal Hc = the total heat input from coal	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input when combusting liquid fuels only.	Minn. R. 7011.0510, subp. 1
Total Particulate Matter: less than or equal to 0.1 lbs/million Btu heat input	Minn. R. 7007.0800, subp. 2, more stringent than Minn. R. 7011.0510, subp. 1, referencing Minn. R. 7011.0545
Opacity: less than or equal to 20 percent opacity, except for one six-minute period per hour of not more than 33% opacity.	Minn. R. 7007.0800, subp. 2, more stringent than Minn. R. 7011.0510, subp. 1, referencing Minn. R. 7011.0545
OPERATIONAL LIMITS	hdr
Fuel type: Subbituminous and Bituminous Coal, No. 2 fuel oil, natural gas and approved biomass mixed with coal only. Approved biomass is defined below.	Minn. R. 7005.0100, subp. 35a
Approved Biomass: Approved biomass includes oat hulls. Alternative biomass may be fired during test burns in compliance with all permit conditions.	*Title I Condition: Limit to avoid major modification under 40 CFR Section 52.21
Combustion of EDTA-type boiler cleaning agents is authorized provided the cleaning agents are generated on site and provide less than 5% of heat input to the emission unit per hour.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Opacity CEMS: The owner or operator shall maintain and operate a COMS to measure opacity emissions from the emission unit.	Minn. R. 7017.1006
Sulfur Dioxide CEMS: Maintain and operate CEMS for SO2 and diluent oxygen after the dry scrubber.	Minn. R. 7017.1006
POLLUTION CONTROL EQUIPMENT	hdr
Operate CE004 (med. temp fabric filter) and CE005 (gas scrubber). The Permittee shall operate and maintain the fabric filter and the gas scrubber at all times that any emission unit controlled by the fabric filter and the gas scrubber is in operation in accordance with the requirements of CE004 and CE005, respectively.	Minn. R. 7007.0800, subp. 2 and 14
PERFORMANCE TESTING	hdr
See SV004 requirements.	Minn. R. 7017.2020, subp. 1
OAT HULL INFORMATION	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<p>Oat Hull Performance Test: due 60 days after achieving the maximum oat hull firing rate, but no later than 180 days after initial startup of the biomass truck unloading station, biomass storage silo, and biomass transfer system to measure CO, PM, PM10, VOC, HCl, and hexane emissions, to monitor NOx and SO2 emissions, and to determine fuel chlorine content for calculating HCl control efficiency.</p>	<p>Minn. R. 7017.2020, subp. 1</p>
<p>Oat Hull Performance Test Notification and Submittals;                  Performance Test Notification (written): due 30 days before Performance Test                  Performance Test Plan: due 30 days before Performance Test                  Performance Test Pre-Test Meeting: due 7 day before Performance Test                  Performance Test Report: due 45 days after Performance Test                  Performance Test Report - Microfiche Copy or CD: due 105 days after Performance Test.                  The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.</p>	<p>Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018 and Minn. R. 7017.2035, subp. 1-2</p>
<p>Revised PSD Analysis based on Oat Hull Performance Test: Within 60 days of submitting the Oat Hull Performance Test Report, the Permittee shall perform a revised PSD analysis based on the results of the performance test. If the results of the analysis continue to demonstrate that projected actual emission do not exceed baseline actual emissions for any regulated NSR pollutant by a significant amount, the Permittee may burn oat hulls up to the tested rate and shall maintain records of the revised PSD analysis. If the results of the analysis demonstrate that a significant emissions increase would occur, the Permittee may not operate the biomass truck unloading station, biomass storage silo, and biomass transfer system without obtaining a permit amendment in compliance with Minn. R. 7007.1150 through Minn. R. 7007.1500.</p>	<p>Title I Condition: Limit to avoid major modification under 40 CFR Section 52.21; Minn. R. 7007.1150 through Minn. R. 7007.1500</p>
<p>Alternative Biomass Fuel Testing Authorization: The Permittee is authorized to conduct test burns of the following alternative biomass fuels: agricultural crops; herbs, nuts, by-products or waste; vegetable oils, by-products or waste; crop field residue or field processing by-products; shells, husks, seed, dust, screenings and other agricultural by-products; cultivated grasses or grass by-products; wood, wood waste including wood processing by-products; and leaves. Acceptable biomass fuels do not include peat, wood that has been painted, stained or pressure treated, waste oil, farm chemicals, pesticide containers, demolition waste except for wood, waste from farms from an open dump, tire derived fuels, non-agricultural industrial process wastes, animal manures and wastes, or any material meeting the definition of a hazardous waste.</p>	<p>Minn R. 7007.0800, subp. 2</p>
<p>Alternative Biomass Fuel Testing Restrictions: Test burns for any potential biomass fuel shall be limited to 4,000 tons, no more than 45 days of operation using the fuel, and a test period not to exceed 180 days.</p>	<p>Minn R. 7007.0800, subp. 2</p>
<p>Alternative Biomass Fuel Testing Requirements: Test burns shall be conducted to measure CO, PM, PM10, VOC, HCl, and hexane emissions, to monitor NOx and SO2 emissions, and to determine fuel chlorine content for calculating HCl control efficiency.</p>	<p>Minn R. 7007.0800, subp. 2</p>
<p>Alternative Biomass Fuel Testing Submittals: 30 days prior to testing of a biomass fuel, the Permittee shall submit a written performance test notification and test plan. The test plan shall meet the requirements of Minn. R. 7017.2030 and shall also include the type(s) and estimated amount of biomass to be tested, 2) operating parameters and anticipated fuel mixes during testing for the boiler to be tested, 3) air pollutants that will be monitored and measured during testing, and 4) a testing schedule.</p>	<p>Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018</p>
<p>Alternative Biomass Fuel Testing Notification and Submittals;                  Pre-Test Meeting: due 7 day before Performance Test                  Test Report: due 45 days after Performance Test                  Test Report - Microfiche Copy or CD: due 105 days after Performance Test.                  The Notification, Test Plan, and Test Report may be submitted in alternative format as allowed by Minn. R. 7017.2018.</p>	<p>Minn. R. 7017.2030, subp. 1-4; Minn. R. 7017.2018 and Minn. R. 7017.2035, subp. 1-2</p>

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 006 SG231 - Medium Pressure Package Boiler (new St. Paul boiler)**

- Associated Items:**
- GP 001 New and modified boilers (annual limits to avoid mod)
  - GP 002 All steam service facilities steam boilers (HAP and heat input limits)
  - GP 003 Db Boilers - General and CEMS/COMS requirements
  - GP 004 Boilers SG231 and SP7 - fuel oil usage limit
  - SV 005 SG231 - Med. pressure package boiler (new St. Paul boiler)

What to do	Why to do it
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity using 6-minute Average except for one 6-minute period per hour of not more than 27 percent opacity.	40 CFR Section 60.43b(f)
Nitrogen Oxides: less than or equal to 0.20 lbs/million Btu heat input using 30-day Rolling Average as determined by CEMS. Please note the NOx limit at SV005 for EU006 which is more restrictive.	40 CFR Section 60.44b(a); Minn. R. 7011.0565
OPERATIONAL LIMITS	hdr
Sulfur Dioxide: less than or equal to 0.5 percent by weight sulfur in fuel oil; percent reduction requirement of 40 CFR Section 60.42b(a) does not apply to this emission unit.	40 CFR Section 60.42b(j); most stringent, meets limit set by 40 CFR Section 60.42b(a) for fuel oil
The opacity standard applies at all times, except during periods of startup, shutdown or malfunction.	40 CFR Section 60.43b(g)
Opacity CEMS: The owner or operator shall install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS).	40 CFR Section 60.48b(a)
Opacity Compliance: Demonstrate compliance with opacity standards using Reference Method 9.	40 CFR Section 60.11; Minn. R. 7017.2015, subp. 2(B)
Nitrogen Oxides: emission rate shall be determined by the NOx CEMS as a 30-day rolling average.	40 CFR Section 60.43b(i); Minn. R. 7011.0565
Nitrogen Oxides: The NOx standards apply at all times including periods of startup, shutdown, and malfunction.	40 CFR Section 60.44b(h)
Nitrogen Oxides CEMS: The owner or operator shall install, calibrate, maintain, and operate a continuous monitoring system for NOx.	40 CFR Section 60.48b(b)
Fuel type: No. 2 fuel oil and natural gas only.	Minn. R. 7005.0100, subp. 35a
RECORDKEEPING AND REPORTING	hdr
Recordkeeping: For each emission unit, maintain records of the type and amount of fuel combusted each day; calculate the annual capacity factor for each fuel for each calendar quarter.	40 CFR Section 60.49b(d); Minn. R. 7011.0565; Minn. R. 7019.0100, subp. 1
Recordkeeping for Sulfur Dioxide: The Permittee shall obtain and maintain at the facility fuel receipts from the fuel supplier which certify that fuel oil meets the definition of very low sulfur fuel oil (less than or equal to 0.5% sulfur by weight).	40 CFR Section 60.49b(r); Minn. R. 7011.0565
Records of Startup, Shutdown, or Malfunction: Any owner or operator subject to the provisions of this part shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.	40 CFR Section 60.7(b); 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); Minn. R. 7019.0100, subp. 1
NOTIFICATIONS	hdr
Notification of Anticipated Date for Conducting Opacity Observations: due 30 day prior to observation date	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1
Notification of any physical or operational change which increases emission rate: due 60 days (or as soon as practical) before the change is commenced, unless specifically exempted under an applicable subpart or in section 60.14(e).	40 CFR Section 60.7(a)(4); Minn. R. 7019.0100, subp. 1
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.	40 CFR Section 60.12; Minn. R. 7011.0050
PERFORMANCE TESTING	hdr
See SV005 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 007 SP1 - Pulverized Coal Boiler

- Associated Items:** CE 006 Centrifugal Collector - Medium Efficiency  
 CE 007 Fabric Filter - High Temperature, i.e., T>250 Degrees F  
 GP 002 All steam service facilities steam boilers (HAP and heat input limits)  
 GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers  
 GP 008 Boilers subject to coal sampling and analysis  
 SV 006 SP1/SP2/SP5/SP6 Pulverized coal and spreader stoker boilers

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity , except for one six-minute period per hour of not more than 60% opacity.	Minn. R. 7011.0510, subp. 2
<p>Sulfur Dioxide: less than or equal to the amount allowed by the following formula when different fuels are burned simultaneously in any combination:</p> $W = (Y \times A + Z \times B) / (X + Y + Z)$ <p>where:                      W = the maximum allowable emissions of SO2 in lb/MMBtu                      X = percentage of total heat input from gaseous fossil fuel                      Y = percentage of total heat input from liquid fossil fuel                      Z = percentage of total heat input from solid fossil fuel                      A = the allowable SO2 standard for liquid fossil fuels                      B = the allowable SO2 standard for solid fossil fuels</p> <p>(less stringent than SO2 limit found under SV006, met by equipment design)</p>	Minn. R. 7011.0505, subp. 3
OPERATIONAL LIMITS	hdr
Fuel type: Bituminous and Subbituminous Coal, No. 2 fuel oil, and natural gas.	Minn. R. 7005.0100, subp. 35a
Combustion of EDTA-type boiler cleaning agents is authorized provided the cleaning agents are generated on site and provide less than 5% of heat input to the emission unit per hour.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Combustion of on-specification and off-specification used oil is authorized provided the Permittee meets the requirements of Minn. R. ch. 7045. The Permittee must keep a daily record of the amount of used oil combusted.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2, Minn. R. 7045.0020, subp. 100a; 7045.0125; and 7045.0695
Opacity CEMS: The owner or operator shall maintain and operate a COMS on SV006 to measure opacity emissions from the emission unit.	Minn. R. 7017.1006
Sulfur Dioxide: Determine the average SO2 emissions by collecting coal samples in an as-fired condition at the inlet to the steam-generating unit using the coal sampling procedures specified in GP008 of this permit. Analyze them for sulfur content and heating value, and maintain fuel oil supplier receipts according to the procedures specified in this permit.	Minn. R. 7009.0020
POLLUTION CONTROL EQUIPMENT	hdr
Operate and maintain CE007 (high temp. fabric filter) and CE006 (med. efficiency centrifugal collector) at all times that any emission unit controlled by the fabric filter is in operation. The fabric filter shall be operated in accordance with the requirements of CE007.	Minn. R. 7007.0800, subp. 2 and 14
PERFORMANCE TESTING	hdr
See SV006 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 008 SP2 - Pulverized Coal Boiler

- Associated Items:** CE 007 Fabric Filter - High Temperature, i.e., T>250 Degrees F  
 CE 041 Centrifugal Collector - Medium Efficiency  
 GP 002 All steam service facilities steam boilers (HAP and heat input limits)  
 GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers  
 GP 008 Boilers subject to coal sampling and analysis  
 SV 006 SP1/SP2/SP5/SP6 Pulverized coal and spreader stoker boilers

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity , except for one six-minute period per hour of not more than 60% opacity.	Minn. R. 7011.0510, subp. 2
<p>Sulfur Dioxide: less than or equal to the amount allowed by the following formula when different fuels are burned simultaneously in any combination:</p> $W = (Y \times A + Z \times B) / (X + Y + Z)$ <p>where:                      W = the maximum allowable emissions of SO2 in lb/MMBtu                      X = percentage of total heat input from gaseous fossil fuel                      Y = percentage of total heat input from liquid fossil fuel                      Z = percentage of total heat input from solid fossil fuel                      A = the allowable SO2 standard for liquid fossil fuels                      B = the allowable SO2 standard for solid fossil fuels</p> <p>(less stringent than SO2 limit found under SV006, met by equipment design)</p>	Minn. R. 7011.0505, subp. 3
OPERATIONAL LIMITS	hdr
Fuel type: Bituminous and Subbituminous Coal, No. 2 fuel oil, and natural gas.	Minn. R. 7005.0100, subp. 35a
Combustion of EDTA-type boiler cleaning agents is authorized provided the cleaning agents are generated on site and provide less than 5% of heat input to the emission unit per hour.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Combustion of on-specification and off-specification used oil is authorized provided the Permittee meets the requirements of Minn. R. ch. 7045. The Permittee must keep a daily record of the amount of used oil combusted.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2, Minn. R. 7045.0020, subp. 100a; 7045.0125; and 7045.0695
Opacity CEMS: The owner or operator shall maintain and operate a COMS on SV006 to measure opacity emissions from the emission unit.	Minn. R. 7017.1006
Sulfur Dioxide: Determine the average SO2 emissions by collecting coal samples in an as-fired condition at the inlet to the steam-generating unit using the coal sampling procedures specified in GP008 of this permit. Analyze them for sulfur content and heating value, and maintain fuel oil supplier receipts according to the procedures specified in this permit.	Minn. R. 7009.0020
POLLUTION CONTROL EQUIPMENT	hdr
Operate and maintain CE007 (high temp. fabric filter) and CE006 (med. efficiency centrifugal collector) at all times that any emission unit controlled by the fabric filter is in operation. The fabric filter shall be operated in accordance with the requirements of CE007.	Minn. R. 7007.0800, subp. 2 and 14
PERFORMANCE TESTING	hdr
See SV006 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 009 SP5 - Spreader Stoker Boiler

- Associated Items:** CE 021 Fabric Filter - High Temperature, i.e., T>250 Degrees F  
 CE 042 Centrifugal Collector - Medium Efficiency  
 GP 002 All steam service facilities steam boilers (HAP and heat input limits)  
 GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers  
 GP 008 Boilers subject to coal sampling and analysis  
 SV 006 SP1/SP2/SP5/SP6 Pulverized coal and spreader stoker boilers

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity , except for one six-minute period per hour of not more than 60% opacity.	Minn. R. 7011.0510, subp. 2
<p>Sulfur Dioxide: less than or equal to the amount allowed by the following formula when different fuels are burned simultaneously in any combination:</p> $W = (Y \times A + Z \times B) / (X + Y + Z)$ <p>where:                      W = the maximum allowable emissions of SO2 in lb/MMBtu                      X = percentage of total heat input from gaseous fossil fuel                      Y = percentage of total heat input from liquid fossil fuel                      Z = percentage of total heat input from solid fossil fuel                      A = the allowable SO2 standard for liquid fossil fuels                      B = the allowable SO2 standard for solid fossil fuels</p> <p>(less stringent than SO2 limit found under SV006, met by equipment design)</p>	Minn. R. 7011.0505, subp. 3
OPERATIONAL LIMITS	hdr
Fuel type: Bituminous and Subbituminous Coal, No. 2 fuel oil, and natural gas.	Minn. R. 7005.0100, subp. 35a
Combustion of EDTA-type boiler cleaning agents is authorized provided the cleaning agents are generated on site and provide less than 5% of heat input to the emission unit per hour.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Combustion of on-specification and off-specification used oil is authorized provided the Permittee meets the requirements of Minn. R. ch. 7045. The Permittee must keep a daily record of the amount of used oil combusted.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2, Minn. R. 7045.0020, subp. 100a; 7045.0125; and 7045.0695
Opacity CEMS: The owner or operator shall maintain and operate a COMS on SV006 to measure opacity emissions from the emission unit.	Minn. R. 7017.1006
Sulfur Dioxide: Determine the average SO2 emissions by collecting coal samples in an as-fired condition at the inlet to the steam-generating unit using the coal sampling procedures specified in GP008 of this permit. Analyze them for sulfur content and heating value, and maintain fuel oil supplier receipts according to the procedures specified in this permit.	Minn. R. 7009.0020
POLLUTION CONTROL EQUIPMENT	hdr
Operate and maintain CE021 (high temp. fabric filter) and CE006 (med. efficiency centrifugal scrubber) at all times that any emission unit controlled by the fabric filter is in operation. The fabric filter shall be operated in accordance with the requirements of CE021.	Minn. R. 7007.0800, subp. 2 and 14
PERFORMANCE TESTING	hdr
See SV005 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 010 SP6 - Spreader Stoker Boiler

- Associated Items:** CE 022 Fabric Filter - High Temperature, i.e., T>250 Degrees F  
 CE 043 Centrifugal Collector - Medium Efficiency  
 GP 002 All steam service facilities steam boilers (HAP and heat input limits)  
 GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers  
 GP 008 Boilers subject to coal sampling and analysis  
 SV 006 SP1/SP2/SP5/SP6 Pulverized coal and spreader stoker boilers

What to do	Why to do it
EMISSION LIMITS	13hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity , except for one six-minute period per hour of not more than 60% opacity.	Minn. R. 7011.0510, subp. 2
<p>Sulfur Dioxide: less than or equal to the amount allowed by the following formula when different fuels are burned simultaneously in any combination:</p> $W = (Y \times A + Z \times B) / (X + Y + Z)$ <p>where:                      W = the maximum allowable emissions of SO2 in lb/MMBtu                      X = percentage of total heat input from gaseous fossil fuel                      Y = percentage of total heat input from liquid fossil fuel                      Z = percentage of total heat input from solid fossil fuel                      A = the allowable SO2 standard for liquid fossil fuels                      B = the allowable SO2 standard for solid fossil fuels</p> <p>(less stringent than SO2 limit found under SV006, met by equipment design)</p>	Minn. R. 7011.0505, subp. 3
OPERATIONAL LIMITS	hdr
Fuel type: Bituminous and Subbituminous Coal, No. 2 fuel oil and natural gas.	Minn. R. 7005.0100, subp. 35a
Combustion of EDTA-type boiler cleaning agents is authorized provided the cleaning agents are generated on site and provide less than 5% of heat input to the emission unit per hour.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2
Combustion of on-specification and off-specification used oil is authorized provided the Permittee meets the requirements of Minn. R. ch. 7045. The Permittee must keep a daily record of the amount of used oil combusted.	Minn. Stat. Section 116.07, subd. 4a; Minn. R. 7007.0800, subp. 2, Minn. R. 7045.0020, subp. 100a; 7045.0125; and 7045.0695
Opacity CEMS: The owner or operator shall maintain and operate a COMS on SV006 to measure opacity emissions from the stack.	Minn. R. 7017.1006
Sulfur Dioxide: Determine the average SO2 emissions by collecting coal samples in an as-fired condition at the inlet to the steam-generating unit using the coal sampling procedures specified in GP008 of this permit. Analyze them for sulfur content and heating value, and maintain fuel oil supplier receipts according to the procedures specified in this permit.	Minn. R. 7009.0020
POLLUTION CONTROL EQUIPMENT	hdr
Operate and maintain CE022 (high temp. fabric filter) and CE006 (med. efficiency centrifugal collector) at all times that any emission unit controlled by the fabric filter is in operation. The fabric filter shall be operated in accordance with the requirements of CE022.	Minn. R. 7007.0800, subp. 2 and 14
PERFORMANCE TESTING	hdr
See SV006 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 011 SP7 - Oil/Gas Package Boiler

**Associated Items:** GP 002 All steam service facilities steam boilers (HAP and heat input limits)

GP 004 Boilers SG231 and SP7 - fuel oil usage limit

GP 006 COMS req'd by state rule: St. Paul Plant Boilers and SE Plant Boilers

SV 007 SP7 - Oil/Gas Package Boiler

What to do	Why to do it
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity (six-minute average) when combusting oil; except for one (1) six-minute period per hour of not more than 27% opacity.	40 CFR Section 60.43c(c); Minn. R. 7011.0570
The opacity standard applies at all times, except during periods of startup, shutdown or malfunction.	40 CFR Section 60.43c(d); Minn. R. 7011.0570
OPERATIONAL LIMITS	hdr
Fuel type: Distillate fuel oil (No. 2 fuel oil), and natural gas.	Minn. R. 7005.0100, subp. 35a
Fuel Heat Input: less than or equal to 99 million Btu/hour	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Maximum Distillate Oil Fuel Usage: less than or equal to 1151600 gallons/year using 12-month Rolling Sum	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Maximum Natural Gas Fuel Usage: less than or equal to 563 million cubic feet/year using 12-month Rolling Sum	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Fuel Usage: less than or equal to 1147600 gallons/year using 12-month Rolling Sum for distillate oil and less than or equal to 405.5 million cubic feet using a 12-month rolling period for natural gas. For every 1000 gallons distillate oil used in excess of the limit above, the limit on natural gas is reduced by 114.1 million cubic feet. For every 1 million cubic feet natural gas used in excess of the limit above, the limit on distillate oil use is reduced by 7300 gallons.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Sulfur Dioxide: less than or equal to 0.5 percent by weight sulfur in fuel oil.	40 CFR Section 60.42c(d); Minn. R. 7011.0570
Sulfur Dioxide: The SO2 standard applies at all times including startup, shutdown or malfunction.	40 CFR Section 60.42c(i); Minn. R. 7011.0570
CONTINUOUS OPACITY MONITORING SYSTEM (COMS)	hdr
Emissions Monitoring: The owner or operator shall use a COMS to measure opacity emissions from SV007 (See requirements for COMS under GP006).	Minn. R. 7017.1006, subp. 1
RECORDKEEPING	hdr
Maintain records of the type and amount of each fuel combusted each day. Calculate the 12-month rolling sum each calendar month for each fuel type.	40 CFR Section 60.48c(g); Minn. R. 7011.0570
Recordkeeping: maintain records of the type and amount of each fuel combusted each day. Calculate the 12-month rolling sum each calendar month for each fuel type.	40 CFR Section 60.48c(g); Minn. R. 7011.0570
Sulfur Dioxide: The Permittees shall obtain and maintain at the facility records of fuel supplier certifications. The certifications shall include the following information: 1. The name of the fuel supplier; 2. A statement from the supplier that the fuel oil meets the definition of distillate oil in 40 CFR Section 60.41c.	40 CFR Section 60.48c(f)(1); 40 CFR Section 60.44c(h); Minn. R. 7011.0570
PERFORMANCE TESTING	hdr
See SV006 requirements.	Minn. R. 7017.2020, subp. 1

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-48

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 014 Diesel 1 - 1800 rpm Generator; 6 Cylinder in Line; 4 Cycles, Turbo St. Paul Plant****Associated Items: SV 010 Diesel 1 - 1800 rpm GEN Turbo SP Plant**

What to do	Why to do it
OPERATIONAL LIMITS	hdr
Operating Hours: less than or equal to 300 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Maintain records of the hours of operation for each calendar month and a record of the 12-month rolling sum of hours of operation.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Fuel Oil Sulfur Content Certification: Obtain and maintain at the facility fuel receipts from the fuel supplier which certify the sulfur content of the fuel does not exceed 0.5% by weight. Records shall be maintained for 5 years.	Minn. R. 7007.0800, subps. 4 & 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 015 Diesel 2 - 1800 rpm Generator; 8 Cylinder V; 4 Cycles, Turbo

**Associated Items:** SV 011 Diesel 2 - 1800 rpm GEN Turbo

What to do	Why to do it
OPERATIONAL LIMITS	hdr
Operating Hours: less than or equal to 300 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input	Minn. R. 7011.2300, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Maintain records of the hours of operation for each calendar month and a record of the 12-month rolling sum of hours of operation.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Fuel Oil Sulfur Content Certification: Obtain and maintain at the facility fuel receipts from the fuel supplier which certify the sulfur content of the fuel does not exceed 0.5% by weight. Records shall be maintained for 5 years.	Minn. R. 7007.0800, subps. 4 & 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-50

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 016 Diesel 3 - 1800 rpm; 6 Cylinder in Line; 4 Cycles SE Fire Pump****Associated Items: SV 012 Diesel 3 - 1800 rpm GEN Fire pump**

What to do	Why to do it
OPERATIONAL LIMITS	hdr
Operating Hours: less than or equal to 300 hours/year using 12-month Rolling Sum to be calculated by the 15th day of each month.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
EMISSION LIMITS	hdr
Opacity: less than or equal to 20 percent opacity once operating temperatures have been attained.	Minn. R. 7011.2300, subp. 1
Sulfur Dioxide: less than or equal to 0.5 lbs/million Btu heat input as determined by vendor certification of fuel oil sulfur content.	Minn. R. 7011.2300, subp. 2
RECORDKEEPING REQUIREMENTS	hdr
Maintain records of the hours of operation for each calendar month and a record of the 12-month rolling sum of hours of operation.	Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Fuel Oil Sulfur Content Certification: Obtain and maintain at the facility fuel receipts from the fuel supplier which certify the sulfur content of the fuel does not exceed 0.5% by weight. Records shall be maintained for 5 years.	Minn. R. 7007.0800, subps. 4 & 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-51

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 050 160GEN002 - 4th Street Switch**Associated Items:** GP 012 Peaking Unit Generators: Annual Limits to Avoid PSD

SV 039 160GEN002 - 4th Street Switch

<b>What to do</b>	<b>Why to do it</b>
Intercooler Temperature: less than 195 degrees Fahrenheit at all times during emission unit operation.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21
Recordkeeping: Maintain records of intercooler temperatures for a period of five years from the date of measurement.	Title I Condition: recordkeeping for limit to avoid classification as a major modification under 40 CFR Section 52.21
Refer to GP012 for further requirements.	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-52

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 051 160GEN003 - 4th Street Switch**Associated Items:** GP 012 Peaking Unit Generators: Annual Limits to Avoid PSD

SV 040 160GEN003 - 4th Street Switch

<b>What to do</b>	<b>Why to do it</b>
Intercooler Temperature: less than 195 degrees Fahrenheit at all times during emission unit operation.	Title I Condition: limit to avoid classification as a major modification under 40 CFR Section 52.21
Recordkeeping: Maintain records of intercooler temperatures for a period of five years from the date of measurement.	Title I Condition: recordkeeping for limit to avoid classification as a major modification under 40 CFR Section 52.21
Refer to GP012 for further requirements.	hdr

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-53

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 139 240-BO-005 Art Building**

<b>What to do</b>	<b>Why to do it</b>
<b>EMISSION LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2
<b>OPERATING CONDITIONS</b>	hdr
Fuel type: Natural gas only.	Minn. R. 7005.0100, subp. 35a

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-54

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 140 139-BO-001 - Bierman Field Ath**

What to do	Why to do it
EMISSION LIMITS	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2
OPERATING CONDITIONS	hdr
Fuel type: Natural gas/propane/No. 2 fuel oil only.	Minn. R. 7005.0100, subp. 35a
RECORDINGKEEPING REQUIREMENTS	hdr
Fuel Oil Sulfur Content Certification: Obtain and maintain at the facility fuel receipts from the fuel supplier which certify the sulfur content of the fuel does not exceed 0.5% by weight. Records shall be maintained for 5 years.	Minn. R. 7007.0800, subps. 4 & 5
Fuel type: Natural gas only.	Minn. R. 7005.0100, subp. 35a

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-55

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: EU 141 139-BO-002 - Bierman Field Ath**

<b>What to do</b>	<b>Why to do it</b>
<b>EMISSION LIMITS</b>	hdr
Total Particulate Matter: less than or equal to 0.4 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 1.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except for one six-minute period per hour of not more than 60 percent opacity.	Minn. R. 7011.0510, subp. 2
<b>OPERATING CONDITIONS</b>	hdr
Fuel type: Natural gas only.	Minn. R. 7005.0100, subp. 35a

