

**AIR EMISSION PERMIT NO. 13700028- 001
IS ISSUED TO THE**

City of Virginia

City of Virginia Department of Public Utilities

620 South 2nd Street

Virginia, St. Louis County, Minnsota 55792

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

Permit Type

Total Facility Operating Permit

Application Date

September 18, 1995

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 and with all general conditions listed in Minn. R. pt. 7007.0800, subp. 16, [and all standard permit requirements listed in 40 CFR 70.6\(a\)](#) which are incorporated by reference. Any changes or modifications to the stationary source must be performed in compliance with Minn. Rules pts. 7007.1150 to 7007.1500. Terms used in the permit are as defined in the state air pollution control rules unless the term is explicitly defined in the permit.

Permit Type: Federal ; Part 70

Issue Date: February 5, 1998

Expiration: February 5, 2003

All Title I Conditions do not expire.

Carolina Espejel-Schutt for

Michael J. Sandusky

Acting Division Manager

Air Quality Division

for

Peder A. Larson

Commissioner

Minnesota Pollution Control Agency

BAB:yma

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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	(612) 296-6300
Outside Metro Area	1-800-657-3864
TTY	(612) 282-5332

The rule 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. Any requirements which have been determined not to apply are listed in Table A of this permit.

The permit shield, however does not apply to: Minn. R. ch. 7030 (Noise Pollution Control).

FACILITY DESCRIPTION:

The City of Virginia Department of Public Utilities is a citizen owned utility providing steam heat and electricity to businesses and residents of the local Virginia area. The department operates any combination of four boilers using coal and/or natural gas as fuel. The four boilers are labeled Boiler #7, Boiler #8, Boiler #9, and Boiler #10. Boilers #7 and #10 are strictly natural gas-fired boilers, Boiler #8 can burn both coal (subbituminous and bituminous) and natural gas, and Boiler #9 can burn only coal (subbituminous and bituminous). As a part of this Title V permit the facility is allowed to also burn oily cellulose-based sorbents (including oily rags) in Boiler #9 only. This requirement is similar to what other utility plant Title V permits have.

Boiler #7 is rated at 175 MMBtu (million Btu) per hour (90,000 lbs of steam per hour). Boiler #8 is rated at 250.07 MMBtu per hour (150,000 lbs of steam per hour). Boiler #9 is rated at 249.5 MMBtu per hour (178,000 lbs of steam per hour). Boiler #10 is rated at 266 MMBtu per hour (200,000 lbs of steam per hour). Only Boiler #10 has an NSPS applicable to it (Subpart Da). Boiler #8 is a pulverized coal unit and Boiler #9 is a spreader stoker (chunk) coal unit.

In terms of pollution control equipment, Boiler #7 has a multiclone for controlling particulate matter emissions. Boilers #8 and #9 have electrostatic precipitators for controlling particulate matter, and Boiler #10 has a water-cooled throat liner, flue gas recirculation, and low NO_x burners for controlling nitrogen oxide emissions. In terms of continuous emission monitors (CEMs) and continuous opacity monitors (COMs), Boiler #7 does not have any CEMs or COMs, Boiler #8 and #9 each have opacity monitors, sulfur dioxide monitors, and carbon dioxide monitors, and Boiler #10 has a nitrogen oxide monitor and an oxygen monitor.

There are three steam driven electrical generating turbines at the facility with a total electrical production capacity of 30 Megawatts.

Other air emission sources at the facility include a railcar coal unloading station and a makeup air natural gas-fired heater. The coal unloading facility is considered an insignificant emission unit. The makeup air heater is a part of the Boiler #10 system in that it pre-heats the incoming combustion air for the boiler. The unit can also be used to provide heat for the building in the event that the #10 boiler is not operating. The small burner (7.15 MMBtu/hour) on this unit does not have a separate stack for its emissions to vent into. The small amount of emissions vent directly into the room and are assumed to be drawn into Boiler #10 and in turn vented through its stack (SV 004).

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities
 Permit Number: 13700028 - 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
Nitrogen Oxides: less than 73.08 tons/month using 12-month Rolling Average basis.	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21
<p>Record keeping: by the 15th day of each month, the Permittee shall record the following information:</p> <p>1) tons of coal burned in EU 002 during the previous month; 2) tons of coal burned in EU 003 during the previous month; 3) total mmcf (million cubic feet) of natural gas burned in EU 001 and EU 002 during the previous month; 4) total monthly NOx emissions for EU 004 and EU 005 as measured by NOx CEMS.</p> <p>The Permittee shall use these fuel usage records, NOx emissions data, and Equation 1 to determine monthly facility NOx emissions.</p>	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
<p>By the 15th day of each month the Permittee shall calculate and record the monthly NOx emissions using Equation 1:</p> $\text{NOx emissions} = \text{EF2(a)} + \text{EF3(b)} + \text{EF1(z)} + \text{EF2ng(x)} + y$ <p>EF2 = 0.0105 (EU 002 emission factor for coal) EF3 = 0.007 (EU 003 emission factor for coal) EF1 = 0.275 (EU 001 emission factor for natural gas) EF2ng = 0.275 (EU 002 emission factor for natural gas) a = tons of coal burned in EU 002 during the month b = tons of coal burned in EU 003 during the month x = mmcf natural gas burned in EU 002 during the month y = monthly total EU 004 and EU 005 NOx emissions determined by NOx CEMS z = mmcf natural gas burned in EU 001 during the month</p> <p>By the 15th day of each month the Permittee shall calculate and record the monthly 12-month rolling average NOx emission rate. The monthly 12-month rolling average shall be determined by summing the monthly NOx emission rates (determined using the above equation) for the previous 12 months, and dividing by 12.</p>	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 4.B.
Revision of Equation 1 Emission Factors: All Equation 1 emission factors shall be revised based on the results of each performance test. The Permittee shall use the most-recent performance test-revised emission factor for calculating emissions, upon receipt of written notification from the MPCA that the performance testing results were valid. For the interim period prior to receipt of any written MPCA notification, the Permittee shall use the factors defined above for Equation 1 in this permit.	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21
The Permittee shall comply with the General Conditions listed in Minn. R. 7007.0800, subp. 16.	Minn. R. 7007.0800, subp. 16
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.	Minn. R. 7011.0150
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.	Minn. R. 7007.0800, subp. 2; Minn. R. 7007.0800, subp. 16(J)
Operation and Maintenance Plan: Retain at the stationary source an operation and maintenance plan for all air pollution control equipment.	Minn. R. 7007.0800, subp. 14 and Minn. R. 7007.0800, subp. 16(J)
Shutdowns: Notify the Commissioner at least 24 hours in advance of shutdown of any process or control equipment if the shutdown would cause an increase in the emission of air contaminants. At the time of notification, notify the Commissioner of the cause of the shutdown and the estimated duration. Notify the Commissioner again when the shutdown is over.	Minn. R. 7019.1000, subp. 1
Breakdowns: Notify the Commissioner immediately of a breakdown of more than one hour duration of any process or control equipment if the breakdown causes an increase in the emission of air contaminants. At the time of notification or as soon thereafter as possible, the permittee shall also notify the Commissioner of the cause of the breakdown and the estimated duration. Notify the Commissioner again when the breakdown is over.	Minn. R. 7019.1000, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