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 143 SE Mpls biomass truck unloading

**Associated Items:** CE 039 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

What to do	Why to do it
EMISSION LIMITS	hdr
Opacity: less than or equal to 5% opacity from truck unloading stations, railcar unloading stations, railcar loading stations, and handling operation fugitive emissions.	Minn. R. 7011.1005, subp. 3(A)
Opacity: less than or equal to 10 percent opacity discharged from control equipment.	Minn. R. 7011.1005, subp. 3(D)
Total Particulate Matter: greater than or equal to 80% collection efficiency.	Minn. R. 7011.1005, subp. 3(E)
Particulate Matter < 10 micron: greater than or equal to 89.1 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 89.1 percent. This limit applies to each unit individually.	Minn. R. 7007.0800, subp. 2 and 1
Total Particulate Matter: greater than or equal to 89.1 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 89.1percent. This limit applies to each unit individually.	Minn. R. 7007.0800, subp. 2 and 14
OPERATING LIMITS	hdr
The Permittee shall clean up commodities (i.e., biomass) spilled on the driveway and other facility property as required to minimize fugitive emissions to a level consistent with RACT (reasonably available control technology).	Minn. R. 7011.1005, subp. 1(A)
Visible Emissions: The Permittee shall check the fabric filter for any visible emissions once each day of operation during daylight hours. During inclement weather, the Permittee shall read and record the pressure drop across the fabric filter, once each day of operation.	Minn. R. 7007.0800, subp. 4 and 5
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 inches of water column , unless a new range is required to be 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.	Minn. R. 7007.0800, subp. 4 and 5
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.	Minn. R. 7007.0800, subp. 2 and 14
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.	Minn. R. 7007.0800, subp. 4, 5 and 14
REPORTING AND RECORDKEEPING	hdr
Recordkeeping of Visible Emissions and Pressure Drop. The Permittee shall record the time and date of each visible emission inspection and pressure drop reading, and whether or not any visible emissions were observed.	Minn. R. 7007.0800, subp. 4 and 5
NOTIFICATIONS	hdr
Notification of Commence Construction Date and Initial Startup Date: due 30 days after initial startup. The Permittee shall submit the following information with the notification: stack/vent, control equipment, and emissions unit information using the latest MPCA application forms.	Minn. R. 7007.0800, subp. 2

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** EU 144 SE Mpls biomass silo and biomass transfer to CFB

**Associated Items:** CE 040 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

What to do	Why to do it
EMISSION LIMITS	hdr
Opacity: less than or equal to 5% opacity from truck unloading stations, railcar unloading stations, railcar loading stations, and handling operation fugitive emissions.	Minn. R. 7011.1005, subp. 3(A)
Opacity: less than or equal to 10 percent opacity discharged from control equipment.	Minn. R. 7011.1005, subp. 3(D)
Total Particulate Matter: greater than or equal to 80% collection efficiency.	Minn. R. 7011.1005, subp. 3(E)
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 99 percent. This limit applies to each unit individually.	Minn. R. 7007.0800, subp. 2 and 14
Total Particulate Matter: greater than or equal to 99 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 99 percent. This limit applies to each unit individually.	Minn. R. 7007.0800, subp. 2 and 14
OPERATING LIMITS	hdr
The Permittee shall clean up commodities (i.e., biomass) spilled on the driveway and other facility property as required to minimize fugitive emissions to a level consistent with RACT (reasonably available control technology).	Minn. R. 7011.1005, subp. 1(A)
Visible Emissions: The Permittee shall check the fabric filter for any visible emissions once each day of operation during daylight hours. During inclement weather, the Permittee shall read and record the pressure drop across the fabric filter, once each day of operation.	Minn. R. 7007.0800, subp. 4 and 5
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 inches of water column , unless a new range is required to be 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.	Minn. R. 7007.0800, subp. 4 and 5
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.	Minn. R. 7007.0800, subp. 2 and 14
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.	Minn. R. 7007.0800, subp. 4, 5 and 14
REPORTING AND RECORDKEEPING	hdr
Recordkeeping of Visible Emissions and Pressure Drop. The Permittee shall record the time and date of each visible emission inspection and pressure drop reading, and whether or not any visible emissions were observed.	Minn. R. 7007.0800, subp. 4 and 5
NOTIFICATIONS	hdr
Notification of Commence Construction Date and Initial Startup Date: due 30 days after initial startup. The Permittee shall submit the following information with the notification: stack/vent, control equipment, and emissions unit information using the latest MPCA application forms.	Minn. R. 7007.0800, subp. 2

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-58

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: CE 001 Fabric Filter - High Temperature, i.e., T>250 Degrees F**

**Associated Items: EU 001 SG201 - Circulating Fluidized Bed Boiler**

What to do	Why to do it
Total Particulate Matter: greater than or equal to 99 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 99 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 99 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Calibrate pressure gauge annually and maintain a written record of the calibration and any action resultng from the calibration.	Minn. R. 7007.0800, subp. 2 and 14
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.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21; to avoid classification as a major source under 40 CFR Section 70.2; Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop. 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - 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. 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.	Minn. R. 7007.0800, subp. 4, 5, and 14
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.	Minn. R. 7007.0800, subp. 4
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.	Minn. R. 7007.0800, subp. 4, 5 and 14
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.	Minn. R. 7007.0800, subp. 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: CE 002 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F**

**Associated Items: EU 004 SE3 - Pulverized Coal Boiler**

What to do	Why to do it
Total Particulate Matter: greater than or equal to 96 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 96 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 96 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 96 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Calibrate pressure gauge annually and maintain a written record of the calibration and any action resultng from the calibration.	Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop. 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - 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. 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.	Minn. R. 7007.0800, subp. 4, 5, and 14
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.	Minn. R. 7007.0800, subp. 4
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.	Minn. R. 7007.0800, subp. 4, 5 and 14
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.	Minn. R. 7007.0800, subp. 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: CE 003 Gas Scrubber (General, Not Classified)**

**Associated Items: EU 004 SE3 - Pulverized Coal Boiler**

What to do	Why to do it
Sulfur Dioxide: greater than or equal to 70 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for SO2 of 70 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Operational requirement: The Permittee is required to operate the scrubber whenever EU004 is in operation.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Pressure Drop: less than or equal to 2 inches of water column	Title I Condition: Monitoring for limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Monitoring and Recordkeeping: The Permittee shall operate the scrubber per manufacturers specifications and the pressure drop range as specified in the Operation and Maintenance (O & M) manual, unless a new pressure drop range is set pursuant to Minn. R. 7017.20205, subp. 3, based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The Permittee shall record the pressure drop rate once every 24 hours when in operation.	Minn. R. 7007.0800, subp. 4 and 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-61

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: CE 004 Fabric Filter - Medium Temperature i.e., 180 F<T<250 F**

**Associated Items: EU 005 SE4 - Spreader Stoker Boiler**

What to do	Why to do it
Total Particulate Matter: greater than or equal to 97 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 97percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 99 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 99 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Calibrate pressure gauge annually and maintain a written record of the calibration and any action resultng from the calibration.	Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop. 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - 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. 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.	Minn. R. 7007.0800, subp. 4, 5, and 14
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.	Minn. R. 7007.0800, subp. 4
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.	Minn. R. 7007.0800, subp. 4, 5 and 14
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.	Minn. R. 7007.0800, subp. 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-62

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: CE 005 Gas Scrubber (General, Not Classified)****Associated Items:** EU 005 SE4 - Spreader Stoker Boiler

What to do	Why to do it
Sulfur Dioxide: greater than or equal to 70 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for SO2 of 70 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Operational requirement: The Permittee is required to operate the scrubber whenever EU004 is in operation.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Pressure Drop: less than or equal to 2 inches of water column	Title I Condition: Monitoring for limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Monitoring and Recordkeeping: The Permittee shall operate the scrubber per manufacturers specifications and the pressure drop range as specified in the Operation and Maintenance (O & M) manual, unless a new pressure drop range is set pursuant to Minn. R. 7017.20205, subp. 3, based on the values recorded during the most recent MPCA-approved performance test where compliance was demonstrated. The Permittee shall record the pressure drop once every 24 hours when in operation.	Minn. R. 7007.0800, subp. 4 and 5

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: CE 007 Fabric Filter - High Temperature, i.e., T>250 Degrees F**

**Associated Items:** EU 007 SP1 - Pulverized Coal Boiler

EU 008 SP2 - Pulverized Coal Boiler

What to do	Why to do it
Total Particulate Matter: greater than or equal to 96 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 96 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 96 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 96 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Calibrate pressure gauge annually and maintain a written record of the calibration and any action resultng from the calibration.	Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop. 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.	Title I Condition: Monitoring for Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21; to avoid classification as a major source under 40 CFR Section 70.2; Minn. R. 7007.0800, subp. 4 and 5
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.	Title I Condition: Limit taken to avoid classification as a major source and modification under 40 CFR Section 52.21; to avoid classification as a major source under 40 CFR Section 70.2; Minn. R. 7007.0800, subp. 2 and 14
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - 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. 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.	Minn. R. 7007.0800, subp. 4, 5, and 14
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.	Minn. R. 7007.0800, subp. 4
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.	Minn. R. 7007.0800, subp. 4, 5 and 14
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.	Minn. R. 7007.0800, subp. 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** CE 021 Fabric Filter - High Temperature, i.e., T>250 Degrees F

**Associated Items:** EU 009 SP5 - Spreader Stoker Boiler

What to do	Why to do it
Total Particulate Matter: greater than or equal to 97 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 97 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 97 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 97percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Calibrate pressure gauge annually and maintain a written record of the calibration and any action resultng from the calibration.	Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop. 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.	Title I Condition: Recordkeeping for limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
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.	Title I Condition: Monitoring for limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - 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. 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.	Minn. R. 7007.0800, subp. 4, 5, and 14
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.	Minn. R. 7007.0800, subp. 4
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.	Minn. R. 7007.0800, subp. 4, 5 and 14
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.	Minn. R. 7007.0800, subp. 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-65

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item: CE 022 Fabric Filter - High Temperature, i.e., T>250 Degrees F**

**Associated Items: EU 010 SP6 - Spreader Stoker Boiler**

What to do	Why to do it
Total Particulate Matter: greater than or equal to 97 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM of 97 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Particulate Matter < 10 micron: greater than or equal to 97 percent control efficiency . The Permittee shall operate and maintain the control equipment such that it achieves an overall control efficiency for PM10 of 97 percent.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Pressure Drop: greater than or equal to 2 inches of water column and less than or equal to 6 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.	Title I Condition: Limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Calibrate pressure gauge annually and maintain a written record of the calibration and any action resultng from the calibration.	Minn. R. 7007.0800, subp. 2 and 14
Recordkeeping of Pressure Drop. 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.	Title I Condition: Recordkeeping for limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
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.	Title I Condition: Monitoring for limit taken to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000
Corrective Actions: The Permittee shall take corrective action as soon as possible if any of the following occur: - 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. 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.	Minn. R. 7007.0800, subp. 4, 5, and 14
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.	Minn. R. 7007.0800, subp. 4
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.	Minn. R. 7007.0800, subp. 4, 5 and 14
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.	Minn. R. 7007.0800, subp. 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-66

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** CE 039 Fabric Filter - Low Temperature, i.e., T<180 Degrees F**Associated Items:** EU 143 SE Mpls biomass truck unloading

<b>What to do</b>	<b>Why to do it</b>
The Permittee shall operate and maintain the fabric filter at all times that any emission unit controlled by the fabric filter is in operation in accordance with the requirements located within EU143.	Minn. R. 7007.0800, subp. 2 and 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-67

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** CE 040 Fabric Filter - Low Temperature, i.e., T<180 Degrees F**Associated Items:** EU 144 SE Mpls biomass silo and biomass transfer to CFB

<b>What to do</b>	<b>Why to do it</b>
The Permittee shall operate and maintain the fabric filter at all times that any emission unit controlled by the fabric filter is in operation in accordance with the requirements located within EU144.	Minn. R. 7007.0800, subp. 2 and 14

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-68

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

**Subject Item:** FS 001 Southeast Coal and Biomass Bunker**Associated Items:** CE 038 Fabric Filter - Low Temperature, i.e., T<180 Degrees F

GP 007 Low-temperature Fabric Filters (GP009, GP010, FS001)

<b>What to do</b>	<b>Why to do it</b>
OPERATIONAL LIMITS	hdr
Fugitive PM: Maintain shape of pile and apply water to minimize fugitive dust.	Minn. R. 7011.1105, subp. C and F

**TABLE A: LIMITS AND OTHER REQUIREMENTS**

A-69

05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<b>What to do</b>	<b>Why to do it</b>
Fugitive PM: greater than or equal to 20% by weight water content of ash loaded into trucks, added in ash conditioner.	Minn. R. 7011.0150
Fugitive PM: Cover ash haul trucks leaving facility; control fugitive dust during unloading and loading ash trucks at the ash storage building.	Minn. R. 7011.0150

**TABLE B: SUBMITTALS**

B-1 05/16/06

Facility Name: University of MN - Twin Cities  
Permit Number: 05301050 - 001

Table B lists most of the submittals required by this permit. Please note that some submittal requirements may appear in Table A or, if applicable, within a compliance schedule located in Table C. Table B is divided into two sections in order to separately list one-time only and recurrent submittal requirements.

Each submittal must be postmarked or received by the date specified in the applicable Table. Those submittals required by parts 7007.0100 to 7007.1850 must be certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Other submittals shall be certified as appropriate if certification is required by an applicable rule or permit condition.

Send any application for a permit or permit amendment to:

AQ Permit Technical Advisor  
Industrial Division  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, Minnesota 55155-4194

Also, where required by an applicable rule or permit condition, send to the Permit Technical Advisor notices of:

- accumulated insignificant activities,
- installation of control equipment,
- replacement of an emissions unit, and
- changes that contravene a permit term.

Unless another person is identified in the applicable Table, send all other submittals to:

AQ Compliance Tracking Coordinator  
Industrial Division  
Minnesota Pollution Control Agency  
520 Lafayette Road North  
St. Paul, Minnesota 55155-4194

Send submittals that are required to be submitted to the U.S. EPA regional office to:

Mr. George Czerniak  
Air and Radiation Branch  
EPA Region V  
77 West Jackson Boulevard  
Chicago, Illinois 60604

Send submittals that are required by the Acid Rain Program to:

U.S. Environmental Protection Agency  
Clean Air Markets Division  
1200 Pennsylvania Avenue NW (6204N)  
Washington, D.C. 20460

**TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS**

B-2 05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

<b>What to send</b>	<b>When to send</b>	<b>Portion of Facility Affected</b>
Computer Dispersion Modeling Information	due 1,096 days after Permit Issuance. Submit modeling data as specified in MPCA guidance for Modeling Information Requests (for PM10, SO2 and NOx). This modeling information is for data collection purposes, no modeling analysis is required at this time. This is a state only requirement and is not enforceable by the EPA Administrator or citizens under the Clean Air Act.	Total Facility
Relative Accuracy Test Audit (RATA) Notification	due 30 days before CEMS Relative Accuracy Test Audit (RATA)	GP005

**TABLE B: RECURRENT SUBMITTALS**

B-3 05/16/06

Facility Name: University of MN - Twin Cities

Permit Number: 05301050 - 001

What to send	When to send	Portion of Facility Affected
Cylinder Gas Audit (CGA) Results Summary	due 30 days after end of each calendar quarter following end of the calendar quarter in which the Audit was performed	GP005
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following Initial Startup of the Monitor	GP006
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following Initial Startup of the Monitor (Submit Deviations Reporting Form DRF-1 as amended). The EER shall indicate all periods of monitor bypass and all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdown, and malfunctions.	GP005
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.	Total Facility
Compliance Certification	due 31 days after end of each calendar year following Permit Issuance (for the previous calendar year). To be submitted on a form approved by the Commissioner, both to the Commissioner and to the US EPA regional office in Chicago. This report covers all deviations experienced during the calendar year.	Total Facility

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Facility Name: University of MN - Twin Cities

Permit Number: 05301050-001

**Appendix A**

**Insignificant Activities and Applicable Requirements**

The table below lists the insignificant activities that are currently at the facility and their associated general applicable requirements.

Under Minn. R. 7007.1250, subp. 1(A), the Permittee may add insignificant activities to the stationary source throughout the term of the permit without getting permit amendments. Certain exclusions apply and are listed in Minn. R. 7007.1250, subp.2. In addition, this permit specifically prohibits the Permittee from making any modifications that would make the source major under NSR. The following table is a listing of the insignificant activities that the Permittee is somewhat likely to add and their associated applicable requirements.

<b>Minn. R. 7007.1300, subpart</b>	<b>Rule Description of the Activity</b>	<b>Applicable Requirement</b>
3(A)	Fuel use: space heaters fueled by, kerosene, natural gas, or propane.	Minn. R. 7011.0510/0515
3(B)	Furnaces, boilers, and incinerators:	
	. infrared electric ovens	Minn. R. 7011.0105/0110
3(C)	Fabrication operations: equipment used exclusively for forging, pressing, drawing, spinning, or extruding hot metals.	Minn. R. 7011.0710/0715
3(D)	Processing operations:	
	open tumblers with a batch capacity of 1,000 pounds or less; and	Minn. R. 7011.0710/0715
3(E)	Storage tanks:	
	1. gasoline storage tanks with a combined total tankage capacity of not more than 10,000 gallons; and	Minn. R. 7011.0710/0715 <i>OR</i> Minn. R. 7011.1505, subp. 2(B)/1505, subp. 3(B) <i>OR</i> Minn. R. 7011.0105/0110 ( <i>if not associated with industrial process per the IPE definition</i> )
	2. non-hazardous air pollutant VOC storage tanks with a combined total tankage capacity of not more than 10,000 gallons of non-hazardous air pollutant VOCs and with a vapor pressure of not more than 1.0 psia at 60 degrees Fahrenheit.	Minn. R. 7011.0710/0715 <i>OR</i> Minn. R. 7011.1505, subp. 2(B)/1505, subp. 3 (B) <i>OR</i> Minn. R. 7011.0105/0110 ( <i>if not associated with industrial process per the IPE definition</i> )

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3(F)	Cleaning operations: commercial laundries, not including dry cleaners and industrial launderers.	Minn. R. 7011.0105/0110
3(G)	Emissions from a laboratory, as defined in the subpart.	
	<ul style="list-style-type: none"> <li>• Animal Waste Treatment Facility</li> <li>• Crops Services Building Process</li> <li>• Kaufert Forestry Products Research</li> <li>• Mechanical Engineering Electric Arcing Research</li> <li>• University Laboratories</li> </ul>	Minn. R. 7011.0105 + Minn. R. 7011.0510/0515 + Minn. R. 7011.0610 + Minn. R. 7011.0710/0715
3(H)	Miscellaneous:	
	1. equipment used exclusively for packaging lubricants or greases;	Minn. R. 7011.0710/0715 OR Minn. R. 7011.0105/0110
	2. equipment used for hydraulic or hydrostatic testing;	Minn. R. 7011.0710/0715
	3. brazing, soldering or welding equipment;	Minn. R. 7011.0510/.0515 + Minn. R. 7011.0610 + Minn. R. 7011.0710/0715
	<ul style="list-style-type: none"> <li>• Rarig Theatre MIG Welder</li> <li>• Rarig Theater Gas Welder</li> <li>• Tedd Mann Concert Hall MIG Welder</li> </ul>	Minn. R. 7011.0710/0715 + Minn. R. 7011.0105
	4. blueprint copiers and photographic processes;	Minn. R. 7011.0105/0110
	Three Coffman Studio Photo Developing Rooms	Minn. R. 7011.0710/0715
	5. equipment used exclusively for melting or application of wax;	Minn. R. 7011.0510/.0515 + Minn. R. 7011.0610 + Minn. R. 7011.0710/0715
	Art Department Wax Melting	Minn. R. 7011.0510 + Minn. R. 7011.0610 + Minn. R. 7011.0710
	6. nonasbestos equipment used exclusively for bonding lining to brake shoes; and	Minn. R. 7011.0710/0715
	7. cleaning operations: alkaline/phosphate cleaners and associated cleaners and associated burners.	Minn. R. 7011.0510/.0515 + Minn. R. 7011.0610 + Minn. R. 7011.0710/0715
3(I)	Individual emissions units at a stationary source, each of which have a potential to emit the following pollutants in amounts less than: <ol style="list-style-type: none"> <li>1. 4,000 lbs/year of carbon monoxide; and</li> <li>2. 2,000 lbs/year each of nitrogen oxide, sulfur dioxide, particulate matter, particulate matter less than ten microns, volatile organic compounds (including hazardous air pollutant-containing VOC), and ozone.</li> </ol>	
	<ul style="list-style-type: none"> <li>• Blegen and Mayo Building Fire Pumps</li> </ul>	Minn. R. 7011.2300

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	<ul style="list-style-type: none"> <li>• Art Depart. Gas Blast Furnace No. 1 (240-BF-001)</li> <li>• Art Depart. Gas Blast Furnace No. 2 (240-BF-002)</li> <li>• Art Depart. Gas Blast Furnace No. 3 (240-BF-003)</li> <li>• Art Depart. Gas Burn-Out Kiln (240-BK-001)</li> <li>• Art Depart. Gas Indoor Kiln No. 1 (240-IK-001)</li> <li>• Art Depart. Gas Indoor Kiln No. 2 (240-IK-002)</li> <li>• Art Depart. Gas Indoor Kiln No. 3 (240-IK-003)</li> <li>• Art Depart. Gas Indoor Kiln No. 4 (240-IK-004)</li> <li>• Art Depart. Gas Indoor Kiln No. 5 (240-IK-005)</li> <li>• Art Depart. Gas Outdoor Kiln No. 1 (240-OK-001)</li> <li>• Art Depart. Gas Outdoor Kiln No. 2 (240-OK-002)</li> <li>• Art Depart. Gas Outdoor Kiln No. 3 (240-OK-003)</li> <li>• Art Depart. Gas Outdoor Kiln No. 4 (240-OK-004)</li>   <li>• Three wet ash truck loading operations (Old and New at SE Plant and St. Paul Plant), each 20 ton/hr capacity and 27% moisture (from AP-42)</li>   <li>• Coal drop onto storage pile (100 ton/hr)</li>   <li>• 250 gal diesel tank – Horticul. Res.</li> <li>• 2000 gal diesel tank – Church St. Garage</li> <li>• 550 gal diesel tank – Mgmt/Econ Bldg</li> <li>• 300 gal diesel tank – Transport. Safety</li> <li>• 300 gal diesel tank – Transport. Safety</li> <li>• 200 gal diesel tank – 19<sup>th</sup> Ave Ramp</li> <li>• 500 gal diesel tank – 21<sup>st</sup> Ave Ramp</li> <li>• 400 gal diesel tank – Middlebrook</li> <li>• 200 gal diesel tank – Comstock</li> <li>• 550 gal diesel tank – YMCA</li> <li>• 280 gal diesel – Law Utility</li> <li>• 300 gal diesel tank – HHH</li> <li>• 300 gal diesel tank – Anderson Hall</li> <li>• 300 gal diesel tank – CME</li> <li>• 600 gal diesel tank – CME</li> <li>• 1000 gal diesel tank – Elec Engineering</li> <li>• 15,000 gal fuel oil tank – Gould Building</li> <li>• 3000 gal diesel tank – PWB-Unit A (B/C)</li> <li>• 3000 gal diesel tank – PWB-Moos Tower (B/C)</li> <li>• 500 gal diesel tank – Millard-JOML Complex</li> <li>• 265 gal diesel tank – Williamson Hall</li> <li>• 505,000 gal fuel oil 1&amp;2 tank – MPLS Htg Plant-Main</li> <li>• 225,000 gal fuel oil 1&amp;2 tank – MPLS Htg Plant-Main</li> <li>• 10,000 gal fuel oil 1&amp;2 tank – MPLS Htg Plant-S.E.</li> <li>• 20,000 gal diesel tank – Basic Sciences</li> <li>• 6000 gal diesel tank – Telecom. Bldg</li> <li>• 510 gal diesel tank – IWMF</li> <li>• 2000 gal diesel tank – Naval Satellite</li> <li>• 2500 gal diesel tank – MCT Facility</li> <li>• 500 gal diesel tank – Ag Engineering</li> <li>• 160 gal diesel tank – Eng. + Fisheries Lab</li> </ul>	<p>Minn. R. 7011.0610</p> <p>Minn. R. 7011.0710/0715</p> <p>Minn. R. 7011.1105</p> <p>Minn. R. 7011.0105/0110 or Minn. R. 7011.0710/0715</p>
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	<ul style="list-style-type: none"> <li>• 265 gal diesel tank – Student Center</li> <li>• 300 gal diesel tank – Golf Course Tool H</li> <li>• 35,000 gal #2 fuel oil tank – St. Paul Htg Plant</li> <li>• 35,000 gal #2 fuel oil tank – St. Paul Htg Plant</li> <li>• 280 gal diesel tank – Earl Brown Cent</li> <li>• 1500 gal diesel tank – Biol Sci Center</li> <li>• 265 gal diesel tank – Bailey Hall</li> <li>• 7500 gal #2 fuel oil tank – Bruce Publshg</li> <li>• 6000 gal diesel tank – Farm &amp; Grnds Main</li> <li>• 520,000 gal fuel oil 1&amp;2 tank – St. Paul Htg Plant</li> <li>• 1000 gal diesel tank – Vet Teach Hospt</li> <li>• 1000 gal diesel tank – Lewis Hosp-Animals</li> <li>• Diesel and fuel oil transfer operations</li>   <li>• 560 gal gasoline tank and transfer – Naval Satellite</li> <li>• 1000 gal gasoline tank and transfer – Golf Course Tool H</li>   <li>• Degreaser – Coffman Facilities</li> <li>• Degreaser – Physics Machine Shop</li> <li>• Degreaser – Civil Mineral Engineering</li> <li>• Degreaser – Civ/Min Pavement Lab</li> <li>• Degreaser – FM Zone 1</li> <li>• Degreaser – FM Zone 3</li> <li>• Degreaser – Fleet Service (Holman)</li> <li>• Degreaser – Fleet Service (Farm and Grounds)</li> <li>• Degreaser – Physics-Eric Ganz’s Lab</li> <li>• Degreaser – Studio Arts</li> <li>• Degreaser – Mechanical Engineering</li> <li>• Degreaser – Machine Shop</li>   <p><b>DIESEL EMERGENCY GENERATORS</b></p> <ul style="list-style-type: none"> <li>• 093GEN090 - 1901 University Ave. (75 kW)</li> <li>• 160GEN001 - 4th Street Switch (50 kW)</li> <li>• 205GEN001 - Anderson Hall (30 kW)</li> <li>• 370GEN001 - Greenhouse (50 kW)</li> <li>• 383GEN001 - Bailey Hall (20 kW)</li> </ul>   <p><b>NATURAL GAS EMERGENCY GENERATORS</b></p> <ul style="list-style-type: none"> <li>• 020GEN001 - Elliot Hall (50 kW)</li> <li>• 028GEN001 - Sanford Hall (25 kW)</li> <li>• 037GEN001 - Appleby Hall (10 kW)</li> <li>• 042GEN001 - Walter Library (30 kW)</li> <li>• 044GEN001 - Shops Building (50 kW)</li> <li>• 049GEN001 - Tate Lab of Physics (45 kW)</li> <li>• 053GEN001 - Northrop Auditorium (75 kW)</li> <li>• 060GEN001 - Vincent Hall (15 kW)</li> <li>• 066GEN001 - Amundson Hall (30 kW)</li> <li>• 107GEN001 - Masonic Cancer Center (80 kW)</li> <li>• 122GEN001 - Kolthoff Hall (75 kW)</li> </ul> </ul>	<p>Minn. R. 7011.0105 + Minn. R. 7011.1505 – no requirements apply under these rules</p> <p>Minn. R. 7011.0710/0715</p> <p>Minn. R. 7011.2300</p> <p>Minn. R. 7011.2300</p>
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	<ul style="list-style-type: none"><li>• 125GEN001 - Shepard Labs (50 kW)</li><li>• 139GEN001 - Bierman Field Ath. (25 kW)</li><li>• 158GEN001 - Harvard St. Ramp (55 kW)</li><li>• 207GEN001 - Willey Hall (70 kW)</li><li>• 208GEN002 - Middlebrook Hall (25 kW)</li><li>• 209GEN001 - Rarig Center (45 kW)</li><li>• 215GEN001 - Ferguson Hall (55 kW)</li><li>• 322GEN001 - Coffey Hall (15 kW)</li><li>• 338GEN001 - McNeal Hall (50 kW)</li><li>• 350GEN001 - Haecker Hall (25 kW)</li><li>• 357GEN001 - Green Hall (33 kW)</li><li>• 371GEN001 - Vet. Teaching Hospital (75 kW)</li><li>• 372GEN001 - Peters Hall (25 kW)</li><li>• 373GEN001 - St. Paul Central Lib. (75 kW)</li><li>• 394GEN001 - Alderman Hall (15 kW)</li><li>• 396GEN001 - Christensen Hall (25 kW)</li><li>• 412GEN001 - COB (15 kW)</li><li>• 455GEN001 - Swine Res. Fac. (55 kW)</li><li>• 463GEN001 - Poultry Teaching (75 kW)</li></ul> <p><b>NATURAL GAS BOILERS</b></p> <ul style="list-style-type: none"><li>• 87-BO-001 - 711 E. River Road (0.3 MM Btu/hr)</li><li>• 88-BO-001 - Torture Treat. Ctr. (0.225 MM Btu/hr)</li><li>• 92-BO-001 - 425 Ontario (1 MM Btu/hr)</li><li>• 141-BO-001 - Oak St. Ramp (1.2 MM Btu/hr)</li><li>• 159-BO-001 - Football Complex (1.438 MM Btu/hr)</li><li>• 159-BO-002 - Football Complex (1.438 MM Btu/hr)</li><li>• 160-BO-001 - 4th Street Switch (0.472 MM Btu/hr)</li><li>• 160-BO-002 - 4th Street Switch Unit Heater (0.131 MM Btu/hr)</li><li>• 160-BO-003 - 4th Street Switch Unit Heater (0.131 MM Btu/hr)</li><li>• 160-BO-004 - 4th Street Switch Unit Heater (0.131 MM Btu/hr)</li><li>• 160-BO-005 - 4th Street Switch Unit Heater (0.131 MM Btu/hr)</li><li>• 184-BO-001 - Network/Telecom (1.043 MM Btu/hr)</li><li>• 240-BO-001 - Art Building (0.5 MM Btu/hr)</li><li>• 240-BO-002 - Art Building (0.4 MM Btu/hr)</li><li>• 240-BO-003 - Art Building (0.4 MM Btu/hr)</li><li>• 240-BO-004 - Art Building (0.165 MM Btu/hr)</li><li>• 349-BO-001 - Golf Maintenance (0.15 MM Btu/hr)</li><li>• 353-BO-001 - KOUM Transmitter (0.248 MM Btu/hr)</li><li>• 354-BO-001 - Golf Club House (1 MM Btu/hr)</li><li>• 384-BO-001 - Commonwealth #1 (0.167 MM Btu/hr)</li><li>• 384-BO-002 - Commonwealth #2 (0.167 MM Btu/hr)</li><li>• 384-BO-003 - Commonwealth #3 (0.167 MM Btu/hr)</li><li>• 384-BO-004 - Commonwealth #4 (0.167 MM Btu/hr)</li><li>• 384-BO-005 - Commonwealth #5 (0.167 MM Btu/hr)</li><li>• 384-BO-006 - Commonwealth #6 (0.167 MM Btu/hr)</li><li>• 384-BO-007 - Commonwealth #7 (0.167 MM Btu/hr)</li></ul>	<p>Minn. R. 7011.0510/0515</p>
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	<ul style="list-style-type: none"> <li>• 384-BO-008 - Commonwealth #8 (0.167 MM Btu/hr)</li> <li>• 384-BO-009 - Commonwealth #9 (0.167 MM Btu/hr)</li> <li>• 384-BO-010 - Commonwealth #25 (0.167 MM Btu/hr)</li> <li>• 384-BO-011 - Commonwealth #26 (0.167 MM Btu/hr)</li> <li>• 384-BO-012 - Commonwealth #27 (0.167 MM Btu/hr)</li> <li>• 384-BO-013 - Commonwealth #28 (0.167 MM Btu/hr)</li> <li>• 384-BO-014 - Commonwealth #29 (0.167 MM Btu/hr)</li> <li>• 384-BO-015 - Commonwealth #30 (0.167 MM Btu/hr)</li> <li>• 384-BO-016 - Commonwealth #45 (0.167 MM Btu/hr)</li> <li>• 384-BO-017 - Commonwealth #46 (0.167 MM Btu/hr)</li> <li>• 384-BO-018 - Commonwealth #47 (0.167 MM Btu/hr)</li> <li>• 384-BO-019 - Commonwealth #48 (0.167 MM Btu/hr)</li> <li>• 384-BO-020 - Commonwealth #49 (0.167 MM Btu/hr)</li> <li>• 384-BO-021 - Commonwealth #10 (0.91 MM Btu/hr)</li> <li>• 384-BO-022 - Commonwealth #16 (0.91 MM Btu/hr)</li> <li>• 384-BO-023 - Commonwealth #17 (0.91 MM Btu/hr)</li> <li>• 384-BO-024 - Commonwealth #22 (0.91 MM Btu/hr)</li> <li>• 384-BO-025 - Commonwealth #24 (0.91 MM Btu/hr)</li> <li>• 384-BO-026 - Commonwealth #31 (0.91 MM Btu/hr)</li> <li>• 384-BO-027 - Commonwealth #32 (0.91 MM Btu/hr)</li> <li>• 384-BO-028 - Commonwealth #35 (0.91 MM Btu/hr)</li> <li>• 384-BO-029 - Commonwealth #37 (0.91 MM Btu/hr)</li> <li>• 384-BO-030 - Commonwealth #39 (0.91 MM Btu/hr)</li> <li>• 384-BO-031 - Commonwealth #42 (0.91 MM Btu/hr)</li> <li>• 384-BO-032 - Commonwealth #44 (0.91 MM Btu/hr)</li> <li>• 384-BO-033 - Commonwealth #50 (0.91 MM Btu/hr)</li> <li>• 384-BO-034 - Commonwealth #57 (0.91 MM Btu/hr)</li> <li>• 384-BO-035 - Commonwealth #57 (0.91 MM Btu/hr)</li> <li>• 384-BO-036 - Commonwealth #13 (0.78 MM Btu/hr)</li> <li>• 384-BO-037 - Commonwealth #20 (0.78 MM Btu/hr)</li> <li>• 384-BO-038 - Commonwealth #55 (0.167 MM Btu/hr)</li> <li>• 384-BO-039 - Commonwealth #55 (0.167 MM Btu/hr)</li> <li>• 384-BO-040 - Commonwealth #52,51 (1.56 MM Btu/hr)</li> <li>• 384-BO-041 - Commonwealth #18 (0.125 MM Btu/hr)</li> </ul>	
3(J)	Fugitive Emissions from roads and parking lots.	Minn. R. 7011.0150
3(K)	Infrequent use of spray paint equipment for routine housekeeping or plant upkeep activities not associated with primary production processes at the stationary source, such as spray painting of buildings, machinery, vehicles, and other supporting equipment.	Minn. R. 7011.0710/0715
	St. Paul Paint Shop	Minn. R. 7011.0710/0715