Monitoring Equipment: Install or make needed repairs to monitoring equipment within 60 days of issuance of the permit if monitoring equipment is not installed and operational on the date the permit is issued.	Minn. R. 7007.0800, subp. 4(D)
Monitoring Equipment Calibration: Annually calibrate all required monitoring equipment (any requirements applying to continuous emission monitors are listed separately in this permit).	Minn. R. 7007.0800, subp. 4(D)
Operation of Monitoring Equipment: Unless otherwise noted in Tables A, B, and/or C, monitoring a process or control equipment connected to that process is not necessary during periods when the process is shutdown, such as for system breakdowns, repairs, calibration checks, and zero and span adjustments (as applicable). Monitoring records should reflect any such periods of process shutdown.	Minn. R. 7007.0800, subp. 4(D)
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.	Minn. R. 7011.0020
Performance Testing: Conduct all performance tests in accordance with Minn. R. ch. 7017 unless otherwise noted in Tables A, B, and/or C.	Minn. R. ch. 7017
Operating and/or production limits will be placed on emission units based on operating conditions during compliance testing. Limits set as a result of a compliance test (conducted before or after permit issuance) apply until new operating/production limits are set following formal review of a performance test as specified by Minn. R. 7017.2025. This does not apply to EU 002 and EU 003, which have specific operating requirements.	Minn. R. 7017.2025
Oral Notification of Deviations Endangering Human Health or the Environment: Within 24 hours of discovery, orally notify the Commissioner of any deviation from permit conditions which could endanger human health or the environment.	Minn. R. 7007.0800, subp. 6(A)
Discovery of Deviations Endangering Human Health or the Environment Report (written): due two working days after discovery of deviation, submit a written description of any deviation endangering human health or the environment to the Commissioner. Include the following information in this written description: cause of the deviation; exact dates of the period of the deviation; if the deviation has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the deviation.	Minn. R. 7007.0800, subp. 6(A)
Application for Permit Amendment: If you need a permit amendment, submit 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.	Minn. R. 7007.1150 through Minn. R. 7007.1500
Emission Fees: due 60 days after receipt of an MPCA bill	Minn. R. 7002.0005 through Minn. R. 7002.0095
Inspections: Upon presentation of credentials and other documents as may be required by law, allow the Agency, or its representative, to enter the Permittee's premises, to have access to and copy any records required by this permit, to inspect at reasonable times (which include any time the source is operating) any facilities, equipment, practices or operations, and to sample or monitor any substances or parameters at any location.	Minn. R. 7007.0800, subp. 9(A)
Record keeping: 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.	Minn. R. 7007.0800, subp. 5(B)
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 strip-chart 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).	Minn. R. 7007.0800, subp. 5(C)
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).	Minn. R. 7007.1400, subp. 1(H)
Noise: The Permittee shall comply with noise standards set forth in Minn. R. 7030.0010 to 7030.0080 at all times during operation of any emission units. This is a state requirement only and is not federally enforceable.	Minn. R. 7030.0010-7030.0080

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

Subject Item: GP 001 Boilers 8 and 9**Associated Items:** EU 002 Boiler #8

EU 003 Boiler #9

What to do	Why to do it
Sulfur Dioxide: less than or equal to 2.5 lbs/million Btu heat input using 1-Hour Average when only one of the two emission units in GP 001 is combusting coal.	Minn. R. 7009.0020 to ensure facility does not cause or contribute to a violaiton of the sulfur dioxide ambient air standard in Minn. R. 7009.0080; meets requirements of Minn. R. 7011.0510, subp. 1
Sulfur Dioxide: less than or equal to 1.72 lbs/million Btu heat input using 1-Hour Average when both EU 002 and EU 003 are combusting coal. This SO2 limit applies individually to each emission unit.	Minn. R. 7009.0020 to ensure facility does not cause or contribute to a violaiton of the sulfur dioxide ambient air standard in Minn. R. 7009.0080

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

Subject Item: EU 001 Boiler #7**Associated Items:** CE 001 Centrifugal Collector - Medium Efficiency
SV 001

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except that a maximum of 60 percent opacity is permissible for four minutes in any 60 minute period, and a maximum of 40 percent opacity is permissible for four additional minutes in any 60 minute period.	Minn. R. 7011.0510, subp. 2
Fuels Allowed: EU 001 fuel is restricted to natural gas only.	Minn. R. 7007.0800, subp. 2
Fuel Usage Recordkeeping: by the 15th day of each month, the Permittee shall record the EU 001 fuel usage for the previous calendar month. The monthly values shall be used in the NOx limitation equation (Equation 1) in the total facility section of this permit.	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
Initial Performance Test: due 30 days after Startup of EU 001. The test shall measure NOx emissions for determining the NOx emission factor (EF1) for use in Equation 1 in the total facility requirements of this permit.	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21; Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test	Minn. R. 7017.2030, subp. 4