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**Insignificant Activities Required to Be Listed for Part 70 sources**

Minn. R. 7007.1300, subpart	Rule Description of the Activity	Applicable Requirement
4	<p>Individual emissions units at a stationary source, each of which has:</p> <p>A. Potential emissions of 5.7 pounds per hour or actual emissions of two tons per year of carbon monoxide;</p> <p>B. Potential emissions of 2.28 pounds per hour or actual emissions of one ton per year for particulate matter, particulate matter less than ten microns, nitrogen oxide, sulfur dioxide, and VOCs; and</p> <p>C. For hazardous air pollutants, emissions units with:</p> <p>(1) potential emissions of 25 percent or less of the hazardous air pollutant thresholds listed in subp. 5; or</p> <p>(2) combined HAP actual emissions of one ton per year unless the emissions unit emits one or more of the HAPs listed in this subpart.</p>	
	<ul style="list-style-type: none"> <li>• 2500 gal IWMF waste solvent storage tank No. 1</li> <li>• 2500 gal IWMF waste solvent storage tank No. 2</li> <li>• 2500 gal IWMF waste solvent storage tank No. 3</li> <li>• IWMF Distillation – Walk-in Hood</li> <li>• IWMF Distillation – Bench Top Hood</li> <li>• IWMF Transfer Operations</li>   <li>• Rarig Theatre Spray Painting</li> <li>• Tedd Mann Concert Hall Spray Gun</li>   <li>• Coffman Studio Screen Printing Operation</li>   <li>• 10,000 gal gasoline tank and transfer – Holman Bldg</li> <li>• 6000 gal gasoline tank and transfer – Farm &amp; Grnds Main</li> </ul> <p><b>SMALL ENGINE DIESEL EMERGENCY GENERATORS (EU074-EU103)</b></p> <ul style="list-style-type: none"> <li>• 063GEN001 - Comstock Hall (200 kW)</li> <li>• 064GEN001 – Coffman (400 kW)</li> <li>• 079GEN001 - Lyon Labs (200 kW)</li> <li>• 144GEN001 - Phillips-Wang. Bldg. (250 kW)</li> <li>• 144GEN090 - Phillips-Wang. Bldg. (250 kW)</li> <li>• 152GEN001 - Williamson Hall (180 kW)</li> <li>• 156GEN001 - Civ. And Min. Eng. Blg (300 kW)</li> <li>• 161GEN090 - Telecomm. Building (375 kW)</li> <li>• 161GEN091 - Telecomm. Building Portable Generator (80 kW)</li> <li>• 161GEN092 - Telecomm. Building Portable Generator (80 kW)</li> </ul>	<p>Minn. R. 7011.0710/0715</p> <p>Minn. R. 7011.0710/0715</p> <p>Minn. R. 7011.0710/0715</p> <p>Minn. R. 7011.1505</p> <p>Minn. R. 7011.2300 + Minn. R. 7007.0800, subp. 2 + Minn. R. 7007.0800, subp. 5 (annual hours of operation recorded and available upon request)</p>

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Permit Number: 05301050-001

Minn. R. 7007.1300, subpart	Rule Description of the Activity	Applicable Requirement
	<ul style="list-style-type: none"> <li>• 161GEN093 - Telecomm. Building Portable Generator (80 kW)</li> <li>• 163GEN001 - Church St. Garage (125 kW)</li> <li>• 167GEN001 - Aquatic Center (230 kW)</li> <li>• 181GEN001 - Ridder Arena (150 kW)</li> <li>• 188GEN001 - University Ramp (Gateway) (130 kW)</li> <li>• 201GEN001 - Management and Econ. (125 kW)</li> <li>• 211GEN001 - Law Building (200 kW)</li> <li>• 214GEN001 - West Bank Ramp (125 kW)</li> <li>• 216GEN001 - Humphrey Center (100 kW)</li> <li>• 241GEN001 – Art Building (150 kW)</li> <li>• 334GEN001 - Ag. Eng. Bldg. (180 kW)</li> <li>• 376GEN001 - Student Center (75 kW)</li> <li>• 411GEN001 - Biol. Sciences (&amp; FP) (375 kW)</li> <li>• 420GEN001 - Brown Cont. Ed. Ctr (90 kW)</li> <li>• 427GEN001 - Vet. Teaching Hospital (350 kW)</li> <li>• 438GEN001 - Ecology Building (300 kW)</li> <li>• 483GEN001 - Gortner Avenue Ramp (100 kW)</li> <li>• ELECGEN003 – Portable Generator (250 kW)</li> <li>• ELECGEN004 – Portable Generator (115 kW)</li> <li>• ELECGEN005 – Portable Generator (55 kW)</li> </ul> <p><b>NATURAL GAS EMERGENCY GENERATORS (EU114-EU138)</b></p> <ul style="list-style-type: none"> <li>• 035GEN001 – Smith Hall (190 kW)</li> <li>• 052GEN001 – Pioneer Hall (75 kW)</li> <li>• 068GEN001 – Centennial Hall (115 kW)</li> <li>• 069GEN001 – Variety Club Res. Ctr (150 kW)</li> <li>• 070GEN001 – Boynton Health Serv. (130 kW)</li> <li>• 074GEN001 – Mayo &amp; Add. (B10) (170 kW)</li> <li>• 074GEN002 – Mayo &amp; Add. (B155) (100 kW)</li> <li>• 074GEN003 – Mayo &amp; Add. (L350) (170 kW)</li> <li>• 074GEN004 – Mayo &amp; Add. (B700-C) (355 kW)</li> <li>• 074GEN005 – Mayo &amp; Add. (B700-B) (170 kW)</li> <li>• 074GEN006 – Mayo &amp; Add. (b700-A) (170 kW)</li> <li>• 074GEN007 – Mayo &amp; Add. (G265) (250 kW)</li> <li>• 074GEN090 – Mayo &amp; Add. (250 kW)</li> <li>• 110GEN001 – Frontier Hall (80 kW)</li> <li>• 115GEN001 – Children's Rehab Center (170 kW)</li> <li>• 141GEN001 – Oak St. Ramp (150 kW)</li> <li>• 202GEN001 – Social Science (250 kW)</li> <li>• 204GEN001 – Wilson Library (200 kW)</li> <li>• 208GEN003 – Middlebrook Hall (85 kW)</li> <li>• 265GEN002 – Mechanical Engineering (255 kW)</li> <li>• 385AGEN001 – Vet. Med. Diagnostic (100 kW)</li> <li>• 393GEN001 – Hodson Hall (115 kW)</li> </ul>	<p>Minn. R. 7011.2300 + Minn. R. 7007.0800, subp. 2 + Minn. R. 7007.0800, subp. 5 (annual hours of operation recorded and available upon request)</p>

APPENDIX MATERIAL

Facility Name: University of MN - Twin Cities

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Minn. R. 7007.1300, subpart	Rule Description of the Activity	Applicable Requirement
	<ul style="list-style-type: none"> <li>• 413GEN001 – Andrew Boss Lab (100 kW)</li> <li>• 416GEN001 – Animal Sci./Vet. Med. (250 kW)</li> <li>• 426GEN001 – Voc. and Tech. Ed. (170 kW)</li> </ul> <p><b>NATURAL GAS BOILERS (EU139-EU141)</b></p> <ul style="list-style-type: none"> <li>• 240-BO-005 - Art Building (2.86 MM Btu/hr)</li> <li>• 139-BO-001 - Bierman Field Ath. (9.8 MM Btu/hr)</li> <li>• 139-BO-002 - Bierman Field Ath. (9.8 MM Btu/hr)</li> </ul> <p><b>INTEGRATED WASTE MANAGEMENT FACILITY</b> 177-EF-14 – Transfer Operation</p>	<p>Minn. R. 7011.0105 + Minn. R. 7011.0510/0515 + Minn. R. 7007.0800, subp. 2 + Minn. R. 7007.0800, subp. 5 (annual hours of operation recorded and available upon request)</p> <p>Minn. R. 7011.0105 + Minn. R. 7011.0710/0715 (carbon tetrachloride lab packed and, therefore, not processed in IWMF)</p>

**Conditionally Insignificant Activities**

	Rule Description of the Activity	Applicable Requirement
Minn. R. 7008.4110	<p>Emissions from equipment venting particulate matter (PM) or particulate matter less than 10 microns (PM-10) inside a building, provided that emissions from the equipment are:</p> <p>a). filtered through an air cleaning system; and</p> <p>b). vented inside of the building 100% of the time.</p> <ul style="list-style-type: none"> <li>• Art Department Woodworking</li> <li>• Architecture Woodworking Shop</li> <li>• Weisman Woodworking</li> </ul>	Minn. R. 7011.0710/0715

APPENDIX MATERIAL

Facility Name: University of MN - Twin Cities

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**Appendix B**

**Parameters Used In Air Dispersion Modeling Analysis**

SUMMARY OF STACK PARAMETERS FOR MODELING INPUT  
*[from Second Supplement to AEPA, Table V-15, p.5-30, Record 013]*  
 (and based on FW Memo to MPCA dated 5/5/98 as part of revised modeling for PM10)

Source ID	EU #	Stack UTM coordinates		Base Elevation (m)	Stack Height (m)	Stack Temp (K)	Exit Velocity (m/sec)	Stack Diameter (m)
		East (m)	West (m)					
SV001 (ST#101)	EU001	480299.9	4980665.1	235.66	80.42	422.0	2.77	4.27
SV002 (ST#102)	EU002 EU003	480342.0	4980665.1	235.66	80.42	462.8	5.71	4.27
SV003 (ST#103)	EU004	480299.9	4980684.0	235.66	80.42	367.8	2.76	4.27
SV004 (ST#104)	EU005	480342.0	4980684.0	235.66	80.42	395.9	3.18	4.27
SV005 (ST#301)	EU006	485537.8	4980476.5	273.71	36.58	399.8	6.17	2.13
SV006 (STPB#1)	EU007- EU010	485500.0	4980500.0	273.71	60.96	453.2	12.15	2.44
SV007 (STPB#7)	EU011	485546.0	4980521.0	273.71	27.43	469.3	8.81	1.52

SUMMARY OF WORST CASE OPERATING SCENARIOS-NEW UNITS

*[from Second Supplement to AEPA, Table V-16, p.5-33, Record 013]*

Pollutant	Unit	Stack Number	Fuel	Load	Emission Rate (g/sec)	Lb/hr *7.93656
SO2	EU001	SV001	Coal	100%	3.67	29.13
	EU002, EU003	SV002	Distillate Oil	100%	33.72	267.62
	EU006	SV005	Distillate Oil	NA	11.18	88.73
TSP/PM10	EU001	SV001	Coal	100%	1.10	8.76
	EU002, EU003	SV002	Distillate Oil	100%	3.67	29.10
	EU006	SV005	Distillate Oil	NA	1.15	9.11
CO g/s [lb/hr]	EU001	SV001	Wood	100%	8.91 [70.75]	
	EU002, EU003	SV002	Distillate Oil	100%	2.62 [20.810]	
	EU006	SV005	Distillate Oil	100%	1.37 [10.88]	
NOx	EU001	SV001	Wood	100%	7.43	58.97
	EU002, EU003	SV002	Distillate Oil	100%	9.17	72.78
	EU006	SV005	Distillate Oil	100%	4.78	37.94

APPENDIX MATERIAL

Facility Name: University of MN - Twin Cities

Permit Number: 05301050-001

SUMMARY OF WORST CASE OPERATING SCENARIOS-EXISTING UNITS

*[from Second Supplement to AEPA, Table V-17, p.5-34, Record 013]*

Pollutant	Unit	Stack Number	Emission Rate (g/sec)	Lb/hr *7.93656
SO2	EU004	SV003	7.15	56.75
	EU005	SV004	7.92	62.86
	EU007-010	SV006	37.48	297.46
	EU011	SV007	6.24	49.52
TSP	EU004	SV003	0.53	4.21
	EU005	SV004	0.59	4.68
	EU007-010	SV006	0.62	4.92
	EU011	SV007	0.18	1.43
PM10	EU004	SV003	2.26	17.91
	EU005	SV004	1.98	15.71
	EU007-010	SV006	3.25	25.80
	EU011	SV007	0.70	5.54
CO	EU004	SV003	0.72 [5.72]	
	EU005	SV004	6.60 [52.40]	
	EU007-010	SV006	4.37 [34.70]	
	EU011	SV007	0.45 [3.57]	
NOx	EU004	SV003	25.04	198.73
	EU005	SV004	18.47	146.59
	EU007-010	SV006	20.48	162.54
	EU011	SV007	1.75	13.89

\* - Numbers in brackets [] were penciled into the tables by previous permit engineer.

**TECHNICAL SUPPORT DOCUMENT**  
**For**  
**AIR EMISSION PERMIT NO. 05301050-001**

This Technical Support Document (TSD) is intended for all parties interested in the 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 determination to issue the permit.

**1. General Information**

**1.1. Applicant and Stationary Source Location:**

Applicant/Address	Stationary Source/Address (SIC Code: 8221)
OWNER: University of Minnesota Twin Cities Board of Regents 202 Morrill Hall Minneapolis, MN 55455  CO-PERMITTEE: Foster Wheeler Twin Cities Perryville Corporate Park Clinton, NJ 08809 Mr. Bruce Studley, <i>Bruce_Studley@fwc.com</i>	University of Minnesota Twin Cities W140 Boynton Health Service Minneapolis, MN 55455
Contact: Mr. Craig Moody, Director of Health and Safety W140 Boynton Health Service Minneapolis, MN 55455 Phone: (612) 626-4399	Consultant for the U of M: Dave Bordson: <a href="mailto:dbordson@comcast.net">dbordson@comcast.net</a> 651-645-3495, 812-363-0036 cell

**1.3 Description of the Permit Action**

The University of Minnesota is a teaching and research institution with two campuses in the Twin Cities: the Minneapolis campus and the St. Paul campus. The two campuses are approximately three miles apart and are connected by a transitway 80 feet wide owned by the University. In a May 13, 1993 letter, EPA Region V issued an opinion that the two campuses constitute a single stationary source for Prevention of Significant Deterioration (PSD) permitting purposes. Because of this determination, the two campuses (Facility) are also a single stationary source for purposes of Title V permitting.

The Facility covers an area of approximately 1154 acres and contains approximately 22,000,000 gross square feet of buildings overall. The Facility employs approximately 15,000 people and serves a population of 40,000 full time and 11,000 part time students. The Facility owns and operates, or contracts with other parties who operate, a variety of facilities that support its teaching and research functions.

The Minneapolis Campus consists of the East and West Bank locations adjacent to the industrial downtown Minneapolis stretch of the Mississippi River. The campus has a variety of teaching and research facilities in the areas of engineering, liberal arts, business, health sciences, and athletics. The Minneapolis Campus provides dormitory and other facilities that are operated by the Facility. A central steam plant (Southeast Plant), which directly provides steam for heating and cooling to the Minneapolis Campus, is located on the East Bank. The Southeast Plant is owned by the Facility, but is currently operated by Foster Wheeler Twin Cities, Inc. (Foster Wheeler). The Southeast Plant provides steam to most on-campus buildings and to several off-campus customers through the University system.

The St. Paul Campus is generally located east of Cleveland Avenue, south of Larpenteur Avenue, west of the Minnesota State Fairgrounds, and north of Como Avenue in St. Paul. The campus has its primary teaching and research emphasis in agricultural studies. Prominent facilities include a veterinary medicine teaching and research facility, biological sciences complex, agricultural engineering building, agronomy and plant research facilities, and animal husbandry facilities. Married student housing buildings are located at the south end of the campus and are operated by the Commonwealth Terrace Cooperative. The St. Paul Campus is served by a central steam plant (St. Paul Plant) owned by the Facility, but operated by Foster Wheeler.

### **Southeast Plant Emissions Units**

The Southeast Plant has five operational boilers. One is a fluidized bed boiler capable of burning coal, wood, oat hulls or natural gas (No. 2 fuel oil is allowed to be used for startup purposes) [EU001]. Two boilers are natural gas- or No. 2 fuel oil-fired package boilers [EU002 and EU003]. The fourth boiler is a pulverized coal boiler also capable of firing No. 2 fuel oil [EU004]. The fifth boiler is a spreader stoker coal boiler, also capable of burning No. 2 fuel oil and oat hulls dependent upon performance test results [EU005]. The Permittee is planning to burn oat hulls primarily in the Circulating Fluid Bed (CFB) boiler except during periods of low steam demand in May and October when the CFB boiler is not utilized. During these times, oat hulls will continue to be received and will be burned in EU005 due to limited storage capacity.

The fluidized bed boiler uses limestone injection to control acid gases (i.e., sulfur dioxide (SO<sub>2</sub>), hydrogen chloride, Nitrogen Oxide (NO<sub>x</sub>) and hydrogen fluoride) and a fabric filter to control Particulate Matter (PM). The two package boilers are not equipped with any control equipment, but incorporate flue gas recirculation to limit emissions. The pulverized coal and spreader stoker boilers are each equipped with dry gas scrubbers (spray dryers) to control acid gas emissions and with

fabric filters to control PM. The pollutants of concern emitted by the boilers include all of the criteria pollutants (i.e., carbon monoxide, NO<sub>x</sub>, SO<sub>2</sub>, PM, Volatile Organic Compounds (VOC), and lead) as well as a number of Hazardous Air Pollutants (HAP) (including hydrogen chloride, hydrogen fluoride, and a variety of other organic and metal HAPs).

The coal used by the Facility is unloaded in a totally enclosed rail car unloading terminal. From the unloading terminal, the coal is transferred via totally enclosed conveyors to the coal storage building for later reclamation and transfer to the outdoor coal bunker located adjacent to the Southeast Plant. Another potential destination, is a truck unloading station, silo and handling system equipped with baghouse filters to be used only for biofuels destined for EU001, which will be located at the Southeast Plant. The unloading terminal, enclosed conveyors, internal transfer points, and coal storage building vent are all equipped with baghouses to control emissions of PM. The outdoor coal bunker, is surrounded by concrete retaining walls that minimize fugitive emissions by shielding the stockpiled coal from the wind. Coal is placed in the outdoor bunker via a telescopic chute, which helps to minimize fugitive dust generation by the material transfer process. Dust suppressants may also be used to minimize fugitive dust. PM is the pollutant of concern for the coal handling and storage process.

The Southeast Plant utilizes limestone, sand and lime for pollution control purposes and handles the ash generated by the coal boilers. Each of these materials is pneumatically conveyed to its own storage silo to await disposal, further processing or use. Each of the storage silos is equipped with fabric filters to reduce the PM emissions associated with the material transfers. The main pollutant of concern for the storage silos is PM.

The Southeast Plant building has been listed on the National Register of Historic Places due to its association with the electric streetcar system once operated in the Twin Cities area. Due to the listing on the National Register, alterations to the building are subject to the provisions of the National Historic Preservation Act.

### **St. Paul Plant Emissions Units**

The St. Paul Plant has six operational boilers. Two boilers are natural gas- or No. 2 fuel oil-fired package boilers. Two of the boilers are pulverized coal boilers also capable of firing natural gas and No. 2 fuel oil. Two of the boilers are spreader stoker coal boilers, also capable of burning natural gas and No. 2 fuel oil.

The two package boilers are not equipped with any control equipment but incorporate flue gas recirculation for NO<sub>x</sub>s control. The exhaust from each of the coal boilers vents to separate cyclones. The exhaust from the two pulverized coal boiler cyclones vents to a common fabric filter. The exhaust from each of the spreader stoker boiler cyclones vent to separate fabric filters. The pollutants of concern emitted by the boilers include all of the criteria pollutants as well as a number of HAP (including hydrogen chloride, hydrogen fluoride, and a variety of other organic and metal HAPs).

The coal used at the St. Paul Plant is trucked from the Southeast Plant storage facility and dumped directly onto a coal pile. Fugitive emissions are managed in a manner similar to the Southeast Plant.

The Southeast Plant pneumatically transfers the ash generated by the coal boilers to two storage silos to await further processing and load out. The storage silo is equipped with fabric filters to reduce the PM emissions associated with the material transfers. The main pollutant of concern for the storage silos is PM.

### **Campus Sources**

The Facility has a number of diesel-fired generators and pumps, natural gas-fired generators, and natural gas-fired boilers. The majority of the generators are used only for emergency purposes, although eleven are operated as peak shaving units. Most of the emergency generators and small boilers qualify as insignificant activities based on either their potential emissions or their actual emissions. However, because a number of them were included in a netting analysis associated with the installation of the fluidized bed boiler, they are included in the permit along with their associated netting-related operating limits. The pollutants of concern emitted by these sources include all of the criteria pollutants, along with small emissions of a number of HAP.

### **Insignificant Activities**

#### Thompson Center for Environmental Management (TCEM) [previously known as Integrated Waste Management Facility (IWMF)]

The TCEM consists of storage tanks, waste solvent transfer operations, and a small scale laboratory distillation operation. The storage tanks are nitrogen blanketed, are equipped with breather valves that releases vapor only when the positive pressure reaches 3 psig, and are emptied from the bottom. The Facility submitted calculations demonstrating that the TCEM storage tanks qualify for classification as insignificant activities. In addition, although not accounted for in the emission calculations, carbon canisters are located on the relief valves that will remove any hydrocarbon vapor that does pass through them.

The Facility submitted calculations for the waste solvent transfer operation demonstrating that the activity is insignificant. The calculations were based on an evaluation of the solvents that could be transferred, using the highest HAP and VOC concentrations from those solvents. In addition, the Facility will lab pack carbon tetrachloride so that it is not part of the pouring operations.

The Facility also submitted calculations for the distillation operation (Walk-In Hood and Bench Top Hood) demonstrating that the activity is insignificant. The calculations were based on an evaluation of the solvents that could be transferred, using the highest HAP and VOC concentrations from those solvents. In addition, although not accounted for in the emission calculations, carbon canisters are located on the fume hoods to remove any hydrocarbon vapor that does pass through them.

## Laboratory Emissions

The Facility has 1,152 laboratories, including a number classified as health care labs. Based on information submitted to the EPA as part of the comment period for the R&D NESHAP, the Facility used emission factors from the University of California system. These emission factors were developed from a range of methods including surveys, interviews, purchase record review, and stack sampling to estimate emissions. The emission factors range from 0.004 lb/day/lab for the Santa Cruz campus to 0.029 lb/day/lab for the San Francisco – Parnassus campus. Using these emission factors, the potential to emit for each laboratory would range from 1.5 lb/yr to 10.6 lb/yr. Therefore, each laboratory is an insignificant activity.