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

Subject Item: EU 002 Boiler #8

Associated Items: CE 002 Electrostatic Precipitator - High Efficiency

GP 001 Boilers 8 and 9

MR 001

MR 002

MR 006

MR 007

SV 002

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except that a maximum of 60% opacity is permissible for four minutes in any 60 minute period, and a maximum of 40% opacity is permissible for four additional minutes in any 60 minute period based on a one(1)-minute averaging period.	Minn. R. 7011.0510, subp. 2
Fuels Allowed: subbituminous coal, bituminous coal, and natural gas.	Minn. R. 7007.0800, subp. 2
Fuel Usage Recordkeeping: by the 15th day of each month the Permittee shall record the type and quantity of fuels burned in EU 002 during the previous month. The monthly records shall be used in the NOx limitation equation (Equation 1) in the total facility section of this permit.	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
Initial Performance Test: due 180 days after Permit Issuance to measure NOx emissions and determine the NOx emission factors for coal and natural gas. The permittee shall conduct separate tests for determining the NOx emission factor for coal (EF ₂) and the NOx emission factor for natural gas (EF _{ng}). These emission factors will be used in Equation 1 in the total facility requirements of this permit.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test for NOx emissions.	Minn. R. 7017.2030, subp. 4
Performance Test: due before end of each 60 months starting 01/31/98 to measure particulate matter emissions. The particulate matter emissions tests shall be conducted at an interval not to exceed 60 months between test dates.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each 60 months starting 01/31/98 (7 days before each Particulate Matter Performance Test).	Minn. R. 7017.2030, subp. 4
Boiler Alternative Operating Conditions for Performance Testing: Alternative Operating Conditions during testing are defined as 90% to 100% of the boiler's maximum normal (continuous) operating load or the maximum permitted operating rate, whichever is lower. The basis for this number must be included in the test plan. If testing is conducted at the alternative operating condition established, an operating limit will not be established as a result of performance testing. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 2(A) and 3(B)
Boiler Operating Conditions Not Meeting the Alternative Operating Conditions During Performance Testing: If performance testing is not conducted at or above the established alternative operating condition, then the boiler operating rate will be limited on an 8-hour block average based on the following: (1) If the results of the performance test are greater than 80% of any applicable emission limit for which compliance is demonstrated, then boiler operation will be limited to the tested operating rate. (2) If results are less than or equal to 80% of all applicable emission limits for which compliance is demonstrated, boiler operation will be limited to 110% of the tested operating rate. In no case will the new operating rate limit be higher than allowed by an existing permit condition.	Minn. R. 7017.2025, subp. 3(B)
STET (Short Term Emergency and Testing) Operating hours limit: The boiler may operate up to 40 hours per year to demonstrate the Uniform Rating of Generating Equipment (URGE) capacity and to meet emergency energy supply needs. Maintain documentation of all STET operation to demonstrate compliance with this limit. The boiler must meet emission limits during STET operation.	Minn. R. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

<p>STET Operation Definition that applies to Boilers that Meet or do Not Meet the Alternative Operating Condition for Performance Testing:</p> <p>If performance test results demonstrate compliance at 80% or less of any applicable emission limits for any tested pollutant, STET operation is defined as operation beyond 110% of the average operating rate achieved during that performance test.</p> <p>If performance test results demonstrate compliance at greater than 80% any applicable emission limit for any tested pollutant, STET operation is defined as operation beyond 100% of the average operating rate achieved during that performance test.</p> <p>In no case will STET operation be higher than allowed by an existing permit condition.</p>	Minn. R. 7007.0800, subp. 2
The results of a performance test are not final until issuance of a review letter by MPCA, unless specified otherwise by Minn. R. 7017.2001-7017.2060.	Minn. R. 7017.2020, subp. 4
Emission Monitoring: The Permittee shall use a COMS to measure opacity emissions from EU002.	Minn. R. 7017.1000, subp. 1; Minn. R. 7007.0800, subp. 2
COMS Monitoring Data: Owners or operators of all COMS shall reduce all data to one-minute averages. Opacity averages shall be calculated from all equally spaced consecutive 10-second (or shorter) data points in the one-minute averaging period.	Minn. R. 7007.0800, subp. 2
COMS Continuous Operation: Except for system breakdowns, repairs, calibration checks and zero and span adjustments, all COMS shall be in continuous operation while the boiler is operating (combusting fuel).	Minn. R. 7007.0800, subp. 2
COMS Daily Calibration Drift (CD) Check: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) opacity at least once daily. The COMS must be adjusted whenever the calibration drift (CD) exceeds the twice specification of PS-1 of 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1000
COMS Calibration Error Audit: due before end of each calendar half-year following COMS Certification Test . Conduct audits at least 3 months apart but no greater than 8 months apart.	Minn. R. 7007.0800, subp. 2
Emissions Monitoring: The Permittee shall use a SO2 CEMS to measure SO2 emissions from EU002.	Minn. R. 7017.1000, subp. 1; Minn. R. 7007.0800, subp. 2
CEMS Continuous Operation: Except for system breakdowns, repairs, calibration checks and zero and span adjustments, all CEMS shall be in continuous operation while the boiler is operating (combusting fuel).	Minn. R. 7007.0800, 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.	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.1000, subp. 5
CEMS Cylinder Gas Audit (CGA): due before end of each calendar half-year following CEM 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. 7007.0800, subp. 2
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar year following CEM Certification Test . 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. 7007.0800, subp. 2
Recordkeeping: The owner or operator must retain records of all CEMS/COMS monitoring data and support information for a period of five (5) years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