### **1.3 Description of any Changes Allowed with this Permit Issuance**

- Performance Testing conducted on Emission Units: This permit incorporates any operating limits or parameter changes required as a result of performance testing. It also includes updated performance testing schedules based upon the approved Testing Frequency Plan.
- The following units have been removed from service and are no longer listed in the permit: Two diesel-powered emergency generators – EU 012 and EU 013
- A hexane limit has been added to ensure that the facility remains a non-major source of HAPs; the total HAP limit (excluding insignificant activities) was changed from 17 tpy to 15 tpy.
- This permit incorporates the major modification issued in 2006 for the addition of oat hulls as an available fuel source, and associated requirements including: a new biomass truck unloading station, silo, and handling system equipped with two baghouse filters for EU001, performance testing of new fuel handling system associated with EU001, performance testing of EU005 within 60 days of firing oat hulls in the unit, and preauthorization of alternative fuel test burns under limited conditions.

## 1.4 Permit History

<b>Permit Number and Issuance Date</b>	<b>Action Authorized</b>
86A-84-OT-1	Minneapolis Main steam plant operation
86A-85-OT-1	Southeast steam plant operation
86B-85-OT-1	St. Paul steam plant operation
252H-33-G-1 February 9, 1993	Emergency generation installations at hospital 2 emergency generators
86A-93-Test-1 April 1, 1993	Research study of counter flow liquid injection plasma pyrolysis process
86B-93-I/O-1 April 27, 1993	Emergency generation installation at Fisheries, St. Paul Library, and Poultry (Bioprocess = bio-culture dryer)
86A-93-I/O-3 May 3, 1993	Emergency generation installation at Washington Ramp and 19 <sup>th</sup> Avenue Ramp
86(O)-93-P-1 September 8, 1993	VOC emissions from Sign printing shop and heating cooling unit at Como Service Yard
86A-93-I/O-1 July 13, 1993	Emergency generation, 2 boilers, distillation and waste solvent pouring at TCEM (previously IWMF)
86A-93-I/O-2 February 10, 1994	Emergency generation installations at Basic Sciences and Cancer Center
86B-94-I/O-2 February 10, 1994	Archeological smelting project at Smelt 1994
86A-94-I/O-4 Issued 2/10/94	Basic Science Generators (EU048 and 049)
86A-94-I/O-5 (05300012-008) Issued 9/6/94	Middlebrook Generator (EU065)
86A-95-I/O-1 (05300012-012) Issued 6/7/95	Carlson Generator & Blegen Fire Pump (EU067)
86A-96-I/O-2 (05300012-013) Issued 9/16/96	Wilson Generator/Center for Magnetic Resonance (2 gens and 3 ng boilers) 056, 057, 068 – boilers ; 064, 131
00000093 [86A-96-I/O-1, 86B-96- I/O-1, 86H-96-I/O-1] October 24, 1996	Modification of steam service facility
05301050-008 January 25, 1999	Operation of modified steam services facility
05301050-009 Voided December 14, 1998	Emergency generator installation at Jackson Hall – never installed and subsequently voided on November 9, 1999

05301050-010 May 25, 1999	Emergency generation installation at Walter Library (EU104)
05301050-013 (86TC-00-I/O-1) Issued 7/7/00	Fourth Street Switch Station (EU050 and EU051)
05301050-011 and 015 October 11, 1999; February 22, 2001	Emergency generator installations at East River Parking
05301050-012 December 22, 1999	Operation of steam plants on both campuses and extends the date for shut down of Minneapolis Main Plant
86TC-01-I/O-001 Issued 8/21/01	Emergency generator installations at East River Parking (EU105/108)
86TC-01-I/O-002 Issued 8/21/01	Emergency generator installations at Plant Growth (500 kW - EU113) and Genomics (750 kW),
86TC-01-I/O-003 Issued 8/21/01	Emergency generator installations at MCB (EU052)
86TC-01-I/O-004 Issued 8/21/01	Emergency generator installations at Coffman Union (400 Kw - EU075)
05301022-001 Issued 11/14/96	MN Library Access Center Generator (MLAC) EU110
05301050-008: 2000	Mechanical Engineering Generator (EU133)
05301050-010: 2000	Walter Library (EU104)
Permit app. 4/14/03	Emergency generator for the Social Science Bldg. Installed as a minor mod (No action taken) (EU130)
86TC-03-I/O-001 Issued 12/17/03	Translation Research Facility (EU053) 1400kW
05301050-017 Issued 2/18/03	Trial burn and testing of oat hulls in EU001
05301050-021 Issued 2/14/06	Inclusion of oat hulls as fuel for EU001 and EU005 with associated performance testing. Preauthorization of test burns.
05301050-001 Part 70 Operating Permit	Current Permit Action

## 1.5. Facility Emissions:

Table 1 provides a summary of the total facility limited potential emissions (not including insignificant activities). See Attachment 1 for detailed emission calculations.

**Table 1. Total Facility Potential to Emit Summary**

	PM tpy	PM <sub>10</sub> tpy	SO <sub>2</sub> tpy	NO <sub>x</sub> tpy	CO tpy	VOC tpy	Single HAP tpy	All HAPs tpy
Total Facility Limited Potential Emissions	102.8	101.1	272.3	929.4	328.2	37.9	7*	15.1*
Total Facility Actual Emissions (2004)*	14.3	10.3	12.3	169.2	104.7	6.5	HAPs not reported in emission inventory (~11 tpy total)	

- \*Obtained from MPCA website database of the Minnesota Criteria Pollutant Emission Inventory – 2004
- \* HAP limits do not include HAPs from insignificant activities.

**Table 2. Facility Classification**

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

## 2. Regulatory and/or Statutory Basis

### New Source Review

The facility is an existing major source under New Source Review regulations. No changes that affect this determination are authorized by this permit.

The permit incorporates a number of permit terms from the facility's current permit (Air Emissions Permits Nos. 05301050-008 and 05301050-011) relating to a netting analysis performed for a boiler replacement project completed in 1999. These terms include 12-month rolling sum Title I limits for a number of pollutants that were taken to allow the project to avoid classification as a major modification under New Source Review (NSR) regulations.

### Part 70 Permit Program

The facility is a major source under the Part 70 permit program.

### New Source Performance Standards (NSPS)

Portions of the facility are subject to the following New Source Performance Standards contained in 40 CFR Part 60:

- EU 001 (CFB Boiler); EU 002 (Medium Pressure Package Boiler); EU 003 (High Pressure Package Boiler); EU 006 (Medium Pressure Package Boiler – new St. Paul boiler):  
Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (60.40b – 60.49b)
- EU 011 (Oil/Gas Package Boiler):  
Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (60.40c – 60.48c)

### National Emission Standards for Hazardous Air Pollutants (NESHAP)

The facility has accepted the following limits on HAP emissions such that it is a non-major source under 40 CFR pt. 63:

- Emissions of Hydrochloric (HCl) for all steam plant boilers (GP002) are limited to 7 tons per year as a 12-month rolling sum. This is a term in their current permit that was rolled into the Title V permit. To ensure an accurate accounting of HCl emissions, the facility will be required to include HCl emissions generated during the combustion of solid fuels in EU001.
- Review of analyses of the coal burned at the facility indicates that the fluoride content of the coal is less than the chlorine content. In addition, equipment used to control HCl will also control HF at similar efficiencies. Therefore, emissions of HF will be capped to 7 tons or less based on the HCl limit discussed above and no explicit limit for HF emissions is included in the permit.
- Emissions of hexane for all steam plant boilers (GP002) are limited to 8 tons per year as a 12-month rolling sum. Based on the current AP-42 emission factor for natural gas, the facility has a hexane potential to emit greater than 10 tons per year. Capping hexane emissions from natural gas at 8 tons per year ensures that the facility will remain minor for purposes of 40 CFR Part 63 even when insignificant sources (i.e., laboratories, small natural gas fired boilers and engines, etc.) and combustion of other fuels are accounted

for. The potential hexane emissions associated with the insignificant natural gas fired boilers and engines are approximately 0.6 tons per year. Total laboratory VOC emissions, of which hexane is potentially a subset, are estimated at between 0.84 tons per year and 6.09 tons per year. Because only a small portion of the laboratory emissions is expected to be hexane, the 1.4 tons per year buffer in the limit (i.e., 10 tons per year threshold minus 8 tons per year GP002 limit minus 0.6 tons per year from insignificant natural gas usage) ensures that the facility will stay minor for hexane emissions.

- Emissions of total HAPs for all steam plant boilers (GP002) are limited to 15 tons per year as a 12-month rolling sum. Capping total HAP emissions at 15 tons per year ensures that the facility will remain minor for purposes of 40 CFR Part 63 even when insignificant sources (i.e., laboratories, small natural gas fired boilers and engines, etc.) are accounted for. The potential total HAP emissions associated with the insignificant natural gas fired boilers and engines are approximately 3.0 tons per year. Total laboratory VOC emissions, of which total HAP is potentially a subset, are estimated at between 0.84 tons per year and 6.09 tons per year. Based on this, the 0.9 tons per year buffer in the limit (i.e., 25 tons per year threshold minus 15 tons per year GP002 limit minus 3.0 tons per year from insignificant natural gas usage minus 6.09 tons per year) ensures that the facility will stay minor for Total HAP emissions.

Therefore, the facility is not classified as a major source for purposes of 40 CFR Part 63 and no NESHAPs apply.

#### Environmental Review

An Environmental Impact Statement (EIS) was prepared for the 1996 steam plant addition. The EIS identified a number of ways that emissions could be reduced from the original application. These methods were voluntarily incorporated into the project by the Permittee:

- Add 100 percent natural gas capability to CFB to increase the steam facility's ability to use natural gas as a primary fuel
- Eliminate petroleum coke as a fuel

## Applicability Determinations

As part of the steam plant modification project, the following applicability determinations were made:

Citation	Requirement
Minn. R. 7007.1800, subp. (A)(2); Minn. R. 7007.0100, subp. 26 (A) or (C)	Inapplicable Requirement: The installation and operation of the Minneapolis Campus Southeast Steam Service Facility and the St. Paul Campus Steam Service Facility do not constitute a "Title I Modification" as defined in Minn. R. 7007.0100, subp 26 (A) or (C). The permit shield applies to this determination under Minn. R. 7007.1800, subp. A(2) provided the applicable limits in this permit for the stack/vent or emission unit are met.
Minn. R. 7007.1800, subp. (A)(2); 40 CFR § 60.14; 40 CFR § 60.15.	Inapplicable Requirement: The installation of distillate fuel firing capability at Southeast Boilers No. 3 and No. 4 does not constitute a modification under 40 CFR. § 60.14 or a reconstruction under 40 CFR § 60.15. The permit shield applies to this determination under Minn. R. 7007.1800, subp. A(2) provided the applicable limits in this permit for the stack/vent or emission unit are met.

- Dispersion modeling and/or information submittals will not be required for this facility in the initial Title V permit, as dispersion modeling was conducted in 1993, and for some pollutants, again in 1999. In accordance with our guidance which states "Permittees who have demonstrated compliance for their total facility (after January 1988) using the most recent EPA-approved model version are not required to demonstrate compliance again." However, please be aware that this is a policy and could be changed if there becomes a basis to require further air dispersion modeling to show compliance with Ambient Air Quality Standards.

As part of the permit amendment to add oat hulls as an alternative fuel to EU001 and EU005, the following determinations were made:

- The facility is not subject to 40 CFR pt. 60, subp. DD Standards of Performance for Grain Elevators.

EU143 EU144	40 CFR pt. 60, subp. DD	Standards of Performance for Grain Elevators. This subpart applies to certain grain but not grain by-product operations. Since oat hulls are considered a grain by-product, this standard does not apply.
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- The facility is not subject to 40 CFR pt. 60, subp. CCCC Standards of Performance for Commercial and Industrial Solid Waste Incineration (CISWI) Units. CISWI Units are defined as any combustion device that combusts commercial and industrial waste. Commercial and industrial waste is further defined as solid waste combusted without energy recovery. Since all combustion devices at the facility (i.e. boilers) include energy recovery, this subpart does not apply.
- The facility is not subject to Minnesota Standards of Performance for Waste Combustors because oat hulls and the other types of biomass for which the facility may conduct test burns are not solid waste as defined under Minn. Stat. Section 116.06, subd. 22

## Minnesota State Rules

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

- Minn. R. 7011.0150 Preventing PM From Becoming Airborne
- Minn. R. 7011.0510 Standards of Performance for Existing Indirect Heating Equipment
- Minn. R. 7011.0515 Standards of Performance for New Indirect Heating Equipment (applies only to a number of insignificant activities)
- Minn. R. 7011.0715 Standards of Performance for Post-1969 Industrial Process Equipment
- Minn. R. 7011.1005 Standards of Performance for Dry Bulk Agriculture Commodity Facilities
- Minn. R. 7011.1105 Standards of Performance for Certain Coal Handling Facilities
- Minn. R. 7011.2300 Standards of Performance for Stationary Internal Combustion Engines

Table 3 provides a summary of the significant sources of emissions and the applicable regulations and standards.

**Table 3. Regulatory Overview of Facility**

GP001 = New and modified boilers (EU001-EU006)	GP006 = State COMS (EU004, EU005, EU007-010)	GP011 = SE Plant Emergency Gens (EU041-EU043)
GP002 = All steam boilers (EU001-EU011)	GP007 = Low-temp fabric filters (CE023-038)	GP012 = Peaking Unit Generators (EU044, EU046-051, EU145)
GP003 = Db Boilers (EU001, EU002, EU003, EU006)	GP008 = Sampling and Analysis (EU001, EU004, EU005, EU007-EU010)	GP013 = Emergency Generators Part of Netting (EU054, EU055, EU060-EU067, EU142)
GP004 = Fuel oil usage limit for EU006, EU011	GP009 = Coal handling operations (EU017-022, EU040)	GP014 = Boilers Part of Netting (EU056-EU059, EU068-EU073)
GP005 = State CEMS (EU004, EU005)	GP010 = Material handling operations (EU023-EU031)	GP015 = Diesel Emergency Generators (EU052, EU053, EU104-EU113)

EU, GP, or SV	Applicable Regulations	Comments:
Facility	General Terms Applicable to All Facilities	The general permit requirements applicable to all facilities are included. There are 2 inapplicable requirements listed, as well as the need to comply with the Fugitive Emissions Control Plan.
GP001	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21, 40 CFR Section 51 App. S (for CO only) and Minn. R. 7007.3000	Annual ton per year emissions limits for PM, PM10, SO2, NOx, CO, VOC. A netting analysis demonstrated that based on annual rolling sum limits proposed by the facility, the “project” was not a major modification for NSR purposes.
GP 002	Minn. Stat. 116.07, subd. 4a Minn. R. 7007.0800  Title I Conditions to Avoid Classification as a Major Source Under 40 CFR Part 63	Requirement that natural gas and approved biomass usage account for at least 70 percent of the total heat input to the boilers and associated monitoring and recordkeeping. This is a state-only requirement and not enforceable by the EPA Administrator and citizens under the Clean Air Act  12-month rolling sum limits for Total HAPs, Hydrogen Chloride and natural-gas usage (to limit Hexane) and associated monitoring and recordkeeping to ensure that the facility is not a major source under 40 CFR Part 63.

GP 003	40 CFR Part 60, Subpart Db; Minn. R. 7017.1002 to 7017.1220	Standards of Performance for Industrial-Commercial-Institutional Steam-generating units. Applies to units installed after 6/19/84 with a heat input capacity greater than 100 MMBtu/hr. All units were installed in 1999, with heat input capacities of greater than 250 MMBtu/hr each. <ul style="list-style-type: none"> <li>• This group contains general requirements and CEMS/COMS requirements applicable to all units.</li> <li>• Minn. Rules for Monitoring apply to units required to operate a CEMS/COMS. More stringent or equivalent requirements from subp. Db would supersede Minn. Rules.</li> <li>• Individual emission limits are listed at the EU level for each boiler.</li> </ul>
GP 004	Minn. Rule 7009.0020	*Fuel oil use limit of 45,200 gallons/day to demonstrate compliance with ambient air quality standards for SOx.
GP 005	Minn. Rule 7017.1102 to 7017.1220	State CEMS requirements applicable to all units within group
GP 006	Minn. Rule 7017.1102 to 7017.1220	State COMS requirements applicable to all units within group
GP007	Title I Condition: Limit to avoid classification as a major modification under 40 CFR Section 52.21, 40 CFR Section 51 App. S and Minn. R. 7007.3000	PM and PM10 limits and other requirements for low-temperature fabric filters
GP 008	Minn. R. 7007.0800	Coal/approved biomass sampling and analysis requirements
GP 009	Minn. R. 7011.1105	Standards of performance for certain coal handling facilities
GP 010	Minn. R. 7011.0715	Standards of performance for post-1969 industrial process equipment as applicable to miscellaneous material handling operations (i.e. lime and ash)
GP 011	Minn. R. 7011.2300  Minn. R. 7011.0800	Standard of Performance for Stationary Internal Combustion Engines (Pre-PSD)  Hours of operation and fuel certification recordkeeping
GP 012	Title I Conditions Taken to Avoid Classification as a Major Modification	12-month rolling sum limits on hours of operation and associated monitoring and recordkeeping to ensure that the project does not result in a significant net increase in

	Under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S Min. R. 7007.0800	emissions for New Source Review purposes
GP013	Minn. R. 7011.2300  Title I Conditions Taken to Avoid Classification as a Major Modification Under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S Min. R. 7007.0800	Standard of Performance for Stationary Internal Combustion Engines (Emergency Generators part of netting) Hours of operation limit (300 hrs) and fuel certification recordkeeping
GP014	Minn. R. 7011.0515  Title I Conditions Taken to Avoid Classification as a Major Modification Under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S Min. R. 7007.0800	Standard of Performance for new indirect heating equipment: PM, SO2 and opacity limit  Hours of operation per boiler limited to 5840 hours per year.
GP015	Minn. R. 7011.2300	Standard of Performance for Stationary Internal Combustion Engines (Emergency Generators) Hours of operation documented (500 hrs) and fuel oil sulfur content certification recordkeeping
SV001 – SV004	Minn. R. 7009.0020	*Emission limits for CO, SO2, and NOx based on the results of dispersion modeling analysis. Performance testing required <ul style="list-style-type: none"> <li>Limits for SO2 set lower than that allowed by the applicable performance standard to ensure emissions do not cause a violation of ambient standards.</li> </ul>
SV005	Minn. R. 7009.0020	*Emission limits for CO and NOx based on the results of dispersion modeling analysis. Performance testing required.
SV006	Minn. R. 7009.0020	*Emission limits for CO, SO2, and NOx based on the results of dispersion modeling analysis. Verification of PM10 emission factor required. Performance testing required.

SV007	Minn. R. 7009.0020	*Emission limits for CO and NOx based on the results of dispersion modeling analysis. Verification of PM10 emission factor required. Performance testing required.
EU001, EU002, EU003	40 CFR pt. 60, subp. Db	Federal New Source Performance Standard – limits on SO2, PM, opacity, NOx, CEMS and COMS <ul style="list-style-type: none"> <li>Operational limits taken to keep the potential emissions increase of NOx from the boiler to less than significant as defined by 40 CFR § 52.21</li> </ul>
EU004 EU005	Minn. R. 7007.0510	Standards of Performance for Existing Indirect Heating Equipment. Determination of applicable limit from rule: <ul style="list-style-type: none"> <li>the unit was constructed in 1941;</li> <li>the facility is located within the cities in Table I;</li> <li>the unit capacity is greater than 250 MMBtu/hr; and</li> <li>the facility has greater than 250 MMBtu/hr of indirect heating equipment.</li> </ul>
EU006	40 CFR pt. 60, subp. Db	Federal New Source Performance Standard – limits on SO2, PM, opacity, NOx, CEMS and COMS
EU007- EU010	Minn. R. 7011.0510	Standards of Performance for Existing Indirect Heating Equipment: SO2, PM, and opacity limits
EU 011	40 CFR 60 Subpart Dc	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
EU014, EU015, EU016	Minn. R. 7011.2300  Title I Conditions Taken to Avoid Classification as a Major Modification Under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S  Minn. R. 7007.0800	Standard of Performance for Stationary Internal Combustion Engines (Emergency Generators part of netting) Hours of operation limit ≤ 300 hrs/yr and fuel certification recordkeeping
EU050 EU051	Title I Condition Taken to Avoid Classification as a Major Modification Under 40 CFR Section 52.21	Intercooler temperature less than 195 degrees F at all times during emission unit operation. Maintain records of measurements.
EU139 EU140 EU141	Minn. R. 7011.0515	Standards of Performance for New Indirect Heating Equipment: SO2, PM, and opacity limits <ul style="list-style-type: none"> <li>natural gas only</li> </ul>

EU143 EU144	Minn. R. 7011.1005	Standards of Performance for Dry Bulk Agriculture Commodity Facilities. This standard applies to grain by-products. In addition, the facility is located in the Minneapolis-St. Paul Air Quality Control Region for which control is required. Operate fabric filter.
CE001 CE007 CE021 CE022	Title I Conditions Taken to Avoid Classification as a Major Modification Under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S  Minn. R. 7007.0800	High-temperature fabric filter for PM and PM10 removal.
CE002 CE004	Title I Conditions Taken to Avoid Classification as a Major Modification Under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S  Minn. R. 7007.0800	Medium-temperature fabric filter for PM and PM10 removal.
CE003 CE005	Title I Conditions Taken to Avoid Classification as a Major Modification Under 40 CFR Section 52.21 and 40 CFR Section 51, Appendix S  Minn. R. 7007.0800	Gas Scrubber (dry sprayer) for SOx removal.
FS001 (SE Coal Bunker)	Minn. R. 7011.1105, subp. F(1)	Standards of Performance for Certain Coal Handling Facilities – maintain shape of pile and apply water as needed to control fugitive PM.

\*"These are a state-only requirements and not enforceable by the EPA Administrator and citizens under the Clean Air Act" refers to permit requirements that are mandated by state law rather than by the federal Clean Air Act. The language is to clarify the distinction between permit conditions that are required by federal law and those that are required by state law. State law requirements are not enforceable by U.S. EPA or by citizens under the federal Clean Air Act, but are fully enforceable by the MPCA and citizens under provisions of state law.

### 3. Technical Information

#### 3.1 Total Facility

- Includes permit terms generally applicable to all Title V subject sources.

#### 3.2 Emissions Units and Group Information

##### Group 001: New and modified boilers (EU001-EU006)

This group of emission units was defined as the “project” for the purpose of determining the applicability of the federal NSR regulations in the 10/24/96 construction permit. The Permittee used vendor data and emission factors obtained from agency approved sources to calculate emissions for use in a NSR netting analysis. The netting analysis demonstrated that based on annual rolling sum limits proposed by the facility, the “project” was not a major modification for NSR purposes. Subsequent amendments dated 4/23/98 and 5/19/98 contained revised NSR analyses and a modeling analysis for PM10 emissions. The permit contains the annual rolling sum limits (based on the netting analysis described above) taken to avoid classification of the project as a major modification under New Source Review regulations for all criteria pollutants (*40 CFR Section 52.21*). In addition, the permit contains associated terms proscribing how the facility demonstrates compliance with the annual rolling sum limits.

- Limits set as a 12-month rolling sum to avoid classification as a major modification under NSR (*40 CFR Section 52.21*). At the time of initial permitting, the Twin Cities area was considered non-attainment for CO. Therefore, the limit for CO is also subject to the thresholds in *40 CFR Section 51, Appendix S*. [When the modeling exercise was begun, Hennepin County was a non-attainment area for SO<sub>2</sub>, however, the area was redesignated as attainment 7/15/95 (Fed. Reg. pub. 5/31/95), before this permit was issued, therefore Appendix S does not apply to the SO<sub>2</sub> limit.]
  - PM ≤ 32.9 tpy; PM10 ≤ 91.7 tpy; SO<sub>2</sub> ≤ 248.9 tpy; NO<sub>x</sub> ≤ 734.8 tpy;  
CO ≤ 280.9 tpy; VOC ≤ 31.2 tpy
- Daily sampling and analysis procedures defined in GP 008 to determine sulfur content, moisture content, and as-received heating value of fuel. CEMS should be used as available and Fuel Oil supplier receipts certifying sulfur content of each delivery may also be used for fuel oil.
- Daily Recordkeeping of the amount of fuel combusted in each unit, the sulfur content of any coal combusted, and the heating value of each fuel combusted.
- Daily emissions calculations using emission factors defined within Group 001, or as determined by CEMS, fuel supplier receipts or sampling. See individual emission units for allowable fuels for each boiler. The type and amount of fuel combusted along with its heating value and sulfur content are required to be determined and recorded.

- Monthly calculation of the 12-month rolling sum emissions for each pollutant.
- Performance testing according to the approved Testing Frequency Plan (typically every 5 years) for emission factors will be required, where CEMS are not available. SO2 will be calculated from sulfur content data or CEMS if available.

**Group 002: All steam service facilities steam boilers (EU001-EU011)**

1. The permit contains permittee-requested Title I Conditions for GP 002 to avoid classification as a major source for purposes of 40 CFR Part 63, as follows:

- Hydrochloric (HCl) Acid emissions limited to less than or equal to 7 tons per year using a 12 month rolling sum calculated monthly. This permit term is included in the facility’s current operating permit. The procedures for coal and fuel oil sampling and analysis for use in demonstrating compliance with this limit are included in the permit terms for GP 002. In addition to the coal and fuel oil sampling requirements, the facility may also track HCl emissions generated by the combustion of solid fuels in EU 001 using stack-test derived emission factors. Review of analyses of the coal burned at the facility indicates that the fluoride content of the coal is less than the coal’s chlorine content. In addition, equipment used to control HCl will also control HF at similar efficiencies. Therefore, emissions of HF will be capped to 7 tons or less based on the HCl limit discussed above and no explicit limit for HF emissions is included in the permit.
- Emissions of hexane for GP002 are limited to 7.78 billion cubic feet per year as a 12-month rolling sum calculated monthly. This is the equivalent of:  
 $7.78 \text{ bcf ng/yr} \times 1050 \times \text{EF}/2000 = 7.23 \text{ tpy Hexane (bcf stands for billion cubic feet)}$   
 $7.78 \text{ bcf ng/yr} \times 1015^* \times \text{EF}/2000 = 6.99 \text{ tpy Hexane}$   
 $^*1,015 \text{ btu/cf}$  was the energy content value used in the permit  
 $^*1,050 \text{ btu/cf}$  is our default for AP-42 factor calculations  
 The permittee will use actual Btu/cf values for calculations.

Fuel	Hexane Emission Factor (lb/MMBtu)	Hexane Emissions (tons/yr)	Limit Maximum Fuel (bcf)*	Limit Maximum Fuel (MMBtu)	NOx Emission Factor (lb/MMBtu)	NOx (tons/yr)
natural gas	1.77E-03	6.99	7.78	7,896,700	0.14	552.8
coal	3.83E-06	4.36E-03		2,275,388	0.16	182.0
wood	-					-
fuel oil	-					-
TOTAL		8.004356				734.8

NOx Limit

\* bcf = billion cubic feet  
 - No hexane emission factor.

Based on the current AP-42 emission factor for natural gas, the facility has a hexane potential to emit greater than 10 tons per year. Capping hexane emissions at 7.23 tpy

would ensure that the facility will remain minor for purposes of 40 CFR Part 63 even when insignificant sources (i.e., laboratories, small natural gas fired boilers and engines, etc.) are accounted for. The potential hexane emissions associated with the remainder of the natural gas fired boilers and engines are approximately 0.6 tons per year. Total laboratory VOC emissions, of which hexane is potentially a subset, are estimated at between 0.84 tons per year and 6.09 tons per year. Because only a small portion of the laboratory emissions is expected to be hexane, the 1.4 tons per year buffer in the limit (i.e., 10 tons per year threshold minus 7.23 tons per year GP002 limit minus 0.6 tons per year from insignificant natural gas usage) ensures that the facility will stay minor for hexane emissions.

- Emissions of total HAPs for GP002 are limited to 15 tons per year as a 12-month rolling sum calculated monthly. Capping total HAP emissions at 15 tons per year ensures that the facility will remain minor for purposes of 40 CFR Part 63 even when insignificant sources (i.e., laboratories, small natural gas fired boilers and engines, etc.) are accounted for. The potential total HAP emissions associated with the insignificant natural gas fired boilers and engines are approximately 3.0 tons per year. Total laboratory VOC emissions, of which total HAP is potentially a subset, are estimated at between 0.84 tons per year and 6.09 tons per year. Based on this, the 0.9 tons per year buffer in the limit (i.e., 25 tons per year threshold minus 15 tons per year GP002 limit minus 3.0 tons per year from insignificant natural gas usage minus 6.09 tons per year) ensures that the facility will stay minor for hexane emissions.