Subject Item: EU 003 Boiler #9**Associated Items:** CE 003 Electrostatic Precipitator - High Efficiency

GP 001 Boilers 8 and 9

MR 003

MR 004

MR 008

MR 009

SV 003

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.6 lbs/million Btu heat input	Minn. R. 7011.0510, subp. 1
Opacity: less than or equal to 20 percent opacity except that a maximum of 60 percent opacity is permissible for four minutes in any 60-minute period, and a maximum of 40 percent opacity is permissible for four additional minutes in any 60-minute period.	Minn. R. 7011.0510, subp. 2
Fuels Allowed: subbituminous coal, bituminous coal, and oily cellulose-based sorbents (including oily rags).	Minn. R. 7007.0800, subp. 2
Fuel Usage Recordkeeping: by the 15th day of each month the the Permittee shall record the type and quantity of fuels burned in EU 003 during the previous month. The monthly records shall be used in the NOx limitation equation (Equation 1) in the total facility section of this permit.	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21; Minn. R. 7007.0800, subp. 5
Fuel Usage Limit: The Permittee shall not combust more than 500 pounds per year of oily cellulose-based sorbents (oily rags) in EU 003.	Minn. R. 7007.0800, subp. 2
Initial Performance Test: due 180 days after Permit Issuance to measure NOx emissions and determine the NOx emission factor (EF3) used in Equation 1 in the total facility requirements of this permit.	Minn. R. 7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before Initial Performance Test for NOx emissions.	Minn. R. 7017.2030, subp. 4
Performance Test: due before end of each 60 months starting 01/31/98 to measure particulate matter emissions. The particulate matter emissions tests shall be conducted at an interval not to exceed 60 months between test dates.	Minn. R.7017.2020, subp. 1
Performance Test Pre-test Meeting: due 7 days before end of each 60 months starting 01/31/98 (7 days before each Particulate Matter Performance Test).	Minn. R. 7017.2030, subp. 4
Emission Monitoring: The Permittee shall use a COMS to measure opacity emissions from EU 003.	Minn. R. 7017.1000, subp. 1; Minn. R. 7007.0800, subp. 2
COMS Monitoring Data: Owners or operators of all COMS shall reduce all data to one-minute averages. Opacity averages shall be calculated from all equally spaced consecutive 10-second (or shorter) data points in the one-minute averaging period.	Minn. R. 7007.0800, subp. 2
COMS Continuous Operation: Except for system breakdowns, repairs, calibration checks and zero and span adjustments, all COMS shall be in continuous operation while the boiler is operating (combusting fuel).	Minn. R. 7007.0800, subp. 2
COMS Daily Calibration Drift (CD) Check: The CD shall be quantified and recorded at zero (low-level) and upscale (high-level) opacity at least once daily. The COMS must be adjusted whenever the calibration drift (CD) exceeds the twice specification of PS-1 of 40 CFR pt. 60, Appendix B.	Minn. R. 7017.1000
COMS Calibration Error Audit: due before end of each calendar half-year following COMS Certification Test . Conduct audits at least 3 months apart but no greater than 8 months apart.	Minn. R. 7007.0800, subp. 2
Emissions Monitoring: The Permittee shall use a SO2 CEMS to measure SO2 emissions from EU 003.	Minn. R. 7017.1000, subp. 1; Minn. R. 7007.0800, subp. 2
CEMS Continuous Operation: Except for system breakdowns, repairs, calibration checks and zero and span adjustments, all CEMS shall be in continuous operation while the boiler is operating (combusting fuel).	Minn. R. 7007.0800, 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.	Minn. R. 7007.0800, subp. 2; Minn. R. 7017.1000, subp. 5
CEMS Cylinder Gas Audit (CGA): due before end of each calendar half-year following CEM 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. 7007.0800, subp. 2

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar year following CEM Certification Test . 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. 7007.0800, subp. 2
Recordkeeping: The owner or operator must retain records of all CEMS/COMS monitoring data and support information for a period of five (5) years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

Subject Item: EU 004 Boiler #10**Associated Items:** CE 004 Modified Furnace or Burner Design

CE 005 Flue Gas Recirculation

CE 006 Low Excess - Air Firing

MR 005

MR 010

SV 004

What to do	Why to do it
Total Particulate Matter: less than or equal to 0.03 lbs/million Btu heat input	40 CFR Section 60.42a(a)(1)
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 60.42a(b)
Sulfur Dioxide: less than or equal to 0.20 lbs/million Btu heat input using 30-day Rolling Average	40 CFR Section 60.43a(b)(2)
Nitrogen Oxides: less than or equal to 0.10 lbs/million Btu heat input using 30-day Rolling Average	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21; ensures compliance with 40 CFR Section 60.44a(a)(1)
Fuels Allowed: EU 004 fuel is restricted to natural gas only.	Minn. R. 7007.0800, subp 2
Emissions Monitoring: The Permittee shall use a NOx CEMS to measure NOx emissions from EU 004 and EU 005, and record the output of the system.	Title I Condition: to limit NOx emissions increase to less than the significant level in 40 CFR Section 52.21; ensures compliance with 40 CFR Section 60.47a(c)
Emissions Monitoring: The owner or operator shall operate and maintain a CO2 or O2 CEMS at the location of the NOx CEMS, and record the output of the system.	40 CFR Section 60.47a(d)
CEMS Continuous Operation: Except for system breakdowns, repairs, calibration checks and zero and span adjustments, all CEMS shall be in continuous operation while the boiler is operating (combusting fuel).	40 CFR Section 60.47a(e); 40 CFR Section 60.13(e)
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.	40 CFR Section 60.48a(d); 40 CFR pt. 60, Appendix F, section 4.1; 40 CFR Section 60.13(d)(1)
CEMS Cylinder Gas Audit (CGA): due before end of each calendar half-year following CEM 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.	40 CFR Section 60.48a(d); 40 CFR pt. 60, Appendix F, section 5.1.2
CEMS Relative Accuracy Test Audit (RATA): due before end of each calendar year following CEM Certification Test . Follow the procedures in 40 CFR pt. 60, Appendix B and Appendix F.	40 CFR Section 60.48a(d); 40 CFR pt. 60, Appendix F, section 5.1.1
Recordkeeping: The owner or operator must retain records of all CEMS/COMS monitoring data and support information for a period of five (5) years from the date of the monitoring sample, measurement or report. Records shall be kept at the source.	40 CFR Section 60.7(f); Minn. R. 7007.0800, subp. 5

TABLE A: LIMITS AND OTHER REQUIREMENTS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

Subject Item: CE 003 Electrostatic Precipitator - High Efficiency**Associated Items:** EU 003 Boiler #9

What to do	Why to do it
Control Equipment Operating Parameters: operate CE 003 with at least the minimum number of fields in operation during the most recent stack test that measured PM emissions less than or equal to the limit under EU 003.	Minn. R. 7007.0800, subp. 14
Record keeping: once each day of operation, record the minimum number of on-line fields for CE 003.	Minn. R. 7007.0800, subp. 5

TABLE B: SUBMITTALS

02/05/98

Facility Name: City of Virginia Department of Public Utilities
Permit Number: 13700028 - 001

Table B lists the submittals you must send to the Commissioner. Table B is divided into two sections, for source-specific submittal requirements and for submittals required of all permittees. Source-specific submittals are further organized as either one-time only or recurrent requirements. You may also be subject to additional reporting requirements contained in the compliance schedule located in Table C of this permit. All submittals must be postmarked or received by the date specified in the table, and certified by a responsible official, defined in Minn. R. 7007.0100, subp. 21. Submittals which must be provided on standardized forms approved by the Commissioner are noted in Tables B and C.