2. **Heat Input from Natural Gas and Approved Biomass:** At the discretion of the MPCA Commissioner, by letter of January 18, 1996, it was determined that certain additional fuel use restrictions should be imposed on the total facility as follow:

- The total fuel used for the steam plants on an annual basis shall be a minimum of seventy percent natural gas, wood and other biomass. [Note: other biomass must be approved on a case-by-case basis.]
- The total fuel used for the steam plants on an annual basis shall be a maximum of thirty percent distillate oil and coal.
- The steam plants will not use petroleum coke as a fuel.
- Daily recordkeeping of the amount of each fuel combusted in each unit and the heating value of each fuel combusted.
- Daily emissions calculations using emission factors defined within GP002, (AP-42 factors or as determined by performance testing). See individual emission units for allowable fuels for each boiler. The type and amount of fuel combusted daily along with its heat content are required to be determined and recorded.

- Monthly calculations of the 12-month rolling sum emissions for each pollutant.

### **Group 003: Db boilers – general and CEMS/COMS requirements**

#### **(EU001-EU 003, EU 006)**

Each of the four boilers in GP 003 is subject to the requirements of 40 CFR Part 60, Subpart Db. The permit terms contained in GP 003 are those requirements from Minnesota Rules, Subpart Db, and General Provisions that apply to each of the boilers. Unit-specific emission limits and other requirements are included in the individual boiler EU permit terms.

- **EU001: Opacity, Sulfur Dioxide, Nitrogen Oxides CEMS**
- **EU002: Opacity, Nitrogen Oxides CEMS**
- **EU003: Opacity, Nitrogen Oxides CEMS**
- **EU006: Opacity, Nitrogen Oxides CEMS**

### **Group 004: Boilers SG231 and SP7 – fuel oil usage limit EU006 and EU011**

The total fuel oil combusted each day in these boilers is restricted 45,200 gallons/day to limit SO<sub>2</sub> emissions, based on computer analysis of the dispersion of SO<sub>2</sub> from the stacks and the 24-hour ambient air standard for SO<sub>2</sub>. Daily recordkeeping of the amount of fuel oil combusted in each unit and the sum of the amount used is required.

### **Group 005: CEMS req'd by state rules (EU 004 and EU 005)**

Each of the boilers in GP 005 is required by state rules to install, maintain, operate, and calibrate CEMS. The original CEMS Certification Tests for EU 004 and EU 005 were performed on November 12, 1992 and November 24, 1992, respectively. The permit terms contained in GP 005 are those requirements from Minnesota Rules that apply to each of the boilers. Unit-specific emission limits and other requirements are included in the individual boiler EU permit terms.

### **Group 006: COMS req'd by state rules (EU 004, EU 005, and EU 007-EU011)**

Each of the boilers in GP 005 is required by state rules to install, maintain, operate, and calibrate COMS. All COMS are equipped with automatic zero adjustments. The permit terms contained in GP 005 are those requirements from Minnesota Rules that apply to each of the boilers. Unit-specific emission limits and other requirements are included in the individual boiler EU permit terms. EU 004, 005, and 011 each exhaust to the atmosphere through dedicated stacks, each of which is equipped with a COMS. EU 007-EU010 exhaust through a common stack (SV 006) which is equipped with an opacity monitor.

### **Group 007: Low-temperature Fabric Filters (CE023-CE038)**

The fabric filters included in GP007 are installed on the coal unloading and transfer system (CE023-CE028), various storage silos and bins (CE029-CE037), and the coal storage building (CE038). Operation of these fabric filters was accounted for in the netting analysis that was the basis for the 10/24/96 construction permit. Therefore, the permit terms associated with the operation of the baghouses are Title I conditions. Also included are standard state requirements to take corrective actions as necessary, perform periodic inspections, and operate and maintain the fabric filters in compliance with an Operation and Maintenance (O&M) Plan prepared by the facility.

- Performance testing is not required to verify control equipment efficiencies for PM and PM10.

**Group 008: Boilers subject to coal/approved biomass sampling and analysis (EU001, EU004, EU005 and EU007-EU010)**

Compliance with some of the terms in GP001 requires sampling and analysis of the coal being burned in the boilers listed in GP008. The permit terms included in GP008 set forth the sampling and analysis procedure in order to assure reliable results are obtained.

**Group 009: Coal handling operations (EU017-EU022 and EU040)**

Because the facility is located in the Twin Cities area, the coal handling operations are subject to the requirements of Minnesota Rule 7011.1105. The permit terms of GP009 include the portions of this rule applicable to the GP009 coal handling operations. The requirements applying to the baghouses associated with the GP009 emission units are listed in GP007. All limits apply individually.

- Fugitive PM: Apply chemical binding agent during unloading and conveying of coal to stockpile. [Minn. R. 7011.1105, subp. G, H]
- Opacity  $\leq$  20 percent [Minn. R. 7011.1105, subp. G(2)]
- PM  $\leq$  0.020 grains/dry standard cubic foot [Minn. R. 7011.1105, subp. G(1)]

**Group 010: Miscellaneous material handling operations (EU023-EU031)**

The facility operates storage silos and bins for limestone, sand, lime, and ash. Each of these operations was installed after 1969 and is therefore subject to the Industrial Process Equipment Rule (IPER) limits of Minn. R. 7011.0715. The permit terms of GP010 include the portions of this rule applicable to the GP010 emission units. The requirements applying to the baghouses associated with the GP010 emission units are listed in GP007. Three additional miscellaneous material handling operations (SE Plant Old Wet Ash Loadout, SE Plant New Wet Ash Loadout, and St. Paul Plant Wet Ash Loadout) are not included because they qualify as insignificant activities under Minn. R. 7007.1300, subp. 3(I).

**Group 011: Peaking Unit Generators (Pre-PSD), (EU041-043)**

The three natural gas-powered generators included in GP011 are used as peaking units (i.e., generate electricity while power is available from the utility), in addition to their use as emergency generators. The operation of each of the engines is limited to a total of 300 hours per year based on a voluntary request by the facility. These units pre-date PSD (EU041-043 were installed in 1973, which is prior to the June 19, 1978 effective date of the original promulgation of PSD). As stationary internal combustion engines, the GP011 emission units are subject to the following requirements:

- $\leq 300$  hours/year [Minn. R. 7007.0800, subp. 2]
- Opacity  $\leq 20$  percent [Minn. R. 7011.2300]
- $\text{SO}_2 \leq 0.5$  lb/MMBtu heat input [Minn. R. 7011.2300]
- Recordkeeping of hours [Minn. R. 7007.0800, subp. 5]

**Group 012: Peaking Unit Generators – Annual Limits to Avoid PSD (EU044, EU046-EU051, EU145)**

The diesel-powered generators included in GP012 are used as peaking units (i.e., generate electricity while power is available from the utility), in addition to their use as emergency generators. The operation of each of the engines is limited to a total of 300 hours per year to avoid their classification as major modifications for PSD purposes. As stationary internal combustion engines, the GP012 emission units are subject to the following requirements:

- $\leq 300$  hours/year [Limit to avoid classification as a major modification per 40 CFR § 52.21]
- Opacity  $\leq 20$  percent [Minn. R. 7011.2300]
- $\text{SO}_2 \leq 0.5$  lb/MMBtu heat input [Minn. R. 7011.2300]
- Recordkeeping of hours [Minn. R. 7007.0800, subp.5]

**Group 013: Emergency Generators Part of Netting (EU054-055, EU060-067, EU142)**

Generators installed between 1991 and 1996.

The natural gas and diesel-powered generators included in GP013 are used for emergency purposes only. This group of emission units was included in the netting analysis performed for the purpose of determining the applicability of the federal NSR regulations in the 01/24/96 construction permit. As a result, the operation of each of the engines is limited to a total of 300 hours per year. As stationary internal combustion engines, each of the GP013 emission units is subject to the following requirements:

- $\leq 300$  hours/year [Limit to avoid classification as a major modification per 40 CFR § 52.21 and 40 CFR pt. 51, Appendix S]
- Opacity  $\leq 20$  percent [Minn. R. 7011.2300]
- $\text{SO}_2 \leq 0.5$  lb/MMBtu heat input [Minn. R. 7011.2300]
- Recordkeeping of hours [Minn. R. 7007.0800, subp.5]

### **Group 014: Boilers Part of Netting (EU056-059, EU068-073)**

Generators installed between 1991 and 1996. The natural gas boilers included in GP014 were included in the netting analysis performed for the purpose of determining the applicability of the federal NSR regulations in the 10/24/96 construction permit. As a result, the operation of each of the boilers is limited to a total of 5840 hours per year. For purposes of the MN standard of performance, these are new boilers, individually less than 100 MMBtu/hr, located within MSP, and total facility > 250 MMBtu/hr.

- $\leq 5840$  hours/year [Limit to avoid classification as a major modification per 40 CFR § 52.21 and 40 CFR pt. 51, Appendix S]
- Opacity  $\leq 20$  percent, except for one 6-min. period per hour of not more than 60 percent opacity [Minn. R. 7011..0515, subp. 2]
- PM  $\leq 0.4$  lb/MMBtu heat input [Minn. R. 7011..0515, subp. 1]
- Recordkeeping of hours [Minn. R. 7007.0800, subp.5]

### **Group 015: Emergency Generators (EU 052-EU053, EU 104-EU113)**

The natural gas and diesel powered generators included in GP 015 are used for emergency purposes only. Per EPA guidance, potential emissions for each of the engines are based on 500 hours per year of operating time for purposes of determining rule applicability. As stationary internal combustion engines, each of the GP 015 emission units is subject to the following requirements:

- Opacity  $\leq 20$  percent [Minn. R. 7011.2300]
- SO<sub>2</sub>  $\leq 0.5$  lb/MMBtu heat input [Minn. R. 7011.2300]
- Recordkeeping of hours [Minn. R. 7007.0800, subp.5]

### **SV001: EU001 - CFB Boiler**

Stack/Vent 001 is the exhaust stack for the CFB boiler (EU001) at the SE facility. The state-only limits for SV001 are based on the use of computer programs to predict the dispersion of pollutants from the stack, if the limits are more stringent than limits in federal regulations or State Rules that apply to this boiler, or if there are no federal regulation or State Rules for a pollutant. CO is an example of a pollutant for which there were no standard emission limits. The limits for SO<sub>2</sub> and NO<sub>x</sub> are examples of limits that are more stringent (when burning coal) than the limits specified in federal regulations for this type of boiler. In order to verify compliance with the emission factors used in GP001, the facility is required to test according to the approved testing frequency plan (typically once each calendar 60 months starting August 21, 2003) for PM, PM<sub>10</sub>, CO and VOC. Performance testing is also required for CO to verify compliance with limits within SV001. Testing frequency may be more frequent depending upon test results.

- Carbon Monoxide: A limit of 0.267 lb/MMBtu heat input, equivalent to 70.75 lb/hr as a 1-hr average is required by computer analysis of the dispersion of CO from the stack (modeling). This is verified by performance testing every 5 years.
- Sulfur Dioxide: 0.38 lb/MMBtu heat input and less than or equal to 96.1 lb/hr as determined by a CEMS as a 1-hour average when burning coal. Note: Modeling based emission limits, in terms of lb/MMBtu, are more stringent than the Subpart Db lb/MMBtu emission limits. Further requirements can be found under EU001.
- Nitrogen Oxides: 0.222 lb/MMBtu heat input and less than or equal to 58.96 lb/hr as determined by a CEMS as a 1-hr average.
- PM-10: The PM-10 emission limit set in the 1996 permit is deleted from this permit. The modeling was revised in 1999 to include corrected estimated emission factors for PM10 as measured by Method 201 (or 201a) and Method 202. The original limit of 4.78 lb/hr (0.018 lb/MMBtu) is now used as a corrected emission factor in GP001 of 8.76 lb/hr (0.033 lb/MMBtu heat input). Uncontrolled emissions are expected to be approximately 0.5 to 0.6 lb/MMBtu so this limit requires a reduction of at least 95 percent. The baghouse dust collector is expected to be at least 99 percent efficient. The PM10 emission rate is verified by performance testing every 5 years.
- As a result of modeling, startup fuel is limited to natural gas only, except that No. 2 fuel oil may be used when natural gas is curtailed up to 15 percent of the maximum heat input (40 MMBtu/hr) for startup only. The limit for this is within EU001.

#### Alternative Biomass Fuels Performance Testing and Submittals

The 1996 permit authorizing the installation and operation of the CFB boiler (EU001) and modification of the stoker fired boiler (EU005) involved a netting analysis to demonstrate that the project did not constitute a major modification triggering PSD review. The fuels considered in that analysis were coal, natural gas, wood and fuel oil. The authorization to burn these fuels is considered a Title I Condition, and modifying such a condition by adding a new fuel (i.e. oat hulls) requires a major permit amendment including public notice.

The permit provides authorization to perform test burns with limited quantities of defined alternative biomass fuels for limited periods of time for purposes of gathering emissions data. All permit conditions continue to apply during any test burn. The future addition of any alternative biomass fuels would require a major permit amendment.

This permit also includes the following requirements associated with the construction permit allowing the combustion of oat hulls (2006):

- Performance testing within 60 days of achieving max. firing rate with the new fuel handling system, but no later than 180 days after initial startup for CO, PM, PM10, VOC, HCl and hexane, monitor NOx and SO2 emissions using CEMS during testing
- If the resulting emissions meet specific permit requirements, the facility may utilize the new equipment without the need for an additional permit amendment. If the specified conditions are not met, a permit amendment would be required to operate the equipment.
- If the performance test indicates that the permit limits would not be met with the burning of oat hulls, a major permit amendment would be required which would include an analysis of possible subpart Db applicability.
- Performance test notifications and submittals
- Revised PSD analysis based on Performance Test
- Authorization for performance test burns of alternative biomass fuels in EU001 and EU005 without the need to obtain a permit amendment. Test burns may only be conducted after a performance test plan is submitted by the U of M and is approved by the MPCA. After performance testing is completed, the new biomass fuel may be burned only if the U of M applies for and received a major permit amendment.

**EU001: SG201 – Circulating Fluidized Bed Boiler**

200,000 lb/hr steam = max. design capacity, 265.32 MMBtu/hr.

- Fuels: bituminous and subbituminous coal, distillate fuel oil for 15 percent of max. heat input for startup only, natural gas, and approved biomass.
- Coal Properties: 8750-8930 btu/lb, typically 0.5 weight percent sulfur, 6.0 weight percent ash
- PCE: baghouse to capture PM
- Limestone bed, an integral part of the process, reduces SO2 and HAP emissions (i.e. HCl and HF)
- CEMS for Opacity, SO2 and Nitrogen Oxides. COM Certification test performed 8/17-10/11/99 EU001
- As a result of modeling, startup fuel is limited to natural gas only, except that No. 2 fuel oil may be used when natural gas is curtailed up to 15 percent of the maximum heat input (40 MMBtu/hr) for startup only.

The circulating fluidized bed boiler is installed in the existing Southeast Plant Building in Minneapolis. It is capable of burning coal, oil, natural gas, wood and other approved biomass. The boiler can also burn distillate low-sulfur fuel oil for startup up to 15 percent of maximum heat input. The steam from this boiler is generated at a pressure that is higher than the pressure in the campus heating system. The high pressure steam is first used to power a turbine to generate electricity for the campus. The steam leaving the turbine is at a lower pressure suitable

for distribution through the campus heating system. The coal burned in this boiler is mixed with pulverized limestone as it is burning. The limestone captures the SO<sub>2</sub> as it is formed. The limestone dust with the captured SO<sub>2</sub> is collected by the baghouse dust collector.

Based on the unit's construction date, it is subject to the requirements of 40 CFR Part 60, Subpart Db [Minn. R. 7011.0565]. In some cases, the boiler is subject to more strict emissions limitations resulting from past air dispersion modeling results. Each pollutant, and associated permit terms, is described below.

- Sulfur Dioxide –Reduction of 90 percent from the potential emission rate is required by the NSPS found in 40 CFR part 60, subp Db. Potential Emission Rate is defined as the maximum emission rate in pounds per hour that would occur based on the sulfur content of the fuel being burned and no air pollution control equipment. In addition to the emission limits from subp. Db and the modeling-based emission limits found under SV001, EU001 is subject to a 90 percent SO<sub>2</sub> reduction requirement whenever coal is combusted (because the unit is restricted to combusting only very low sulfur fuel oil, the percent reductions do not apply when the unit is combusting oil.) The limits are verified by SO<sub>x</sub> CEMS, fuel oil certification, and fuel sampling.
- Total PM: The unit is subject to the applicable limits from Subpart Db. One million Btu of heat is equivalent to burning about 114 pounds of subbituminous coal. The PM limit of 0.10 lb/million Btu of heat input is equal to 26.53 lb/hr at the maximum rating of this boiler. Uncontrolled emissions would be approximately 5 lb/MMBtu, depending on the ash content of the coal being burned, so this limit requires a reduction of at least 98 percent. The baghouse dust collector is expected to be more than 99 percent efficient. The PM emission rate is verified by performance testing every 5 years.
- Nitrogen Oxides: 0.20 lb/MMBtu when combusting fuel oil or natural gas. This is equal to 53.06 lb/hr at the maximum rating of this boiler. This limit is required by 40 CFR part 60, subp. Db. [A limit of 0.222 lb/MMBtu heat input, equivalent to 58.96 lb/hr is required by computer analysis of the dispersion of NO<sub>x</sub> from the stack (modeling) – See SV001.] 40 CFR part 60, subp. Db restricts NO<sub>x</sub> emissions when a combination of fuels is burned in the unit according to the following equation:

$$E_n = [(EL_{go} \times H_{go}) + (EL_c \times H_c)] / (H_{go} + H_c)$$

Where:

$E_n$  = the NO<sub>x</sub> emission limit in lb/MMBtu

$EL_{go}$  = the emission limit for natural gas or fuel oil, lb/MMBtu

$H_{go}$  = the total heat input from natural gas or fuel oil, MMBtu/hr

$EL_c$  = the emission limit for coal in lb/MMBtu

$H_c$  = the total heat input from coal, MMBtu/hr

The limits are verified by NO<sub>x</sub> CEMS.

- Opacity: Opacity is a measure of how dark a plume from a stack appears as compared to the sky or other background behind the plume. Opacity is measured as the percent of light that is absorbed by the plume from the background. A plume that is so thick and dark it lets no light through has opacity of 100 percent. Opacity can be measured in the stack continuously by electronic instruments. Persons can also be trained to estimate opacity by visual observations that closely agree with the instrument readings. The limit for the CFB is 20 percent as a six-minute average with one six-minute period per hour allowed of up to 27 percent. The limit is verified by COMS.

**SV002 - EU002 and EU003: SG202/SG203 – Med/High Pressure Package Boilers**

The two boilers designated EU 002 and EU003 exhaust to the atmosphere through a common stack (SV002). The limits listed for SO<sub>2</sub>, NO<sub>x</sub>s, and carbon monoxide were established in connection with past modeling performed to demonstrate compliance with National and Minnesota Ambient Air Quality Standards. In order to verify compliance with the emission factors used in GP001, the facility is required to test according to the approved testing frequency plan (typically once each calendar 60 months) for PM, PM<sub>10</sub>, CO and VOC. Performance testing is also required for CO to verify compliance with limits within SV002.

- SO<sub>2</sub>: 267.6 lb/hr using a 3-hour block average as determined by fuel oil vendor certification.
- NO<sub>x</sub>: 0.140 lb/MMBtu and 35.24 lb/hr for EU 002 and 37.51 lb/hr for EU 003 for all fuels as determined by NO<sub>x</sub> CEMS on a 30 day rolling average basis.
- CO: 0.040 lb/MMBtu and 10.07 lb/hr for EU 002 and 10.71 lb/hr for EU 003 for all fuels determined on a 1-hour average.
- PM<sub>10</sub>: The PM-10 emission limit set in the 1996 permit is deleted from this permit. The modeling was revised in 1999 to include corrected estimated emission factors for PM<sub>10</sub> as measured by Method 201 (or 201a) and Method 202. The original limit of 18.7 lb/hr total (0.036 lb/MMBtu each boiler) is now used as a corrected emission factor in GP001 of 14.1 lb/hr and 0.056 lb/MMBtu for EU002 and 15.0 lb/hr and 0.056 lb/MMBtu for EU003.
- PM and VOC – testing for emission factors contained within GP001 are contained herein.

**EU002: Medium Pressure Package Boiler**

250,000 lb/hr steam = max. design capacity, 251.75 MMBtu/hr with fuel oil, 295.9 MMBtu/hr with natural gas. No APCE for boilers combusting only natural gas and distillate fuel oil.

This boiler generates steam at the pressure at which steam is distributed through the campus heating system. As a result, this steam is not used to power the turbine to generate electricity. As a result, since generating electricity along with steam for heating is more economical than generating steam heat alone, this boiler will be used primarily when more steam is needed than the CFB and high pressure package boiler can furnish or when the turbine is out of service. The boiler is subject to NSPS, 40 CFR, subpart Db.

- PM: For boilers such as this one which combust only natural gas and distillate low-sulfur fuel oil, and are regulated by federal NSPS regulation, there is no TPM limit. [Testing for PM is required to verify emission factor for PM within GP001. Limit taken to assure modification is not major for PSD.]

- PM-10/NOx/CO: These limits are discussed under SV002
- SO2: Sulfur content of the fuel oil used must be no more than 0.5 percent by weight.
- Opacity: The limit is 20 percent as a six-minute average with one six-minute period per hour allowed of up to 27 percent
- Continuous monitoring of stack emissions for Opacity. COM Certification test performed 6/30-7/23/99 for SV002.

*40 CFR Section 60.42b(j):* Percent reduction requirements are not applicable to affected facilities combusting only very low sulfur oil. Require use of very-low-sulfur fuel oil and maintain fuel receipts as described in Section 60.49b(r).

### **EU003: High Pressure Package Boiler**

200,000 lb/hr steam = max. design capacity, 267.9 MMBtu/hr with fuel oil, 280.68 MMBtu/hr with natural gas. No APCE for boilers combusting only natural gas and distillate fuel oil.

This boiler is installed at the SE Plant Building in Minneapolis. The boiler is capable of burning either natural gas or distillate low-sulfur fuel oil to generate steam at its maximum design capacity. This boiler will generate steam at the same pressure as the CFB. The steam will thus first pass through the turbine to generate electricity and then be distributed through the campus heating system. The boiler is subject to NSPS, 40 CFR, subpart Db.

- PM: For boilers such as this one which combust only natural gas and distillate low-sulfur fuel oil, and are regulated by federal NSPS regulation, there is no TPM limit. [Testing for PM is required to verify emission factor for PM within GP001. Limit taken to assure modification in not major for PSD.]
- PM10/NOx/CO: These limits are discussed under SV002
- SO2: Sulfur content of the fuel oil used must be no more than 0.5 percent by weight.
- Opacity: The limit is 20 percent as a six-minute average with one six-minute period per hour allowed of up to 27 percent
- Continuous monitoring of stack emissions for Opacity. COM Certification test performed 7/15-8/10/99 SV002

*40 CFR Section 60.42b(j):* Percent reduction requirements are not applicable to affected facilities combusting only very low sulfur oil. Require use of very-low-sulfur fuel oil and maintain fuel receipts as described in Section 60.49b(r).

### **SV003 (EU004): SE3 – Pulverized Coal Boiler**

SV003 is the exhaust stack for EU004. The limits are for pollutants for which the computer dispersion modeling programs require more stringent limits than in current rules (Minn. R. 7009.0020). Other limits for this unit are at EU004.

- PM10: The PM-10 emission limit set in the 1996 permit is deleted from this permit. The modeling was revised in 1999 to include corrected estimated emission factors for PM10 as measured by Method 201 (or 201a) and Method 202. The original limit of 1.01 lb/hr total (0.006 lb/MMBtu) is now used as a corrected emission factor in GP001 of 17.91 lb/hr and 0.106 lb/MMBtu.

- SO<sub>2</sub>: ≤ 0.34 lb/MMBtu (56.78 lb/hr) as a 1-hr average at maximum rated capacity when combusting coal or No.2 fuel oil or both as determined by CEMS.
- NO<sub>x</sub>: ≤ 1.18 lb/MMBtu, equivalent to 198.74 lb/hr, at maximum rated capacity
- CO: ≤ 0.03 lb/MMBtu, equivalent to 5.75 lb/hr, at maximum rated capacity

The performance testing requirements incorporate PM<sub>10</sub>, PM, NO<sub>x</sub>, CO and VOC in order to verify emission factors for use in showing compliance with GP001 limits. SO<sub>2</sub> is determined via CEMS and use of fuel-oil certificates. Continuous monitoring for SO<sub>2</sub> and Opacity is required. Because a removal efficiency determination is not required for SO<sub>2</sub>, the CEM is required only after the dry scrubber.

**EU004: SE3 – Pulverized Coal Boiler**

110,000 lb/hr steam = max. design capacity, 169 MMBtu/hr pulverized subbituminous and bituminous coal. Capability to use natural gas and fuel oil up to full capacity as the primary fuels. The boiler utilizes a baghouse to control particulate emissions and a dry scrubber to control acid gas (i.e., SO<sub>2</sub>, HCl and HF) emissions.

This boiler was installed in 1941. This boiler will be normally used in a cold shutdown condition (newer boilers would be used primarily).

- PM: 0.1 lb/MMBtu based on a previous permit condition (more restrictive than PM ≤ 0.4 lb/MMBtu = Minn. R. 7011.0510, subp. 1)
- PM<sub>10</sub>/SO<sub>2</sub>/NO<sub>x</sub>/CO: Discussed under SV003
- SO<sub>2</sub>: ≤ 3.0 lb/MMBtu when combusting solid fuels, or according to formula for combustion of solid and liquid fuels (Minn. R. 7011.0510, subp. 1). SO<sub>2</sub> emissions determined via CEMS and fuel-oil certificates.  
[57.46 lb/hr / 169 MMBtu/hr = 0.34 lb/MMBtu per equipment design, w/o scrubber = limit set in SV003]
- Opacity: ≤ 20 percent as a six-minute average with one two-minute period per hour allowed up to 33 percent based on a previous permit condition (more restrictive than Opacity ≤ 20 percent, except for one six-minute period per hour of not more than 60 percent opacity. = Minn. R. 7011.0510, subp. 2)
- Continuous monitoring for opacity and SO<sub>2</sub>.

**SV004 (EU005): SE4 – Pulverized Coal Boiler**

SV004 is the exhaust stack for EU005. The limits are for pollutants for which the computer dispersion modeling programs require more stringent limits than in current rules (Minn. R. 7009.0020). Other limits for this unit are at EU005.

- PM<sub>10</sub>: The PM-10 emission limit set in the 1996 permit is deleted from this permit. The modeling was revised in 1999 to include corrected estimated emission factors for PM<sub>10</sub> as measured by Method 201 (or 201a) and Method 202. The original limit of 0.95 lb/hr total (0.005 lb/MMBtu) is now used as a corrected emission factor in GP001 of 15.71 lb/hr and 0.084 lb/MMBtu.

- SO<sub>2</sub>: ≤ 0.34 lb/MMBtu (62.83 lb/hr) as a 1-hr average at maximum rated capacity when combusting coal or No.2 fuel oil or both as determined by CEMS.
- NO<sub>x</sub>: ≤ 0.78 lb/MMBtu, equivalent to 146.61 lb/hr, at maximum rated capacity
- CO: ≤ 0.28lb/MMBtu, equivalent to 52.34 lb/hr, at maximum rated capacity

The performance testing requirements incorporate PM<sub>10</sub>, PM, NO<sub>x</sub>, CO and VOC in order to verify emission factors for use in showing compliance with GP001 limits. SO<sub>2</sub> is determined via CEMS and use of fuel-oil certificates. Continuous monitoring for SO<sub>2</sub> and Opacity is required. Because a removal efficiency determination is not required for SO<sub>2</sub>, the CEM is required only after the dry scrubber.

#### **EU005: SE4 – Spreader Stoker Boiler**

137,000 lb/hr steam = max. design capacity, 187 MMBtu/hr pulverized subbituminous and bituminous coal. Capability to use natural gas and fuel oil up to full capacity as the primary fuels. The boiler utilizes a baghouse to control particulate emissions and a dry scrubber to control acid gas (i.e., SO<sub>2</sub> HCl and HF) emissions.

This boiler was installed in 1949. This boiler will be normally used in a cold shutdown condition (newer boilers would be used primarily).