Send any application for a permit or permit amendment to: Permit Information Coordinator, Permit Section, Air Quality Division, Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4914. Also send the Permit Information Coordinator notices of: accumulated insignificant activities, installation of control equipment, replacement of an emissions unit, and changes that contravene a permit term.

Send all other submittals to: Compliance Tracking Coordinator, Compliance Determination Unit, Air Quality Division, Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, Minnesota 55155-4194.

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

What to send	When to send	Portion of Facility Affected
Application for Permit Reissuance	due 180 days before expiration of Existing Permit	Total Facility
Computer Dispersion Modeling Protocol	due 1,096 days after Permit Issuance for PM-10 and NOx dispersion modeling. The protocol will describe the proposed modeling methodology and input data in accordance with all requirements of 40 CFR pt. 51, App. W. The protocol may be based on proposed operating conditions under the next permit term if necessary.	Total Facility
Computer Dispersion Modeling Results	due 1,462 days after Permit Issuance for PM-10 and NOx dispersion modeling.	Total Facility
Fugitive Control Plan	due 60 days after Permit Issuance. The plan shall identify all fugitive emission sources, primary and contingent control measures, and records kept, if any.	Total Facility
Notification	due 5 days after Startup of EU 001. Startup is defined as the date the Permittee changes the EU 001 dispatch status from emergency to a more frequent operating status.	EU001
Performance Test Notification (written)	due 30 days before Initial Performance Test	EU001
Performance Test Notification (written)	due 30 days before Initial Performance Test for NOx emissions.	EU002, EU003
Performance Test Plan	due 30 days before Initial Performance Test	EU001
Performance Test Plan	due 30 days before Initial Performance Test for NOx emissions. The test plan operating scenario will include as an operating scenario coal combusted individually.	EU003
Performance Test Plan	due 30 days before Initial Performance Test for NOx emissions. The test plan will include the operating scenario of coal and natural gas combusted individually.	EU002
Performance Test Report - Microfiche Copy	due 105 days after Initial Performance Test for NOx emissions.	EU002, EU003
Performance Test Report	due 45 days after Initial Performance Test	EU001
Performance Test Report	due 45 days after Initial Performance Test for NOx emissions.	EU002, EU003
Relative Accuracy Test Audit (RATA) Notification	due 30 days before CEMS Relative Accuracy Test Audit (RATA)	EU002, EU003, EU004
Testing Frequency Plan	due 60 days after Initial Performance Test for NOx emissions. The plan shall specify a testing frequency for natural gas and a testing frequency for coal, using the test data from the initial NOx performance tests and MPCA guidance. Future performance tests based on year (12 month), 36 month, and 60 month intervals, or as applicable shall be required on written approval of MPCA per Minn. R. 7017.2020, subp. 1.	EU002
Testing Frequency Plan	due 60 days after Initial Performance Test for NOx emissions. The plan shall specify a testing frequency using the initial NOx performance test data and MPCA guidance. Future performance tests based on one year (12 month), 36 month, and 60 month intervals, or as applicable, shall be required on written approval of MPCA per Minn. R. 7017.2020, subp. 1.	EU003

TABLE B: ONE TIME SUBMITTALS OR NOTIFICATIONS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

Testing Frequency Plan	due 60 days after Initial Performance Test for NOx emissions. The plan shall specify a testing frequency using the initial NOx performance test data and MPCA guidance. Future performance tests based on year (12 month), 36 month, and 60 month intervals, or as applicable shall be required on written approval of MPCA per Minn. R. 7017.2020, subp. 1.	EU001
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TABLE B: RECURRENT SUBMITTALS