- PM: 0.1 lb/MMBtu based on a previous permit condition (more restrictive than PM ≤ 0.4 lb/MMBtu = Minn. R. 7011.0510, subp. 1)
- PM<sub>10</sub>/SO<sub>2</sub>/NO<sub>x</sub>/CO: Discussed under SV004
- SO<sub>2</sub>: ≤ 3.0 lb/MMBtu when combusting solid fuels, or according to formula for combustion of solid and liquid fuels (Minn. R. 7011.0510, subp. 1).  
[62.83 lb/hr / 187 MMBtu/hr = 0.34 lb/MMBtu per equipment design, w/o scrubber]
- Opacity: ≤ 20 percent as a six-minute average with one two-minute period per hour allowed up to 33 percent based on a previous permit condition (more restrictive than Opacity ≤ 20 percent, except for one six-minute period per hour of not more than 60 percent opacity. = Minn. R. 7011.0510, subp. 2)
- Continuous monitoring for opacity and SO<sub>2</sub>.

#### **Alternative Biomass Fuels Performance Testing and Submittals**

The 1996 permit authorizing the installation and operation of the CFB boiler (EU001) and modification of the stoker fired boiler (EU005) involved a netting analysis to demonstrate that the project did not constitute a major modification triggering PSD review. The fuels considered in that analysis were coal, natural gas, wood and fuel oil. The authorization to burn these fuels is considered a Title I Condition, and modifying such a condition by adding a new fuel (i.e. oat hulls) requires a major permit amendment including public notice.

The permit provides authorization to perform test burns (in EU001 and EU005) with limited quantities of defined alternative biomass fuels for limited periods of time for purposes of gathering emissions data. All permit conditions continue to apply during any test burn. The future addition of any alternative biomass fuels would require a major permit amendment.

This permit also includes the following requirements associated with the construction permit allowing the combustion of oat hulls (2006):

- Performance testing within 60 days of firing oat hulls in the unit using the new fuel handling system, for CO, PM, PM10, VOC, HCl and hexane, monitor NOx and SO2 emissions using CEMS during testing
- If the resulting emissions meet specific permit requirements, the facility may utilize the new equipment without the need for an additional permit amendment. If the specified conditions are not met, a permit amendment would be required to operate the equipment.
- Performance test notifications and submittals
- Revised PSD analysis based on Performance Test
- Authorization for performance test burns of alternative biomass fuels in EU001 and EU005 without the need to obtain a permit amendment. Test burns may only be conducted after a performance test plan is submitted by the U of M and is approved by the MPCA. After performance testing is completed, the new biomass fuel may be burned only if the U of M applies for and received a major permit amendment.

**SV005 (EU006): SG231 – Medium Pressure Package Boiler (New St. Paul Boiler)**

SV005 is the exhaust stack for EU006. The limits are for pollutants for which the computer dispersion modeling programs require more stringent limits than in current rules (Minn. R. 7009.0020). Other limits for this unit are at EU006.

- PM10: The PM-10 emission limit set in the 1996 permit is deleted from this permit. The modeling was revised in 1999 to include corrected estimated emission factors for PM10 as measured by Method 201 (or 201a) and Method 202. The original limit of 9.76 lb/hr total (0.036 lb/MMBtu) is now used as a corrected emission factor in GP001 of 15.2 lb/hr and 0.056 lb/MMBtu.
- NOx:  $\leq 0.140$  lb/MMBtu, equivalent to 37.95 lb/hr, at maximum rated capacity
- CO:  $\leq 0.040$  lb/MMBtu, equivalent to 10.86 lb/hr, at maximum rated capacity

The performance testing requirements incorporate PM10, PM, CO and VOC in order to verify emission factors for use in showing compliance with GP001 limits. SO2 is determined via use of fuel-oil certificates. Continuous monitoring for NOx and Opacity is required.

Last performance test for CO, PM10, VOC conducted 4/8/04. Compliant, with no adjustments or limits required as a result of testing.

**EU006: SG231 – Medium Pressure Package Boiler (New St. Paul Boiler)**

250,000 lb/hr steam = max. design capacity, 271.08 MMBtu/hr with fuel oil, 316.44 MMBtu/hr with natural gas. This boiler generates steam to be distributed through the campus heating system. No electricity generation is planned for the St. Paul campus. This boiler is subject to NSPS, 40 CFR Part 60, subp. Db.

- PM: For boilers such as this one which combust only natural gas and distillate low-sulfur fuel oil, and are regulated by federal NSPS regulation, there is no TPM limit

- PM10/SO2/NOx/CO: Discussed under SV005
- SO2: Sulfur content of fuel oil used must be no more than 0.5 percent by weight
- Opacity: The limit is 20 percent as a six-minute average with one six-minute period per hour allowed of up to 27 percent (40 CFR Section 60.43b(f))
- Continuous monitoring of NOx and Opacity required by NSPS, 40 CFR Pt. 60, Subp. Db

**SV006 (EU007, EU008, EU009, EU010): St. Paul Boilers 1, 2, 5, and 6**

Stack/Vent 006 is the exhaust stack shared by St. Paul Boilers 1, 2, 5, and 6. Boilers 3 and 4 were permanently shut down. Their emissions were included in the computer dispersion analysis for this facility. These are state-only limits.

- PM10: The PM-10 emission limit set in the 1996 permit is deleted from this permit. The modeling was revised in 1999 to include corrected estimated emission factors for PM10 as measured by Method 201 (or 201a) and Method 202. The original emission factor of 0.96 lb/hr total is now 25.8 lb/hr and 0.1 lb/MMBtu total. The facility must test periodically to ensure that this emission factor is still valid so that the assumptions used in modeling compliance with the NAAQS remain valid.
- SO2:  $\leq 1.15$  lb/MMBtu (297.48 lb/hr) with all 4 boilers operating as determined by fuel sampling and analysis.
- NOx:  $\leq 0.63$  lb/MMBtu, equivalent to 162.56 lb/hr, at maximum rated capacity when EU007 – EU010 are all operating;  $\leq 0.808$  lb/MMBtu when only EU007 and/or EU008 are operating;  $\leq 0.538$  lb/MMBtu when only EU009 and/or EU010 are operating.
- CO: Revised modeling in 1999 resulted in limits of  $\leq 0.14$  lb/MMBtu, equivalent to 36.2 lb/hr, at maximum rated capacity for all boilers; and  $\leq 0.04$  lb/MMBtu when only EU007 and/or EU008 are operating;  $\leq 0.192$  lb/MMBtu when only EU009 and/or EU010 are operating.

**Stack-testing conducted:**

- COM Certification test performed 10/14-28/98 on SV006 (recertification)
- EU007 (alone): 1/15/02 for PM10, NOx, CO. The permit does not contain limits for PM10 for EU007 operating alone, the limits are for simultaneous operation of the boilers.
- EU008 (alone): 12/4/03 for PM10, NOx, CO. The permit does not contain limits for PM10 for EU008 operating alone, the limits are for simultaneous operation of the boilers. Results were 70 percent of the limit, therefore testing required every 3 years according to TFP (due 12/4/06)
- EU009 (alone): 1/16/02 for PM10, NOx, CO. The permit does not contain limits for PM10 for EU009 operating alone, the limits are for simultaneous operation of the boilers.
- EU010 (alone): 1/17/02 for PM10, NOx, CO. The permit does not contain limits for PM10 for EU009 operating alone, the limits are for simultaneous operation of the boilers.

No operating limits were required to be set as a result of performance testing. By meeting the lb/MMBtu limit for PM10 individually, the same limit will be met collectively. Testing will be required in accordance with the approved testing frequency plan.

**EU007: SP1 – Pulverized Coal Boiler**

30,000 lb/hr steam = max. design capacity, 44 MMBtu/hr pulverized coal, distillate oil, natural gas.  
Mechanical cyclone and fabric filter baghouse.

- PM:  $\leq 0.4$  lb/MMBtu of heat input (Minn. R. 7011.0510, subp. 1). This is equal to 17.60 lb/hr at the maximum rating. One million btu of bituminous coal, the type usually used at the St. Paul campus, is approximately 77 lbs.
  - 4.40 lb/hr max PM PTE/ 44 MMBtu/hr = 0.10 lb/MMBtu < 0.4 lb/MMBtu OK
- PM10/SO2/NOx/CO: discussed under SV006
- Opacity: The limit is 20 percent opacity as a six-minute average with 60 percent allowed for 6 minutes in ay 60-minute period (Minn. R. 7011.0510, subp. 2)
- Sulfur Dioxide: less than or equal to the amount allowed by the following formula when different fuels are burned simultaneously in any combination (Minn. R. 7011.0510, subp 1):

$$W = (Y \times A + Z \times B) / (X + Y + Z)$$

where:

W = the maximum allowable emissions of SO2 in lb/MMBtu

X = percentage of total heat input from gaseous fossil fuel

Y = percentage of total heat input from liquid fossil fuel

Z = percentage of total heat input from solid fossil fuel

A = the allowable SO2 standard for liquid fossil fuels

B = the allowable SO2 standard for solid fossil fuels

$$[\leq 3.0 \text{ lb/MMBtu for coal} \Rightarrow 50.60 \text{ lb/hr} / 44 \text{ MMBtu/hr} = 1.15 \text{ lb/MMBtu} < 3.0 \text{ lb/MMBtu OK}]$$

$$[\leq 1.6 \text{ lb/MMBtu for liquid fuels} \Rightarrow 22.66 \text{ lb/hr} / 44 \text{ MMBtu/hr} = 0.515 \text{ lb/MMBtu} < 1.6 \text{ lb/MMBtu OK}]$$

This limit is met by equipment design and is less restrictive than the SO2 limit for this unit found under SV006.

- COMS required by state rule
- Coal Sampling and Analysis (GP008) and fuel oil sulfur content certification used to determine compliance with SO2 limit.

### **EU008: SP2 – Pulverized Coal Boiler**

30,000 lb/hr steam = max. design capacity, 44 MMBtu/hr pulverized coal, distillate oil, natural gas.  
Mechanical cyclone and fabric filter baghouse.

- PM:  $\leq 0.4$  lb/MMBtu of heat input (Minn. R. 7011.0510, subp. 1). This is equal to 17.60 lb/hr at the maximum rating. One million btu of bituminous coal, the type usually used at the St. Paul campus, is approximately 77 lbs.
  - 4.40 lb/hr max PM PTE/ 44 MMBtu/hr = 0.10 lb/MMBtu < 0.4 lb/MMBtu OK
- PM10/SO2/NOx/CO: discussed under SV006
- Opacity: The limit is 20 percent opacity as a six-minute average with 60 percent allowed for 6 minutes in ay 60-minute period (Minn. R. 7011.0510, subp. 2)

- Sulfur Dioxide: less than or equal to the amount allowed by the following formula when different fuels are burned simultaneously in any combination (Minn. R. 7011.0510, subp 1):

$$W = (Y \times A + Z \times B) / (X + Y + Z)$$

where: W = the maximum allowable emissions of SO2 in lb/MMBtu  
 X = percentage of total heat input from gaseous fossil fuel  
 Y = percentage of total heat input from liquid fossil fuel  
 Z = percentage of total heat input from solid fossil fuel  
 A = the allowable SO2 standard for liquid fossil fuels  
 B = the allowable SO2 standard for solid fossil fuels

$$[\leq 3.0 \text{ lb/MMBtu for coal} \Rightarrow 50.60 \text{ lb/hr} / 44 \text{ MMBtu/hr} = 1.15 \text{ lb/MMBtu} < 3.0 \text{ lb/MMBtu} \text{ OK}]$$

$$[\leq 1.6 \text{ lb/MMBtu for liquid fuels} \Rightarrow 22.66 \text{ lb/hr} / 44 \text{ MMBtu/hr} = 0.515 \text{ lb/MMBtu} < 1.6 \text{ lb/MMBtu} \text{ OK}]$$

This limit is met by equipment design and is less restrictive than the SO2 limit for this unit found under SV006.

- COMS required by state rule
- Coal Sampling and Analysis (GP008) and fuel oil sulfur content certification used to determine compliance with SO2 limit.

### **EU009: SP5 – Spreader Stoker Boiler**

60,000 lb/hr steam = max. design capacity, 85 MMBtu/hr coal, distillate oil, natural gas. Mechanical cyclone and fabric filter baghouse.

- PM:  $\leq 0.4$  lb/MMBtu of heat input (Minn. R. 7011.0510, subp. 1). This is equal to 34 lb/hr at the maximum rating. One million btu of bituminous coal, the type usually used at the St. Paul campus, is approximately 77 lbs.
  - $8.50 \text{ lb/hr max PM PTE} / 85 \text{ MMBtu/hr} = 0.10 \text{ lb/MMBtu} < 0.4 \text{ lb/MMBtu} \text{ OK}$
- PM10/SO2/NOx/CO: discussed under SV006
- Opacity: The limit is 20 percent opacity as a six-minute average with 60 percent allowed for 6 minutes in any 60-minute period (Minn. R. 7011.0510, subp. 2)
- Sulfur Dioxide: less than or equal to the amount allowed by the following formula when different fuels are burned simultaneously in any combination (Minn. R. 7011.0510, subp 1):

$$W = (Y \times A + Z \times B) / (X + Y + Z)$$

where: W = the maximum allowable emissions of SO2 in lb/MMBtu  
 X = percentage of total heat input from gaseous fossil fuel  
 Y = percentage of total heat input from liquid fossil fuel  
 Z = percentage of total heat input from solid fossil fuel  
 A = the allowable SO2 standard for liquid fossil fuels  
 B = the allowable SO2 standard for solid fossil fuels

$$[\leq 3.0 \text{ lb/MMBtu for coal} \Rightarrow 97.75 \text{ lb/hr} / 85 \text{ MMBtu/hr} = 1.15 \text{ lb/MMBtu} < 3.0 \text{ lb/MMBtu} \text{ OK}]$$

$$[\leq 1.6 \text{ lb/MMBtu for liquid fuels} \Rightarrow 43.78 \text{ lb/hr} / 85 \text{ MMBtu/hr} = 0.515 \text{ lb/MMBtu} < 1.6 \text{ lb/MMBtu} \text{ OK}]$$

This limit is met by equipment design and is less restrictive than the SO2 limit for this unit found under SV006.

- COMS required by state rule

- Coal Sampling and Analysis (GP008) and fuel oil sulfur content certification used to determine compliance with SO2 limit.

**EU010: SP6 – Spreader Stoker Boiler**

60,000 lb/hr steam = max. design capacity, 85 MMBtu/hr coal, distillate oil, natural gas. Mechanical cyclone and fabric filter baghouse.

- PM: ≤ 0.4 lb/MMBtu of heat input (Minn. R. 7011.0510, subp. 1). This is equal to 34 lb/hr at the maximum rating. One million btu of bituminous coal, the type usually used at the St. Paul campus, is approximately 77 lbs.
  - 8.50 lb/hr max PM PTE/ 85 MMBtu/hr = 0.10 lb/MMBtu < 0.4 lb/MMBtu OK
- PM10/SO2/NOx/CO: discussed under SV006
- Opacity: The limit is 20 percent opacity as a six-minute average with 60 percent allowed for 6 minutes in any 60-minute period (Minn. R. 7011.0510, subp. 2)
- Sulfur Dioxide: less than or equal to the amount allowed by the following formula when different fuels are burned simultaneously in any combination (Minn. R. 7011.0510, subp 1):

$$W = (Y \times A + Z \times B) / (X + Y + Z)$$

where:

W = the maximum allowable emissions of SO2 in lb/MMBtu

X = percentage of total heat input from gaseous fossil fuel

Y = percentage of total heat input from liquid fossil fuel

Z = percentage of total heat input from solid fossil fuel

A = the allowable SO2 standard for liquid fossil fuels

B = the allowable SO2 standard for solid fossil fuels

$$[\leq 3.0 \text{ lb/MMBtu for coal} \Rightarrow 97.75 \text{ lb/hr} / 85 \text{ MMBtu/hr} = 1.15 \text{ lb/MMBtu} < 3.0 \text{ lb/MMBtu OK}]$$

$$[\leq 1.6 \text{ lb/MMBtu for liquid fuels} \Rightarrow 43.78 \text{ lb/hr} / 85 \text{ MMBtu/hr} = 0.515 \text{ lb/MMBtu} < 1.6 \text{ lb/MMBtu OK}]$$

This limit is met by equipment design and is less restrictive than the SO2 limit for this unit found under SV006.

- COMS required by state rule
- Coal Sampling and Analysis (GP008) and fuel oil sulfur content certification used to determine compliance with SO2 limit.

**SV007: EU011 - SP7 – Oil/Gas Package Boiler**

82,000 lb/hr steam = max. design capacity, 99 MMBtu/hr distillate oil; 78,000 lb/hr steam and 99 MMBtu/hr natural gas. SV007 is the exhaust stack for EU011. The limits are for pollutants for which the computer dispersion modeling programs require more stringent limits than in current rules (Minn. R. 7009.0020). Other limits for this unit are at EU011.

- PM10: The PM10 emission limit set in the 1996 permit is deleted from this permit. The modeling was revised in 1999 to include corrected estimated emission factors for PM10 as measured by Method 201 (or 201a) and Method 202. The original emission factor of 0.79 lb/hr (0.008 lb/MMBtu ) is now 5.54 lb/hr and 0.056 lb/MMBtu. The facility must test according to the Testing Frequency Plan (currently set at every 5 years) to ensure that this

emission factor is still valid so that the assumptions used in modeling compliance with the NAAQS remain valid.

- NO<sub>x</sub>: ≤ 0.140 lb/MMBtu, equivalent to 13.86 lb/hr, at maximum rated capacity
- CO: ≤ 0.004lb/MMBtu, equivalent to 3.56 lb/hr, at maximum rated capacity
- Performance testing required for PM<sub>10</sub>, NO<sub>x</sub>, and CO according to approved Testing Frequency Plan (currently every 5 years.)
  - PM<sub>10</sub> tested 12/5/03 = 0.023 lb/MMBtu and 1.051 lb/hr OK – 5 years
  - NO<sub>x</sub> tested 12/5/03 = 0.13 lb/MMBtu and 11.97 lb/hr OK – test in 1 year (12/5/04)
  - CO tested 12/5/03 = 0.0037 lb/MMBtu and 0.34 lb/hr OK – 5 years

Last performance test for PM<sub>10</sub>, NO<sub>x</sub> and CO conducted 12/5/03. Compliant, with no adjustments or limits required as a result of testing.

### **EU011: SP7 – Oil/Gas Package Boiler**

82,000 lb/hr steam = max. design capacity, 99 MMBtu/hr distillate oil; 78,000 lb/hr steam and 99 MMBtu/hr natural gas. This boiler will serve together with EU006 as the primary source of steam for the St. Paul campus. This boiler was installed in 1991 and is therefore subject to 40 CFR Subp. Dc - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units.

- PM: For boilers such as this one which combust only natural gas and distillate low-sulfur fuel oil, and are regulated by federal NSPS regulation, there is no TPM limit
- PM<sub>10</sub>/NO<sub>x</sub>/CO: These limits are discussed under SV007
- SO<sub>2</sub>: Sulfur content of the fuel oil used must be no more than 0.5 percent by weight. The percent reduction requirements do not apply to this boiler. [40 CFR § 42c(d)] Subp. Dc requires either sampling and analysis of distillate oil fuel or maintaining fuel oil supplier receipts. This permit will require maintenance of fuel oil supplier receipts under 40 CFR § 60.44c(h).
- Opacity: The limit is 20 percent as a six-minute average with one six-minute period per hour allowed of up to 27 percent when combusting fuel oil (does not apply when combusting natural gas only) [40 CFR Section 60.43c(c)]
- Continuous monitoring of Opacity required. COM Certification test performed 11/18-12/3/98 on SV007 (recertification) [Minn. Rules]
- Fuel Usage and Heat Input Limits: Title I condition – limitation on amount of fuels combusted for the installation of this boiler to avoid classification as a major modification under 40 CFR § 52.21.
  - Fuel heat input: ≤ 99 MMBtu/hr from a previous permit.
  - Maximum Distillate Oil Use: ≤ 1,151,600 gallons per 12-month rolling sum.
  - Maximum Natural Gas Use: ≤ 563 million cubic feet per 12-month rolling sum.
  - Combined Fuel Usage Limit: ≤ 1,147,600 gallons of distillate oil on a 12-month rolling sum, ≤ 405.5 million cubic feet of natural gas on a 12-month rolling sum. For every 1000 gallons distillate oil used in excess of the limit above, the limit on natural gas is reduced by 114.1 million cubic feet. For every 1 million cubic feet of natural gas used in excess of the limit above, the limit on distillate oil use is reduced by 7300 gallons

### **EU012 and EU013: Diesel 1 and 2 – 720 rpm Generators**

Emission units EU012 and EU013 were *removed* in 1998.

### **EU014: Diesel 1 – 1800 rpm Generator**

Emission unit EU014 was installed in 1956. This emission unit is a non-peaking emergency generator. Its emissions were included in the netting analysis associated with the 10/24/96 construction permit.

- Title I Condition to avoid classification as a major modification under 40 CFR Section 52.21
  - Hours of operation  $\leq$  300 hours per year using a 12-month rolling sum
- Opacity:  $\leq$  20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
- Sulfur Dioxide:  $\leq$  0.5 lb/MMBtu as determined by vendor certification that fuel oil sulfur content is less than 0.5 percent by weight. [Minn. R. 7011.2300, subp. 2]

### **EU015: Diesel 2 – 1800 rpm Generator**

Emission unit EU015 was installed in 1990. This emission unit is a non-peaking emergency generator. Its emissions were included in the netting analysis associated with the 10/24/96 construction permit.

- Title I Condition to avoid classification as a major modification under 40 CFR Section 52.21
  - Hours of operation  $\leq$  300 hours per year using a 12-month rolling sum
- Opacity:  $\leq$  20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
- Sulfur Dioxide:  $\leq$  0.5 lb/MMBtu as determined by vendor certification that fuel oil sulfur content is less than 0.5 percent by weight. [Minn. R. 7011.2300, subp. 2]

### **EU016: Diesel 3 – 1800 rpm Fire Pump**

Emission unit EU016 was installed in 1997. This emission unit is a non-peaking emergency generator. Its emissions were included in the netting analysis associated with the 10/24/96 construction permit.

- Title I Condition to avoid classification as a major modification under 40 CFR Section 52.21
  - Hours of operation  $\leq$  300 hours per year using a 12-month rolling sum
- Opacity:  $\leq$  20 percent opacity once operating temperatures have been attained. [Minn. R. 7011.2300, subp. 1]
- Sulfur Dioxide:  $\leq$  0.5 lb/MMBtu as determined by vendor certification that fuel oil sulfur content is less than 0.5 percent by weight. [Minn. R. 7011.2300, subp. 2]

### **EU017-EU022, EU040 (Group 009): Coal handling operations**

See requirements under GP009.

*Because the facility is located in the Twin Cities area, the coal handling operations are subject to the requirements of Minnesota Rule 7011.1105. The permit terms of GP009 include the portions of this rule applicable to the GP009 coal handling operations. The requirements applying to the baghouses associated with the GP009 emission units are listed in GP007. All limits apply individually.*

The coal used by the Facility is unloaded in a totally enclosed rail car unloading terminal consisting of two railcar hoppers. Emissions generated from one of the hoppers, as well as two material drops in the enclosed tunnel (EU017), are collected and vented to fabric filter CE023. Emissions generated from the second hopper, as well as well as three material drops in the enclosed tunnel (EU018) are collected and vented to fabric filter CE024.

From the unloading terminal, the coal is transferred via totally enclosed conveyors directly to the Southeast Plant for processing and use in the boilers (EU020, controlled by CE026). There is also a truck unloading station, silo and handling system equipped with baghouse filters to be used only for biofuels destined for EU001, which will be located at the Southeast Plant.

#### **EU023-EU031 (Group 010): Miscellaneous material handling operations**

See requirements under GP010.

*The facility operates storage silos and bins for limestone, sand, lime, and ash. Each of these operations was installed after 1969 and is therefore subject to the Industrial Process Equipment Rule (IPER) limits of Minnesota Rule 7011.0715. The permit terms of GP010 include the portions of this rule applicable to the GP010 emission units. The requirements applying to the baghouses associated with the GP010 emission units are listed in GP007*

The Southeast Plant utilizes limestone, sand and lime for various purposes and handles the ash generated by the coal boilers. These materials are stored in various silos while awaiting transfer for further use or disposal. The main pollutant of concern for the storage silos is PM.

The limestone is injected into the CFB to control emissions of acid gases (i.e., SO<sub>2</sub>, HCl and HF) and the sand is used as the boiler's fluidized bed. The limestone and sand is delivered to the facility via truck and is pneumatically transferred to the appropriate storage silos. The emissions generated by the loading and unloading of the limestone silo (EU023) and the sand silo (EU024) are controlled by fabric filters (CE029 and CE030, respectively).

The lime is used in boilers EU004 (SE3) and EU005 (SE4) at the Southeast Plant. The lime is delivered to the facility via truck and is pneumatically conveyed to the storage silo. The emissions generated by the loading and unloading of the lime silo (EU025) are controlled by a fabric filter (CE031).

Ash generated by the CFB is pneumatically transferred to a silo prior to mixing with water and loadout to truck for disposal. The emissions generated by the pneumatic transfer (EU026) are controlled by a fabric filter (CE032) and emissions generated during the unloading of the CFB ash silo (EU027) are also controlled by a fabric filter (CE033). Similarly, the ash generated by boilers EU004 (SE3) and EU005 (SE4) is pneumatically transferred to a storage silo separate from the CFB ash. The emissions generated by the pneumatic transfer (EU028) from EU004 (SE3) and EU005 (SE4) are controlled by a fabric filter (CE034) and emissions generated during the unloading of the EU004 (SE3) and EU005 (SE4) ash silo (EU029) are also controlled by a fabric filter (CE035). Because the ash loaded out to trucks for disposal is wet (*Insignificant Activity*), the emissions are insignificant.

At the St. Paul Plant, the ash generated by boilers EU007-EU010 (SP1, SP2, SP5, and SP6) is pneumatically transferred to a storage silo. The emissions generated by the pneumatic transfer from the boilers to the ash storage silo (EU030) are controlled by a fabric filter (CE036) and emissions generated during the unloading of the ash silo (EU031) are also controlled by a fabric filter (CE037). Because the ash loaded out to trucks for disposal is wet (EU032), the emissions are insignificant.

### **EU033 – EU039: Main Plant Boilers - REMOVED**

### **EU041 – EU043: Peaking Generators, Pre-PSD**

See GP011 requirements.

*The natural gas and diesel powered generators included in GP011 are used as peaking units (i.e., generate electricity while power is available from the utility), in addition to their use as emergency generators.*

### **EU044 – EU051: Peaking Generators, Annual Limits to Avoid PSD**

See GP012 requirements.

*The natural gas and diesel powered generators included in GP012 are used as peaking units (i.e., generate electricity while power is available from the utility), in addition to their use as emergency generators*

### **EU045: Peaking Generator – 144GEN002 – Phillips-Wang Building (Replaced with EU145)**

See GP012 requirements.

*The natural gas and diesel powered generators included in GP012 are used as peaking units (i.e., generate electricity while power is available from the utility), in addition to their use as emergency generators*

**EU050– EU051: Peaking Generators**

See GP012 requirements. Installed in 2001.

- Intercooler temperature less than 195 degrees F.

**EU052 – EU053: Emergency Generators**

See GP015 requirements. Installed in 2000 and 2004.

**EU054 – EU055: Emergency Generators Part of Netting**

See GP013 requirements. Installed in 1993.

**EU056 – EU059: Boilers Part of Netting**

[Group A– for calculation purposes]

See GP014 requirements. Installed in 1993 and 1996.

**EU060– EU067: Diesel Emergency Generators Part of Netting**

[Group B – for calculation purposes]

See GP013 requirements. Installed between 1991 and 1996.

**EU068– EU073: Boilers Part of Netting**

[Group C – for calculation purposes]

See GP014 requirements. Installed between 1991 and 1996.

**EU074– EU103: Small Engine Diesel Emergency Generators: Insignificant Activities in Appendix A**

[Group D – for calculation purposes]

**EU104– EU113: Large Engine Diesel Emergency Generators**

[Group E – for calculation purposes]

See GP015 requirements. Installed between 1978 and 2000. These units would require less than 43 hours/year to remain insignificant. As a group, the amount of emissions should be accounted for in the emission inventory.

**EU114– EU138: Natural Gas Emergency Generators: Insignificant Activities in Appendix A**

[Group F – for calculation purposes]

**EU139– EU141: Natural Gas Boilers: Insignificant Activities in Appendix A**

[Group G – for calculation purposes]

**EU142: Emergency Generator 143GEN002 – Cancer Center**

See GP013 requirements.

**EU143: SE Mpls biomass truck unloading**

**EU144: SE Mpls biomass silo and biomass transfer to CFB**

Constructed in 2006 for approved biomass, a truck unloading station, silo and handling system that would allow the facility to handle and burn oat hulls in EU001 without coal blending. The associated control equipment includes a baghouse filter. EU005 will not be connected to this new fuel handling system and alternative biomass firing would be limited to the existing coal handling equipment.

Minn. R. 7011.1005	Standards of Performance for Dry Bulk Agriculture Commodity Facilities. This standard applies to grain by-products. In addition, the facility is located in the Minneapolis-St. Paul Air Quality Control Region for which control is required. Operate fabric filter.
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- Opacity:  $\leq 5\%$  ( $\leq 10\%$  from control equip)(Minn. R. 7011.1005)
- PM:  $\leq 80\%$  collection efficiency (Minn. R. 7011.1005)
- Clean up commodities (Minn. R. 7011.1005)
- PM/PM10:  $\leq 89.1$  percent overall control efficiency (Title I Condition to avoid classification as a major modification under 40 CFR Section 52.21)
- Daily visible emissions observation and periodic inspections.
- Pressure drop readings if unable to conduct visible emissions readings

**EU145: Peaking Generator – 144GEN002 – Phillips-Wang Building (Replaced EU045)**

See GP012 requirements.

*The natural gas and diesel powered generators included in GP012 are used as peaking units (i.e., generate electricity while power is available from the utility), in addition to their use as emergency generators*

NOTE: This unit is a Replacement Unit installed in July 2005.

Replacement units may now be evaluated with a comparison of baseline actual emissions to projected actual emissions. The definition requires that four criteria must be met by replacement units:

1. The unit is reconstructed as defined by NSPS or completely takes the place of the existing unit
2. The unit is identical to or functionally equivalent to the replaced unit.
3. The replacement does not alter the *basic design parameters* of the process unit.
4. The replaced unit is permanently removed.

The installation of the replacement units does not constitute a change requiring a major permit amendment under Minn. R. 7007.1500. In addition, there is no need for a minor or moderate permit amendment since it appears that the maximum hourly emissions rate of the stationary source would not increase. As a replacement unit, the new unit is subject to and would be required to comply with all of the permit requirements that currently apply to the existing unit.

**CE001 : Fabric Filter, EU001 (SG201 – Circulating Fluidized Bed Boiler)**

SG201 is equipped with a fabric filter for controlling emissions of PM. Operation of the control equipment was accounted for in the netting analysis performed in connection with the 10/24/96 construction permit. Therefore, a number of requirements associated with the fabric filter are Title I Conditions accepted to avoid classification as a major modification for purposes of 40 CFR Section 52.21.

- Operate and maintain control equipment any time associated emission unit is operating [Title I Condition]
- Achieve 99 percent control efficiency for total PM and PM-10 [Title I Condition]  
Performance testing is not required to verify control equipment efficiencies for PM and PM10 control.
- Measure and record pressure drop and maintain in specified range [Title I Condition]
- Install monitoring equipment, inspect periodically, operate and maintain in accordance with O&M Plan, and take corrective actions, as applicable [Minn. R. 7007.0800]

**CE002 : Fabric Filter, EU004 (SE3 – Pulverized Coal Boiler)**

SE3 is equipped with a fabric filter for controlling emissions of PM. Operation of the control equipment was accounted for in the netting analysis performed in connection with the 10/24/96 construction permit. Therefore, a number of requirements associated with the fabric filter are Title I Conditions accepted to avoid classification as a major modification for purposes of 40 CFR Section 52.21.

- Operate and maintain control equipment any time associated emission unit is operating [Title I Condition]
- Achieve 96 percent control efficiency for total PM and PM-10 [Title I Condition]  
Performance testing is not required to verify control equipment efficiencies for PM and PM10 control.
- Measure and record pressure drop and maintain in specified range [Title I Condition]
- Install monitoring equipment, inspect periodically, operate and maintain in accordance with O&M Plan, and take corrective actions, as applicable [Minn. R. 7007.0800]

**CE003 : Dry Scrubber, EU004 (SE3 – Pulverized Coal Boiler)**

SE3 is equipped with a dry scrubber for controlling emissions of acid gases (SO<sub>2</sub>, hydrogen chloride, and hydrogen fluoride). Operation of the control equipment was accounted for in the netting analysis performed in connection with the 10/24/96 construction permit and is used to synthetically minor the facility for HAP emissions (i.e., hydrogen chloride and hydrogen fluoride). Therefore, a number of requirements associated with the dry scrubber are Title I Conditions accepted to avoid classification as a major modification for purposes of 40 CFR Section 52.21, Minn. R. 7007.3000, and 40 CFR Section 51 Appendix S (for SO<sub>2</sub>) and to avoid classification of a major source under 40 CFR Section 63.2 and Minn. R 7011.7000.

- Operate and maintain control equipment any time associated emission unit is operating [Title I Condition]
- Achieve 70 percent control efficiency SO<sub>2</sub> [Title I Condition]
- Measure and record specified operating parameters and maintain in specified range [Title I Condition]
- Install monitoring equipment, inspect periodically, operate and maintain in accordance with O&M Plan, and take corrective actions, as applicable [Minn. R. 7007.0800]

**CE004 : Fabric Filter, EU005 (SE4 – Pulverized Coal Boiler)**

SE4 is equipped with a fabric filter for controlling emissions of PM. Operation of the control equipment was accounted for in the netting analysis performed in connection with the 10/24/96 construction permit. Therefore, a number of requirements associated with the fabric filter are Title I Conditions accepted to avoid classification as a major modification for purposes of 40 CFR Section 52.21.

- Operate and maintain control equipment any time associated emission unit is operating [Title I Condition]
- Achieve 97 percent control efficiency for total PM and PM-10 [Title I Condition]  
Performance testing is not required to verify control equipment efficiencies for PM and PM10 control.
- Measure and record pressure drop and maintain in specified range [Title I Condition]
- Install monitoring equipment, inspect periodically, operate and maintain in accordance with O&M Plan, and take corrective actions, as applicable [Minn. R. 7007.0800]

**CE005 : Dry Scrubber, EU005 (SE4 – Pulverized Coal Boiler)**

SE4 is equipped with a dry scrubber for controlling emissions of acid gases (SO<sub>2</sub>, hydrogen chloride, and hydrogen fluoride). Operation of the control equipment was accounted for in the netting analysis performed in connection with the 10/24/96 construction permit and is used to synthetically minor the facility for HAP emissions (i.e., hydrogen chloride and hydrogen fluoride). Therefore, a number of requirements associated with the dry scrubber are Title I Conditions accepted to avoid classification as a major modification for purposes of 40 CFR Section 52.21, Minn. R. 7007.3000, and 40 CFR Section 51 Appendix S (for SO<sub>2</sub>) and to avoid classification of a major source under 40 CFR Section 63.2 and Minn. R 7011.7000.

- Operate and maintain control equipment any time associated emission unit is operating [Title I Condition]
- Achieve 70 percent control efficiency SO<sub>2</sub> [Title I Condition]
- Measure and record specified operating parameters and maintain in specified range [Title I Condition]
- Install monitoring equipment, inspect periodically, operate and maintain in accordance with O&M Plan, and take corrective actions, as applicable [Minn. R. 7007.0800]

### **CE006 : Centrifugal Collector, EU007**

The Saint Paul Campus pulverized coal boilers SP1 vents to a centrifugal collector, which then vents to fabric filter CE007. The centrifugal collector acts to reduce the particulate loading to the fabric filters and is not required to meet the PM limits applicable to the boiler. This is evidenced by the fact that a number of other boilers operated by the facility (i.e., EU001, EU004, and EU005) vent directly to a fabric filter with no intermediate centrifugal collector. Therefore, although CE006 is included in the MPCA's Delta system, no permit requirements are included for the control device.

### **CE007 : Fabric Filter, EU007 and EU008 (SP1 and SP2 – Pulverized Coal Boilers)**

SP1 and SP2 are equipped with a fabric filter for controlling emissions of PM. Operation of the control equipment was accounted for in the netting analysis performed in connection with the 10/24/96 construction permit. Therefore, a number of requirements associated with the fabric filter are Title I Conditions accepted to avoid classification as a major modification for purposes of 40 CFR Section 52.21.

- Operate and maintain control equipment any time associated emission unit is operating [Title I Condition]
- Achieve 96 percent control efficiency for total PM and PM-10 [Title I Condition]  
Performance testing is not required to verify control equipment efficiencies for PM and PM10 control.
- Measure and record pressure drop and maintain in specified range [Title I Condition]
- Install monitoring equipment, inspect periodically, operate and maintain in accordance with O&M Plan, and take corrective actions, as applicable [Minn. R. 7007.0800]

### **CE021 : Fabric Filter, EU009 (SP5 – Pulverized Coal Boiler)**

SP5 is equipped with a fabric filter for controlling emissions of PM. Operation of the control equipment was accounted for in the netting analysis performed in connection with the 10/24/96 construction permit. Therefore, a number of requirements associated with the fabric filter are Title I Conditions accepted to avoid classification as a major modification for purposes of 40 CFR Section 52.21.

- Operate and maintain control equipment any time associated emission unit is operating [Title I Condition]
- Achieve 97 percent control efficiency for total PM and PM-10 [Title I Condition]  
Performance testing is not required to verify control equipment efficiencies for PM and PM10 control.
- Measure and record pressure drop and maintain in specified range [Title I Condition]
- Install monitoring equipment, inspect periodically, operate and maintain in accordance with O&M Plan, and take corrective actions, as applicable [Minn. R. 7007.0800]

### **CE022 : Fabric Filter, EU010 (SP6 – Pulverized Coal Boiler)**

SP6 is equipped with a fabric filter for controlling emissions of PM. Operation of the control equipment was accounted for in the netting analysis performed in connection with the 10/24/96 construction permit. Therefore, a number of requirements associated with the fabric filter are Title I Conditions accepted to avoid classification as a major modification for purposes of 40 CFR § 52.21.

- Operate and maintain control equipment any time associated emission unit is operating [Title I Condition]
- Achieve 97 percent control efficiency for total PM and PM-10 [Title I Condition]  
Performance testing is not required to verify control equipment efficiencies for PM and PM10 control.
- Measure and record pressure drop and maintain in specified range [Title I Condition]
- Install monitoring equipment, inspect periodically, operate and maintain in accordance with O&M Plan, and take corrective actions, as applicable [Minn. R. 7007.0800]

### **CE039/CE040: Fabric Filter for Biomass Operations**

Must operate control equipment at all times that any emission unit controlled by the fabric filter is in operation according to the requirements found under EU143/EU144.

### **CE041 : Centrifugal Collector, EU008**

The Saint Paul Campus pulverized coal boiler SP2 vents to a centrifugal collector CE041, which then vents to fabric filter CE007. The centrifugal collector acts to reduce the particulate loading to the fabric filters and is not required to meet the PM limits applicable to the boiler. This is evidenced by the fact that a number of other boilers operated by the facility (i.e., EU001, EU004, and EU005) vent directly to a fabric filter with no intermediate centrifugal collector. Therefore, although CE041 is included in the MPCA's Delta system, no permit requirements are included for the control device.

### **CE042 : Centrifugal Collector, EU008**

The Saint Paul Campus spreader stoker boiler SP5 vents to a centrifugal collector CE042, which then vents to fabric filter CE0021. The centrifugal collector acts to reduce the particulate loading to the fabric filters and is not required to meet the PM limits applicable to the boiler. This is evidenced by the fact that a number of other boilers operated by the facility (i.e., EU001, EU004, and EU005) vent directly to a fabric filter with no intermediate centrifugal collector. Therefore, although CE042 is included in the MPCA's Delta system, no permit requirements are included for the control device.

### **CE006 : Centrifugal Collector, EU007, EU008, EU009, and EU010**

The Saint Paul Campus spreader stoker boiler SP6 vents to a centrifugal collector CE043, which then vents to fabric filter CE022. The centrifugal collector acts to reduce the particulate loading to the fabric filters and is not required to meet the PM limits applicable to the boiler. This is evidenced by the fact that a number of other boilers operated by the facility (i.e., EU001, EU004, and EU005) vent directly to a fabric filter with no intermediate centrifugal collector. Therefore, although CE043 is included in the MPCA's Delta system, no permit requirements are included for the control device.

### **FS001 : Fugitive Sources**

These are sources of fugitive emissions, which are emissions which cannot be reasonably vented through a stack, vent, chimney or similar type of opening.

The SE Coal Bunker (**FS001**) is a stockpile of coal and/or approved biomass. This stockpile may be a source of fugitive dust due to wind, and thus must comply with the fugitive dust control rule. This stockpile is maintained in a flat shape and is protected from wind on three sides by walls and on the fourth side by the building.

- TPM and PM10: This is a source of fugitive emissions. Minn. R. 7011.1105 requires the Permittee to take reasonable measures to minimize fugitive dust such as providing protection from wind and applying water or other dust suppression materials. This stockpile is contained in an area with walls on all four sides. It is kept in a flat shape below the wall height which protects from wind blown dust. When the surface of the pile is dry, it is sprayed with water by water sprays located along the wall.

#### **Insignificant Activity: Southeast EU004 and EU005 ash truck loading**

**Description:** Ash from coal combustion is stored in a silo and periodically loaded into trucks for transport to a disposal site. The loading of ash can create dust which is controlled by the addition of water during truck loading. The trucks are required to be covered to prevent dust during road travel  
**Emission Limit:** Minn. R. 7011.0150. Ash is wetted with water to about 20 percent moisture content primarily because the ash can be compacted into a smaller volume in this condition. The moisture content is high enough to effectively control dust emissions.

#### **Insignificant Activity : Southeast CFB ash truck loading**

**Description:** Ash from coal and wood combustion is stored in a silo and periodically loaded into trucks for transport to a disposal site. The loading of the ash can create dust which is controlled by the addition of water during truck loading. The trucks are required to be covered to prevent dust during road travel.  
**Emission Limit:** Minn. R. 7011.0150. Ash is wetted with water to about 20 percent moisture content primarily because the ash can be compacted into a smaller volume in this condition. The moisture content is high enough to effectively control dust emissions.

#### **Insignificant Activity: St. Paul ash truck loading**

**Description:** Ash from coal combustion is stored in a silo and periodically loaded into trucks for transport to a disposal site. The loading of the ash can create dust which is controlled by the following measures. Ash first goes through a conditioner to be wetted. It is loaded onto trucks inside a completely enclosed truck bay. The air from the truck bay is circulated through a dust collector system. The trucks are required to be covered to prevent dust during road travel.

**Emission Limits:** Minn. R. 7011.0150. Ash is wetted with water to about 20 percent moisture content primarily because the ash can be compacted into a smaller volume in this condition. The moisture content is high enough to effectively control dust emissions.

## **Insignificant Activities**

### Thompson Center for Environmental Management (TCEM) [previously known as the Integrated Waste Management Facility (IWMF)]

The TCEM consists of storage tanks, waste solvent transfer operations, and a small scale laboratory distillation operation. The storage tanks are nitrogen blanketed, are equipped with breather valves that releases vapor only when the positive pressure reaches 3 psig, and are emptied from the bottom. The Facility submitted calculations demonstrating that the TCEM storage tanks qualify for classification as insignificant activities. In addition, although not accounted for in the emission calculations, carbon canisters are located on the relief valves that will remove any hydrocarbon vapor that does pass through them.

The Facility submitted calculations for the waste solvent transfer operation demonstrating that the activity is insignificant. The calculations were based on an evaluation of the solvents that could be transferred, using the highest HAP and VOC concentrations from those solvents. In addition, the Facility will lab pack carbon tetrachloride so that it is not part of the pouring operations.

The Facility also submitted calculations for the distillation operation (Walk-In Hood and Bench Top Hood) demonstrating that the activity is insignificant. The calculations were based on an evaluation of the solvents that could be transferred, using the highest HAP and VOC concentrations from those solvents. In addition, although not accounted for in the emission calculations, carbon canisters are located on the fume hoods to remove any hydrocarbon vapor that does pass through them.

### Laboratory Emissions

The Facility has 1,203 laboratories with fume hoods, including a number classified as health care labs. Based on information submitted to the EPA as part of the comment period for the R&D NESHAP, the Facility used emission factors from the University of California system. These emission factors were developed from a range of methods including surveys, interviews, purchase record review, and stack sampling to estimate emissions. The emission factors range from 0.004 lb/day/lab for the Santa Cruz campus to 0.029 lb/day/lab for the San Francisco – Parnassus campus. Using these emission factors, the potential to emit for each laboratory would range from 1.5 lb/yr to 10.6 lb/yr. Therefore, each laboratory is an insignificant activity.

### Calculations of Potential to Emit

Attachments to the TSD contain a summary of the PTE of the Facility, along with detailed spreadsheets and supporting information prepared by the MPCA and the Permittee.

### **3.2 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 considers the following:

- The likelihood of 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.

U of M has several operations which are classified as insignificant activities. These are listed in Appendix A to the permit. The permit is required to include periodic monitoring for all emission units, including Insignificant Emission Units (IEU), per EPA guidance. The insignificant activities at the U of M are only subject to general applicable requirements. It is our belief that IEU's listed in Appendix A to the permit are associated with inconsequential environmental impacts and present little potential for violations of generally applicable requirements; therefore, no additional periodic monitoring will be required.

Table 4 summarizes the periodic monitoring requirements for those emission units for which the monitoring required by the applicable requirement is nonexistent or inadequate.

**Table 4. Periodic Monitoring**

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
<p>GP 001: New and modified boilers (EU001-EU006)</p>	<ul style="list-style-type: none"> <li>• <math>PM \leq 32.9</math> tpy</li> <li>• <math>PM_{10} \leq 91.7</math> tpy</li> <li>• <math>SO_2 \leq 248.9</math> tpy</li> <li>• <math>NO_x \leq 734.8</math> tpy</li> <li>• <math>CO \leq 280.9</math> tpy</li> <li>• <math>VOC \leq 31.2</math> tpy</li> </ul> <p>(Title I Condition: limit to avoid classification as a major modification under 40 CFR § 52.21, 40 CFR pt. 51 App. S (for CO) and Minn. R. 7007.3000)</p>	<ul style="list-style-type: none"> <li>• Daily Coal (and optional Fuel Oil) sampling and analysis according to GP008</li> <li>• Fuel oil receipts for sulfur content</li> <li>• Daily calculations of emissions using emission factors, amount of fuel burned and heating value of fuel combusted (CEMS data for NO<sub>x</sub> and SO<sub>x</sub> as available)</li> <li>• Daily records of type, amount, and heating value of fuel combusted</li> <li>• Monthly calculations of 12-month rolling sum</li> <li>• Performance testing every 5 years as required for verification of emission factors</li> </ul>	<p>Annual limits based on daily recordkeeping and calculation of emissions to ensure that the project did not result in a significant net increase in emissions for New Source Review purposes (1996 modification). The 12-month rolling sum is calculated monthly from daily calculations.</p> <p>Performance Testing for PM, PM<sub>10</sub>, NO<sub>x</sub>, SO<sub>x</sub>, CO and VOC unless CEMS or fuel receipts are available. Specific testing requirements located under stack/vent level</p>
<p>GP 002: All steam service facilities steam boilers (HAP and heat input limits)</p>	<p>Heat input from natural gas and approved biomass: less than or equal to 70 percent of the total fuel heat input, based on a 12-month rolling average (Minn. Stat. Section 116.07, subd. 4a)</p> <p><math>HCl \leq 7</math> tpy</p> <p>Total HAP <math>\leq 15</math> tpy</p> <p>Natural-gas usage <math>\leq 7.78</math> bcf/yr</p> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<ul style="list-style-type: none"> <li>• Daily recordkeeping of type and quantity of fuels used.</li> <li>• Daily Coal (including biomass) sampling according to GP002 and GP008. Daily composite and monthly analysis for heat content and HCl content.</li> <li>• Fuel oil samples for each delivery, composited monthly, and analyzed for chlorine and heat content</li> <li>• Daily recordkeeping of fuel usage</li> </ul>	<p>The heat input limit is a state-only requirement at the direction of the MPCA Commissioner. The heat input is a 12-month rolling average to be calculated by the 15<sup>th</sup> day of each month for the previous 12-month period.</p> <p>Monthly calculation of HCl</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
			<p>emissions, natural-gas usage and total HAP emissions along with the 12-month rolling sums for each.</p> <p>The permit specifies use of a combination of daily fuel usage records, monthly coal and fuel oil sampling and analysis for chlorine content, and stack-test derived emission factors.</p>
GP003 (EU001 - 003, EU006)	40 CFR Part 60, Subpart Db; Minn. R. 7017.1002 to 7017.1220	Minn. R. 7017.1002-7017.1220, Continuous Monitoring Systems	<p>Standards of Performance for Industrial-Commercial-Institutional Steam-generating units. This group contains general requirements and CEMS/COMS requirements applicable to all units.</p> <p>Individual emission limits and requirements are listed at the SV level for each boiler.</p>
GP004 (EU006, EU011)	Fuel Oil Use: less than or equal to 45,200 gallons/day Minn. R. 7009.0020	Maintain daily record of amount of fuel oil combusted.	The daily recordkeeping of fuel oil usage in the boilers ensures compliance with the usage limit.
GP005 (EU004 and EU005)	Minn. R. 7017.1002 to 7017.1220	Minn. R. 7017.1002-7017.1220, Continuous Monitoring Systems	<p>This group contains general requirements and CEMS requirements applicable to all units.</p> <p>Individual emission limits and requirements are listed at the EU and SV level for each boiler.</p>
GP006 (EU004, EU005, EU007-EU011)	Minn. R. 7017.1002 to 7017.1220	Minn. R. 7017.1002-7017.1220, Continuous Monitoring Systems	<p>This group contains general requirements and COMS requirements applicable to all units.</p> <p>Individual emission limits and requirements are listed at the EU level for each boiler.</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
GP007 (CE023- CE038)	<ul style="list-style-type: none"> <li>PM control efficiency &gt;99%</li> <li>PM-10 control efficiency &gt;99%</li> <li>Pressure drop <math>\geq 2</math> and <math>\leq 6</math> inches of water column</li> </ul> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Daily visual check of stack emissions during daylight hours or pressure drop and recordkeeping of inspections and readings.</p> <p>Take corrective actions as specified in the permit terms.</p> <p>Periodically inspect equipment to ensure proper operation.</p>	<p>This group contains fabric filter operational requirements applicable to all units when in operation.</p> <p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>
GP008 (EU001, EU004, EU005, EU007- EU010)	Coal/approved biomass sampling methodology and frequency (Minn. R. 7007.0800, subp. 2 and 14)	Collect 2-lb coal/biomass samples every 2 hours from each operating boiler. Make daily composite sample for each boiler and analyze daily for sulfur content, moisture content and as-received heating value.	Sampling and analysis results used in combination with calculation methods detailed in GP001, GP002, EU001, EU007, EU008, EU009, and EU010.
GP009 (EU017- EU022, EU040)	PM: $\leq 0.020$ gr/dscf Opacity: $\leq 20\%$ (Minn. R. 7011.1105)	GP007 details the monitoring and recordkeeping requirements implemented to ensure compliance.	Proper operation and maintenance of the control equipment will ensure compliance with the PM and opacity standards.
GP010 (EU023- EU031)	PM: $\leq 0.3$ gr/dscf Opacity: $\leq 20\%$ (Minn. R. 7011.0715)	GP007 details the monitoring and recordkeeping requirements implemented to ensure compliance.	Proper operation and maintenance of the control equipment will ensure compliance with the PM and opacity standards.
GP011 (EU041- EU043)	Operating Hours: $\leq 300$ hrs/yr (Minn. R. 7007.0800, subp. 2)  SO <sub>2</sub> : $\leq 0.5$ lb/MMBtu  Opacity: $\leq 20\%$ once operating temperatures established (Minn. R. 7011.2300)	Monthly reading of hours operated and calculation of 12-month rolling sum of hours operated.	<p>The operational limits were requested by the facility to limit emissions from these peaking unit generators.</p> <p>The operational and emission limit apply to each individual emissions unit in the group.</p> <p>Use of natural gas as a fuel ensures compliance with the SO<sub>2</sub> and opacity limits.</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
GP012 (EU044- EU051)	<p>Operating Hours: <math>\leq 300</math> hrs/yr</p> <p>(Title I Condition: to avoid classification as a major modification under 40 CFR § 52.21; Minn. R. 7007.3000)</p> <p>SO<sub>2</sub>: <math>\leq 0.5</math> lb/MMBtu</p> <p>Opacity: <math>\leq 20\%</math> once operating temperatures established</p> <p>(Minn. R. 7011.2300)</p>	<p>Monthly reading of hours operated and calculation of 12-month rolling sum of hours operated.</p> <p>Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.</p>	<p>The operational and emission limit apply to each individual emissions unit in the group.</p> <p>Use of fuel oil with a sulfur content of less than 0.5 percent will ensure compliance with the SO<sub>2</sub> limit. Proper maintenance and operation of the units will ensure compliance with the opacity standards, so no additional monitoring or recordkeeping requirements are necessary.</p>
GP013 (EU054, EU055, EU060- EU067, EU142)	<p>Operating Hours: <math>\leq 300</math> hrs/yr</p> <p>(Title I Condition: to avoid classification as a major modification under 40 CFR § 52.21 and 40 CFR § 51, Appendix S; Minn. R. 7007.3000)</p> <p>SO<sub>2</sub>: <math>\leq 0.5</math> lb/MMBtu</p> <p>Opacity: <math>\leq 20\%</math> once operating temperatures established</p> <p>(Minn. R. 7011.2300)</p>	<p>Monthly reading of hours operated and calculation of 12-month rolling sum of hours operated.</p> <p>Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.</p>	<p>The operational and emission limit apply to each individual emissions unit in the group.</p> <p>Use of natural gas as a fuel (EU054 and EU142) ensures compliance with the SO<sub>2</sub> and opacity limits.</p> <p>Use of fuel oil (EU055, EU060-EU067) with a sulfur content of less than 0.5 percent will ensure compliance with the SO<sub>2</sub> limit. Proper maintenance and operation of the units will ensure compliance with the opacity standards, so no additional monitoring or recordkeeping requirements are necessary.</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
GP014 (EU056- EU059, EU068- EU073)	Operating Hours: $\leq 5840$ hrs/yr  (Title I Condition: to avoid classification as a major modification under 40 CFR § 52.21 and 40 CFR § 51, Appendix S; Minn. R. 7007.3000)  PM: $\leq 0.4$ lb/MMBtu SO <sub>2</sub> : $\leq 1.6$ lb/MMBtu Opacity: $\leq 20\%$  (Minn. R. 7011.0515)	Monthly reading of hours operated and calculation of 12-month rolling sum of hours operated.	The operational and emission limit apply to each individual emissions unit in the group.  Use of natural gas as a fuel ensures compliance with the PM, SO <sub>2</sub> and opacity limits.
GP015 (EU052, EU053, EU074- EU138)	Operating Hours: $\leq 500$ hrs/yr  (Hours to qualify as emergency generators Minn. R. 7007.0800)  SO <sub>2</sub> : $\leq 0.5$ lb/MMBtu Opacity: $\leq 20\%$ once operating temperatures established  (Minn. R. 7011.2300)	Maintain records demonstrating that units operate less than 500 hours per year.  Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.	The operational and emission limit apply to each individual emissions unit in the group.  Use of natural gas as a fuel (EU114-EU138) ensures compliance with the SO <sub>2</sub> and opacity limits.  Use of fuel oil (EU052, EU053, EU074-EU113) with a sulfur content of less than 0.5 percent will ensure compliance with the SO <sub>2</sub> limit. Proper maintenance and operation of the units will ensure compliance with the opacity standards, so no additional monitoring or recordkeeping requirements are necessary.
SV001 (EU001)	CO: $\leq 0.267$ lb/MMBtu and $\leq 70.75$ lb/hr  SO <sub>2</sub> : $\leq 0.38$ lb/MMBtu and $\leq 96.1$ lb/hr, when combusting coal  NO <sub>x</sub> : $\leq 0.222$ lb/MMBtu and $\leq 58.96$ lb/hr	The unit is equipped with CEMS for SO <sub>2</sub> and NO <sub>x</sub> , the requirements for which are set forth in GP003.  Performance testing required for CO once every 5 years.	The emission limits are state-only enforceable requirements based on the results of a dispersion modeling analysis.  Additional emission, operational, and monitoring requirements are listed at the EU level.

Emission Unit or Group	Requirement (basis)	Additional Monitoring	Discussion
	(Minn. R. 7009.00200		<p>The permit provides authorization to perform test burns with limited quantities of defined alternative biomass fuels for limited periods of time for purposes of gathering emissions data. All permit conditions continue to apply during any test burn. The future addition of any alternative biomass fuels would require a major permit amendment.</p> <p>This permit also includes the following requirements associated with the construction permit allowing the combustion of oat hulls (2006):</p> <ul style="list-style-type: none"> <li>• Performance testing within 60 days of achieving max. firing rate, but no later than 180 days after initial startup for CO, PM, PM10, VOC, HCl and hexane, monitor NOx and SO2 emissions using CEMS during testing</li> <li>• Performance test notifications and submittals</li> <li>• Revised PSD analysis based on Performance Test</li> </ul>
SV002 (EU002 and EU003)	CO: $\leq 0.040$ lb/MMBtu and $\leq 10.07$ lb/hr for EU002 and $\leq 10.71$ lb/hr for EU003	The units are equipped with CEMS for NOx, the requirements for which are set forth in GP003.	The emission limits are state-only enforceable requirements based on the results of a dispersion modeling analysis.

Emission Unit or Group	Requirement (basis)	Additional Monitoring	Discussion
	SO <sub>2</sub> : ≤ 267.6 lb/hr NO <sub>x</sub> : ≤ 0.140 lb/MMBtu and ≤ 35.24 lb/hr for EU002 and ≤ 37.51 lb/hr for EU003 (Minn. R. 7009.00200)	Performance testing required for CO once every 5 years.	Additional emission, operational, and monitoring requirements (including fuel oil sulfur content certification) are listed at the EU level.
SV003 (EU004)	CO: ≤ 0.03 lb/MMBtu and ≤ 5.75 lb/hr SO <sub>2</sub> : ≤ 0.34 lb/MMBtu and ≤ 56.78 lb/hr NO <sub>x</sub> : ≤ 1.176 lb/MMBtu and ≤ 198.74 lb/hr (Minn. R. 7009.00200)	The units are equipped with CEMS for SO <sub>2</sub> , the requirements for which are set forth in GP003.  Performance testing required for CO and NO <sub>x</sub> once every 5 years.	The emission limits are state-only enforceable requirements based on the results of a dispersion modeling analysis.  Additional emission, operational, and monitoring requirements are listed at the EU level.
SV004 (EU005)	CO: ≤ 0.28 lb/MMBtu and ≤ 52.34 lb/hr SO <sub>2</sub> : ≤ 0.34 lb/MMBtu and ≤ 62.83 lb/hr NO <sub>x</sub> : ≤ 0.78 lb/MMBtu and ≤ 146.61 lb/hr (Minn. R. 7009.00200)	The units are equipped with CEMS for SO <sub>2</sub> , the requirements for which are set forth in GP003.  Performance testing required for CO and NO <sub>x</sub> once every 5 years.	The emission limits are state-only enforceable requirements based on the results of a dispersion modeling analysis.  Additional emission, operational, and monitoring requirements are listed at the EU level.
SV005 (EU006)	CO: ≤ 0.040 lb/MMBtu and ≤ 10.86 lb/hr NO <sub>x</sub> : ≤ 0.140 lb/MMBtu and ≤ 37.95 lb/hr (Minn. R. 7009.00200)	The units are equipped with CEMS for NO <sub>x</sub> , the requirements for which are set forth in GP003.  Performance testing required for CO once every 5 years.	The emission limits are state-only enforceable requirements based on the results of a dispersion modeling analysis.  Additional emission, operational, and monitoring requirements are listed at the EU level.  The permit provides authorization to perform test burns with limited quantities of defined alternative biomass fuels for limited periods of time for purposes of gathering emissions data. All permit conditions continue to apply during any test burn. The

Emission Unit or Group	Requirement (basis)	Additional Monitoring	Discussion
			<p>future addition of any alternative biomass fuels would require a major permit amendment.</p> <p>This permit also includes the following requirements associated with the construction permit allowing the combustion of oat hulls (2006):</p> <ul style="list-style-type: none"> <li>• Performance testing within 60 days of burning oathulls for CO, PM, PM10, VOC, HCl and hexane, monitor NOx and SO2 emissions using CEMS during testing</li> <li>• Performance test notifications and submittals</li> <li>• Revised PSD analysis based on Performance Test</li> </ul>
SV006 (EU007-EU010)	<p>PM10: <math>\leq 0.1</math> lb/MMBtu or <math>\leq 25.8</math> lb/hr</p> <p>CO: <math>\leq 0.14</math> lb/MMBtu and <math>\leq 36.2</math> lb/hr when all units are operating; <math>\leq 0.04</math> lb/MMBtu when only EU007 and/or EU008 are operating; <math>\leq 0.192</math> lb/MMBtu when only EU009 and/or EU010 are operating</p> <p>SO2: <math>\leq 1.15</math> lb/MMBtu and <math>\leq 297.48</math> lb/hr</p> <p>NOx: <math>\leq 0.63</math> lb/MMBtu and <math>\leq 162.56</math> lb/hr when all units are operating; <math>\leq</math></p>	<p>Coal and fuel oil sulfur content determined by fuel sampling and analysis requirements detailed in GP008.</p> <p>Performance testing required for PM10, CO and NOx once every 5 years for EU007 and EU010.</p> <p>Performance testing required for PM10, CO and NOx once every 4 years for EU008 and EU009.</p>	<p>The emission limits are state-only enforceable requirements based on the results of a dispersion modeling analysis.</p> <p>Additional emission, operational, and monitoring requirements are listed at the EU level.</p>

<b>Emission Unit or Group</b>	<b>Requirement (basis)</b>	<b>Additional Monitoring</b>	<b>Discussion</b>
	0.808 lb/MMBtu when only EU007 and/or EU008 are operating; $\leq 0.538$ lb/MMBtu when only EU009 and/or EU010 are operating (Minn. R. 7009.00200)		

<p>SV007 (EU011)</p>	<p>PM10: <math>\leq 0.56</math> lb/MMBtu or <math>\leq 5.54</math> lb/hr  CO: <math>\leq 0.04</math> lb/MMBtu and <math>\leq 3.56</math> lb/hr  NOx: <math>\leq 0.140</math> lb/MMBtu and <math>\leq 13.86</math> lb/hr  (Minn. R. 7009.00200)</p>	<p>Performance testing required for PM10 and CO once every 5 years.  Performance testing required for NOx once every year.</p>	<p>The emission limits are state-only enforceable requirements based on the results of a dispersion modeling analysis.  Additional emission, operational, and monitoring requirements are listed at the EU level.</p>
<p>EU001</p>	<p>SO2: <math>\leq</math> fuel based calculation  Use of Fuels Other Than Coal: Annual capacity factor <math>&gt; 10\%</math>  PM: <math>\leq 0.10</math> lb/MMBtu  Opacity: <math>\leq 20\%</math>  NOx: <math>\leq 0.200</math> lb/MMBtu when combusting only natural gas or only fuel oil; <math>\leq</math> fuel based calculation when simultaneously combusting coal, oil, and/or natural gas or when simultaneously combusting coal or oil, or a mixture of these fuels, with natural gas and approved biomass  (40 CFR Part 60, Subpart Db)  Startup Fuel: Natural gas only except that No. 2 fuel oil may be used when natural gas is curtailed. No. 2 fuel oil may be used up to 15 percent of the maximum heat input for startup only.  (Minn. R. 7009.0020)  Fuel type: Bituminous and Subbituminous Coal, approved biomass, natural</p>	<p>The unit is equipped with CEMS for SO2 and NOx and with a COMS for opacity, the requirements for which are set forth in GP003.  Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.  Monitoring of the type and amount of fuel combusted each day, with quarterly calculation of the annual capacity factor.</p>	<p>Operation of the control equipment, the requirements for which are listed under CE001, will ensure compliance with the PM10 limit.  Additional emission, operational, and monitoring requirements are listed at the GP, SV, and CE levels.</p>

	gas, and No. 2 fuel oil only for startup as specified above (Minn. R. 7005.0100)		
EU002	SO <sub>2</sub> : ≤ 0.5% by weight sulfur in fuel oil Opacity: ≤ 20% NO <sub>x</sub> : ≤ 0.20 lb/MMBtu (40 CFR Part 60, Subpart Db) Fuel type: Natural gas, and No. 2 fuel oil only (Minn. R. 7005.0100)	The unit is equipped with CEMS for NO <sub>x</sub> and with a COMS for opacity, the requirements for which are set forth in GP003.  Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.  Monitoring of the type and amount of fuel combusted each day, with quarterly calculation of the annual capacity factor	Additional emission, operational, and monitoring requirements are listed at the GP and SV levels.
EU003	SO <sub>2</sub> : ≤ 0.5% by weight sulfur in fuel oil Opacity: ≤ 20% NO <sub>x</sub> : ≤ 0.20 lb/MMBtu (40 CFR Part 60, Subpart Db) Fuel type: Natural gas, and No. 2 fuel oil only (Minn. R. 7005.0100)	The unit is equipped with CEMS for NO <sub>x</sub> and with a COMS for opacity, the requirements for which are set forth in GP003.  Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.  Monitoring of the type and amount of fuel combusted each day, with quarterly calculation of the annual capacity factor.	Additional emission, operational, and monitoring requirements are listed at the GP and SV levels.
EU004	SO <sub>2</sub> : ≤ 3.0 lb/MMBtu when combusting only coal or fuel based calculation when simultaneously combusting solid and liquid fuels PM: ≤ 0.1 lb/MMBtu Opacity: ≤ 20%	The unit is equipped with CEMS for SO <sub>2</sub> and with a COMS for opacity, the requirements for which are set forth in GP005 and GP006, respectively.	Operation of the control equipment, the requirements for which are listed under CE001, will ensure compliance with the PM <sub>10</sub> limit.  Additional emission, operational, and monitoring requirements are listed at the

	(Minn. R. 7011.0510) Fuel type: Subbituminous Coal, natural gas, and No. 2 fuel oil only (Minn. R. 7005.0100)		GP, SV, and CE levels.
EU005	SO <sub>2</sub> : ≤ 3.0 lb/MMBtu when combusting only coal or fuel based calculation when simultaneously combusting solid and liquid fuels PM: ≤ 0.1 lb/MMBtu Opacity: ≤ 20 percent (Minn. R. 7011.0510) Fuel type: Subbituminous Coal, natural gas, No. 2 fuel oil and approved biomass only (Minn. R. 7005.0100)	The unit is equipped with CEMS for SO <sub>2</sub> and with a COMS for opacity, the requirements for which are set forth in GP005 and GP006, respectively.	Operation of the control equipment, the requirements for which are listed under CE004 and CE005, will ensure compliance with the PM10 limit.  Additional emission, operational, and monitoring requirements are listed at the GP, SV, and CE levels.
EU006	SO <sub>2</sub> : ≤ 0.5% by weight sulfur in fuel oil Opacity: ≤ 20% NO <sub>x</sub> : ≤ 0.20 lb/MMBtu (40 CFR Part 60, Subpart Db) Fuel type: Natural gas, and No. 2 fuel oil only (Minn. R. 7005.0100)	The unit is equipped with CEMS for NO <sub>x</sub> and with a COMS for opacity, the requirements for which are set forth in GP003.  Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.  Monitoring of the type and amount of fuel combusted each day, with quarterly calculation of the annual capacity factor.	Additional emission, operational, and monitoring requirements are listed at the GP and SV levels.
EU007	SO <sub>2</sub> : ≤ fuel based calculation PM: ≤ 0.4 lb/MMBtu Opacity: ≤ 20% (Minn. R. 7011.0510)	The unit is equipped with a COMS for opacity, the requirements for which are set forth in GP006.  Coal and optional fuel oil sulfur content determined by	Operation of the control equipment, the requirements for which are listed under CE006 and CE007, will ensure compliance with the PM10 limit.

	<p>Fuel type: Bituminous and Subbituminous Coal, natural gas, and No. 2 fuel oil only (Minn. R. 7005.0100)</p>	<p>fuel sampling and analysis requirements detailed in GP008. Alternatively, fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.</p>	<p>Additional emission, operational, and monitoring requirements are listed at the GP, SV, and CE levels.</p>
EU008	<p>SO<sub>2</sub>: ≤ fuel based calculation PM: ≤ 0.4 lb/MMBtu Opacity: ≤ 20% (Minn. R. 7011.0510) Fuel type: Bituminous and Subbituminous Coal, natural gas, and No. 2 fuel oil only (Minn. R. 7005.0100)</p>	<p>The unit is equipped with a COMS for opacity, the requirements for which are set forth in GP006.  Coal and optional fuel oil sulfur content determined by fuel sampling and analysis requirements detailed in GP008. Alternatively, fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.</p>	<p>Operation of the control equipment, the requirements for which are listed under CE006 and CE007, will ensure compliance with the PM10 limit.  Additional emission, operational, and monitoring requirements are listed at the GP, SV, and CE levels.</p>
EU009	<p>SO<sub>2</sub>: ≤ fuel based calculation PM: ≤ 0.4 lb/MMBtu Opacity: ≤ 20% (Minn. R. 7011.0510) Fuel type: Bituminous and Subbituminous Coal, natural gas, and No. 2 fuel oil only (Minn. R. 7005.0100)</p>	<p>The unit is equipped with a COMS for opacity, the requirements for which are set forth in GP006.  Coal and optional fuel oil sulfur content determined by fuel sampling and analysis requirements detailed in GP008. Alternatively, fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.</p>	<p>Operation of the control equipment, the requirements for which are listed under CE006 and CE007, will ensure compliance with the PM10 limit.  Additional emission, operational, and monitoring requirements are listed at the GP, SV, and CE levels.</p>
EU010	<p>SO<sub>2</sub>: ≤ fuel based calculation PM: ≤ 0.4 lb/MMBtu Opacity: ≤ 20 percent (Minn. R. 7011.0510) Fuel type: Bituminous and Subbituminous Coal, natural gas, and No. 2 fuel oil only (Minn. R. 7005.0100)</p>	<p>The unit is equipped with a COMS for opacity, the requirements for which are set forth in GP006.  Coal and optional fuel oil sulfur content determined by fuel sampling and analysis requirements detailed in GP008. Alternatively, fuel oil supplier certification for each shipment that sulfur content ≤ 0.5 percent by</p>	<p>Operation of the control equipment, the requirements for which are listed under CE006 and CE007, will ensure compliance with the PM10 limit.  Additional emission, operational, and monitoring requirements are listed at the GP, SV, and CE levels.</p>

		weight.	
EU011	<p>SO<sub>2</sub>: ≤ 0.5% by weight sulfur in fuel oil</p> <p>Opacity: ≤ 20%</p> <p>(40 CFR Part 60, Subpart Dc)</p> <p>Fuel type: Natural gas, and No. 2 fuel oil only</p> <p>(Minn. R. 7005.0100)</p> <p>Fuel Heat Input: ≤ 99 MM Btu/hr</p> <p>Maximum Fuel Oil Usage: ≤ 1151600 gal/yr</p> <p>Maximum Natural Gas Usage: ≤ 563 MM cubic feet/yr</p> <p>Fuel Usage: ≤ 1147600 gal/yr for distillate oil and ≤ 405.5 MM cubic feet/yr.</p> <p>Fuel usage limits are further balanced based on actual fuels and amounts used</p> <p>(Title I Condition: limit to avoid classification as a major modification under 40 CFR S§ 52.21; Minn. R. 7007.3000)</p>	<p>The unit is equipped with a COMS for opacity, the requirements for which are set forth in GP006.</p> <p>Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.</p> <p>Monitoring of the type and amount of fuel combusted each day, with monthly calculation of the 12 month rolling sum for the usage of each fuel.</p>	<p>Additional emission, operational, and monitoring requirements are listed at the GP and SV levels.</p>
EU014	<p>Operating Hours: ≤ 300 hrs/yr</p> <p>(Title I Condition: to avoid classification as a major modification under 40 CFR § 52.21; Minn. R. 7007.3000)</p> <p>SO<sub>2</sub>: ≤ 0.5 lb/MMBtu</p> <p>Opacity: ≤ 20% once operating temperatures established</p> <p>(Minn. R. 7011.2300)</p>	<p>Monthly reading of hours operated and calculation of 12-month rolling sum of hours operated.</p> <p>Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.</p>	<p>Use of fuel oil with a sulfur content of less than 0.5 percent will ensure compliance with the SO<sub>2</sub> limit. Proper maintenance and operation of the units will ensure compliance with the opacity standards, so no additional monitoring or recordkeeping requirements are necessary.</p>

EU015	<p>Operating Hours: <math>\leq 300</math> hrs/yr</p> <p>(Title I Condition: to avoid classification as a major modification under 40 CFR Section 52.21; Minn. R. 7007.3000)</p> <p>SO<sub>2</sub>: <math>\leq 0.5</math> lb/MMBtu</p> <p>Opacity: <math>\leq 20\%</math> once operating temperatures established</p> <p>(Minn. R. 7011.2300)</p>	<p>Monthly reading of hours operated and calculation of 12-month rolling sum of hours operated.</p> <p>Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5 percent by weight.</p>	<p>Use of fuel oil with a sulfur content of less than 0.5 percent will ensure compliance with the SO<sub>2</sub> limit. Proper maintenance and operation of the units will ensure compliance with the opacity standards, so no additional monitoring or recordkeeping requirements are necessary.</p>
EU016	<p>Operating Hours: <math>\leq 300</math> hrs/yr</p> <p>(Title I Condition: to avoid classification as a major modification under 40 CFR § 52.21; Minn. R. 7007.3000)</p> <p>SO<sub>2</sub>: <math>\leq 0.5</math> lb/MMBtu</p> <p>Opacity: <math>\leq 20\%</math> once operating temperatures established</p> <p>(Minn. R. 7011.2300)</p>	<p>Monthly reading of hours operated and calculation of 12-month rolling sum of hours operated.</p> <p>Obtain fuel oil supplier certification for each shipment that sulfur content does not exceed 0.5% by weight.</p>	<p>Use of fuel oil with a sulfur content of less than 0.5 percent will ensure compliance with the SO<sub>2</sub> limit. Proper maintenance and operation of the units will ensure compliance with the opacity standards, so no additional monitoring or recordkeeping requirements are necessary.</p>
EU050, 051	<p>(Title I Condition: to avoid classification as a major modification under 40 CFR § 52.21; Minn. R.</p>	<p>Continuous measurement of intercooler temperature (less than 195 degrees F)</p>	<p>Maintain records of measurements</p>
EU139	<p>PM: <math>\leq 0.4</math> lb/MMBtu</p> <p>SO<sub>2</sub>: <math>\leq 1.6</math> lb/MMBtu</p> <p>Opacity: <math>\leq 20\%</math></p> <p>(Minn. R. 7011.0515)</p>		<p>Use of natural gas as a fuel ensures compliance with the PM, SO<sub>2</sub> and opacity limits.</p>
EU140	<p>PM: <math>\leq 0.4</math> lb/MMBtu</p> <p>SO<sub>2</sub>: <math>\leq 1.6</math> lb/MMBtu</p> <p>Opacity: <math>\leq 20\%</math></p> <p>(Minn. R. 7011.0515)</p>		<p>Use of natural gas as a fuel ensures compliance with the PM, SO<sub>2</sub> and opacity limits.</p>

EU141	<p>PM: <math>\leq 0.4</math> lb/MMBtu</p> <p>SO<sub>2</sub>: <math>\leq 1.6</math> lb/MMBtu</p> <p>Opacity: <math>\leq 20\%</math></p> <p>(Minn. R. 7011.0515)</p>		Use of natural gas as a fuel ensures compliance with the PM, SO <sub>2</sub> and opacity limits.
EU143	<p>Opacity: <math>\leq 5\%</math> (<math>\leq 10\%</math> from control equip) (Minn. R. 7011.1005)</p> <p>PM: <math>\leq 80\%</math> collection efficiency (Minn. R. 7011.1005)</p> <p>Clean up commodities (Minn. R. 7011.1005)</p> <p>PM/PM<sub>10</sub>: <math>\leq 89.1</math> percent overall control efficiency (Title I Condition to avoid classification as a major modification under 40 CFR § 52.21)</p>	<p>Daily visible emissions observation and periodic inspections.</p> <p>Pressure drop readings if unable to conduct visible emissions readings</p>	Permittee must operate control equipment at all times that emission unit is operational.
EU144	<p>Opacity: <math>\leq 5\%</math> (<math>\leq 10</math> from PCE) (Minn. R. 7011.1005)</p> <p>PM: <math>\leq 80\%</math> collection efficiency (Minn. R. 7011.1005)</p> <p>Clean up commodities (Minn. R. 7011.1005)</p> <p>PM/PM<sub>10</sub>: <math>\leq 89.1</math> percent overall control efficiency (Title I Condition to avoid classification as a major modification under 40 CFR Section 52.21)</p>	<p>Daily visible emissions observation and periodic inspections.</p> <p>Pressure drop readings if unable to conduct visible emissions readings</p>	<p>Opacity: <math>\leq 5\%</math> (<math>\leq 10\%</math> from control equip) (Minn. R. 7011.1005)</p> <p>PM: <math>\leq 80\%</math> collection efficiency (Minn. R. 7011.1005)</p> <p>Clean up commodities (Minn. R. 7011.1005)</p> <p>PM/PM<sub>10</sub>: <math>\leq 89.1</math> percent overall control efficiency (Title I Condition to avoid classification as a major modification under 40 CFR Section 52.21)</p>
CE001	<ul style="list-style-type: none"> <li>• PM control efficiency &gt;99%</li> <li>• PM-10 control efficiency &gt;99%</li> <li>• Pressure drop <math>\geq 2</math> and <math>\leq 6</math> inches of water column</li> </ul> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Daily reading of pressure drop and recordkeeping of inspections and readings.</p> <p>Take corrective actions as specified in the permit terms.</p> <p>Periodically inspect equipment to ensure proper operation.</p>	<p>The permit terms include fabric filter operational requirements applicable to the equipment when the emissions unit is in operation.</p> <p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>

CE002	<ul style="list-style-type: none"> <li>PM control efficiency &gt;96%</li> <li>PM-10 control efficiency &gt;96%</li> <li>Pressure drop <math>\geq 2</math> and <math>\leq 6</math> inches of water column</li> </ul> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Daily reading of pressure drop and recordkeeping of inspections and readings.</p> <p>Take corrective actions as specified in the permit terms.</p> <p>Periodically inspect equipment to ensure proper operation.</p>	<p>The permit terms include fabric filter operational requirements applicable to the equipment when the emissions unit is in operation.</p> <p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>
CE003	<ul style="list-style-type: none"> <li>SO<sub>2</sub> control efficiency <math>\geq 70\%</math></li> <li>Pressure Drop <math>\leq 2</math> inches of water column</li> </ul> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>	<p>The permit terms include scrubber operational requirements applicable to the equipment when the emissions unit is in operation.</p>
CE004	<ul style="list-style-type: none"> <li>PM control efficiency &gt;97%</li> <li>PM-10 control efficiency &gt;97%</li> <li>Pressure drop <math>\geq 2</math> and <math>\leq 6</math> inches of water column</li> </ul> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Daily reading of pressure drop and recordkeeping of inspections and readings.</p> <p>Take corrective actions as specified in the permit terms.</p> <p>Periodically inspect equipment to ensure proper operation.</p>	<p>The permit terms include fabric filter operational requirements applicable to the equipment when the emissions unit is in operation.</p> <p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>
CE005	<ul style="list-style-type: none"> <li>SO<sub>2</sub> control efficiency <math>\geq 70\%</math></li> <li>Pressure Drop <math>\leq 2</math> inches of water column</li> </ul> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>	<p>The permit terms include scrubber operational requirements applicable to the equipment when the emissions unit is in operation.</p>
CE007	<ul style="list-style-type: none"> <li>PM control efficiency &gt;96%</li> <li>PM-10 control efficiency &gt;96%</li> <li>Pressure drop <math>\geq 2</math> and <math>\leq 6</math> inches of water</li> </ul>	<p>Daily reading of pressure drop and recordkeeping of inspections and readings.</p> <p>Take corrective actions as specified in the permit terms.</p>	<p>The permit terms include fabric filter operational requirements applicable to the equipment when the emissions unit is in operation.</p>

	<p>column</p> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Periodically inspect equipment to ensure proper operation.</p>	<p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>
CE021	<ul style="list-style-type: none"> <li>• PM control efficiency &gt;97%</li> <li>• PM-10 control efficiency &gt;97%</li> <li>• Pressure drop <math>\geq 2</math> and <math>\leq 6</math> inches of water column</li> </ul> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Daily reading of pressure drop and recordkeeping of inspections and readings.</p> <p>Take corrective actions as specified in the permit terms.</p> <p>Periodically inspect equipment to ensure proper operation.</p>	<p>The permit terms include fabric filter operational requirements applicable to the equipment when the emissions unit is in operation.</p> <p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>
CE022	<ul style="list-style-type: none"> <li>• PM control efficiency &gt;97%</li> <li>• PM-10 control efficiency &gt;97%</li> <li>• Pressure drop <math>\geq 2</math> and <math>\leq 6</math> inches of water column</li> </ul> <p>(Title I Condition to avoid major source classification under 40 CFR § 63.2)</p>	<p>Daily reading of pressure drop and recordkeeping of inspections and readings.</p> <p>Take corrective actions as specified in the permit terms.</p> <p>Periodically inspect equipment to ensure proper operation.</p>	<p>The permit terms include fabric filter operational requirements applicable to the equipment when the emissions unit is in operation.</p> <p>Equipment to be operated and maintained according to a site-specific Operation and Maintenance Plan.</p>

FS001	<ul style="list-style-type: none"> <li>Fugitive PM control: maintain shape of stock pile and apply water</li> </ul>	The stockpile is enclosed on 4 sides – the stockpile is to be kept in a flat shape below the walls to minimize PM becoming airborne	There are water spray nozzles within the enclosure that can be used to spray down the stockpile as needed.
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### **3.3 Insignificant Activities**

The University has several operations which are classified as insignificant activities. These are listed in Appendix A to the permit. Emission calculations were not requested for the majority of the listed items because they are insignificant activities by virtue of their design and capacity, as provided by the University. Exceptions are the emergency generators and boilers, which are insignificant because of actual emissions. Based on emissions information provided by Facility actual emissions are below the significant threshold. However, the boilers and generators could exceed the insignificant threshold and therefore, the university will track hourly usage. The likelihood of units emitting at significant levels is very small. Therefore, no periodic monitoring for these or any other insignificant activity is included in the permit.

### **3.4 Background Information for Stack Parameters relied upon in Dispersion Modeling**

#### **Third Supplement to Permit Application**

CO, NOx, TSP, and PM10 ambient air quality impacts were demonstrated to be insignificant. Multi-source modeling was conducted for SO2.

Modeling Results (p. 5-32):

- Predicted CO impacts were below significance levels
- Predicted NOx impacts for Case A were demonstrated to be an insignificant increase in ambient air concentrations over predicted NOx impacts for existing facility baseline (actual) operation.
- Predicted TSP and PM10 impacts for Case A were demonstrated to be an insignificant increase in ambient air concentrations over predicted TSP and PM10 impacts for existing facility baseline (actual) operation.
- Predicted SO2 impacts indicate that University sources were predominately minor contributors to overall predicted SO2 concentrations (not among the top five contributors).

*From e-mail from Greg Archer, 8/23/99*

Background: As part of the Steam Plant Modification the University conducted air quality modeling to demonstrate compliance with ambient air quality standards (AAQS). Modeling (steam plants) was conducted for NOx, PM and CO. Because the area was in non-attainment for SOx at the time of application submittal, multi-source modeling, which included emergency generators, was conducted for SOx. One result of this modeling was a recommended minimum stack height of 3 meters for certain diesel generators. Since this modeling, the University has installed generators based on this recommended stack height.

### **3.5 Permit Organization**

There are several groups (GP007, GP009-GP015) where the requirements apply individually to all the emission units associated with that group. This is typically done when there are a large number of items with similar associated requirements (i.e. GP007 contains the requirements for 16 low temperature fabric filters).

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 tracked (e.g., limits, submittals, etc.), should be in Table A or B. The main reason is that the appendices are word processing sections and are not part of the 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.

### **3.5 Comments Received – Section to be completed after public notice period**

Public Notice Period: March 30, 2006 – April 28, 2006

EPA 45-day Review Period: March 30, 2006 – May 15, 2006

Comments were not received from the public during the public notice period. Comments were not received from EPA during their review period.

## **4. Conclusion**

Based on the information provided by the University of Minnesota and Foster Wheeler, the MPCA has reasonable assurance that the proposed operation of the emission facility, as described in the Air Emission Permit No. 05301050-001, and this TSD, will not cause or contribute to a violation of applicable federal regulations and Minnesota Rules.

Staff Members on Permit Team: Bonnie Nelson (permit writer/engineer)  
Kirk Dunbar, HDR Engineering, Inc. (contracted permit writer/technical consultant)  
Susan Venem (enforcement)  
Curt Stock (stack testing)  
Steve Pak (peer reviewer)

Attachments: 1. Emission Calculation Spreadsheets  
2. Coal Pile Emission Calculation Spreadsheets  
3. Actual Emissions  
4. Facility Description Forms  
5. CD-01 Forms  
6. Testing Frequency Plan dated 2005  
7. Material Handling Schematics  
8. *Comments received as a result of public notice and comment responses.*



# *Attachment 1*

## **Emission Calculations**



## *Attachment 2*

# **Coal Pile Emission Calculations**



## *Attachment 3*

# **Actual Emissions**



# *Attachment 4*

## **Facility Description**



# *Attachment 5*

## **CD-01 Forms**



*Attachment 6*

**Testing Frequency Plan – 2005**



## *Attachment 7*

# **Material Handling Schematics**



## *Attachment 8*

### **Comments if received**