02/05/98

Facility Name: City of Virginia Department of Public Utilities

Permit Number: 13700028 - 001

What to send	When to send	Portion of Facility Affected
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following Permit Issuance (Submit Deviations Reporting Form DRF-1 as amended). The EERs shall indicate all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdowns, and malfunctions.	EU003, EU004
Excess Emissions/Downtime Reports (EER's)	due 30 days after end of each calendar quarter following Permit Issuance (Submit Deviations Reporting Form DRF-1 as amended). The EERs shall indicate all periods of exceedances of the limit including exceedances allowed by an applicable standard, i.e. during startup, shutdowns, and malfunctions.	EU002
Relative Accuracy Test Audit (RATA) Results Summary	due 30 days after end of each calendar quarter following CEMS Relative Accuracy Test Audit (RATA)	EU002, EU003, EU004
CEMS Cylinder Gas Audit (CGA) Report	due 30 days after end of each calendar half-year following CEMS Cylinder Gas Audit (CGA)	EU002
CEMS Cylinder Gas Audit (CGA). Report	due 30 days after end of each calendar half-year following CEMS Cylinder Gas Audit (CGA)	EU003, EU004
COMS Calibration Error Audit Report Report	due 30 days after end of each calendar half-year following COMS Calibration Error Audit	EU002
COMS Calibration Error Audit Report. Report	due 30 days after end of each calendar half-year following COMS Calibration Error Audit	EU003
Semiannual Deviations Report	due 30 days after end of each calendar half-year following Permit Issuance	Total Facility
Compliance Certification	due 30 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.	Total Facility
Emissions Inventory Report	due 91 days after end of each calendar year following Permit Issuance	Total Facility
Performance Test Notification (written)	due 30 days before end of each 60 months starting 01/31/98 (30 days before each Particulate Matter Performance Test).	EU002, EU003
Performance Test Plan	due 30 days before end of each 60 months starting 01/31/98 (30 days before each Particulate Matter Performance Test).	EU002, EU003
Performance Test Report - Microfiche Copy	due 105 days after end of each 60 months starting 01/31/98 (105 days after each Particulate Matter Performance Test)	EU002
Performance Test Report - Microfiche Copy	due 105 days after end of each 60 months starting 01/31/98 (105 days after each Particulate Matter Performance Test).	EU003
Performance Test Report	due 45 days after end of each 60 months starting 01/31/98 (45 days after each Particulate Matter Performance Test).	EU002
Performance Test Report	due 45 days after end of each 60 months starting 01/31/98 (45 days after each Particulate Matter Performance Test).	EU003

TECHNICAL SUPPORT DOCUMENT
For
AIR EMISSION PERMIT NO. 13700028-001

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

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1. General Information

1.1. Applicant and Stationary Source Location:

Applicant/Address	Stationary Source/Address (SIC Code: 4911)
City of Virginia Dept. of Public Utilities 620 South Second Street PO Box 1048 Virginia, Minnesota 55792	City of Virginia Dept. of Public Utilities 620 South Second Street Virginia, Minnesota 55792

Contact: Mr. Douglas J. Ganoe, Director of Safety and Environmental

1.2. Description Of The Permit Action

The City of Virginia Department of Public Utilities is a citizen-owned utility providing steam heat and electricity to businesses and residents of the local Virginia area. The department operates any combination of four boilers using coal and/or natural gas as fuel. The four boilers are referred to as Boiler Nos. 7, 8, 9, and No. 10. Boilers No. 7 and No. 10 are strictly natural gas-fired boilers, Boiler No. 8 can burn both coal (subbituminous and bituminous) and natural gas, and Boiler No. 9 can burn only coal (subbituminous and bituminous). This Title V permit also allows the facility to burn oily cellulose-based sorbents (including oily rags) in Boiler No. 9 only. This requirement is similar to other coal-fired electric utility plant Title V permits.

This is a reissuance of an existing permit, and the issuance of the air emissions operating permit required by Title V of the Clean Air Act Amendments of 1990, codified in 40 CFR pt. 70. Previously the facility operated under a state-only total facility air emission permit issued by the Minnesota Pollution Control Agency (MPCA). The last total facility permit was issued on June 26, 1992. Five permit amendments were issued after permit issuance. The existing permit expires on June 26, 1997.

Amendment No. 1 authorized extension of the compliance test deadline for Boilers No. 7, 8, and No. 9 for emissions of TSP, Sulfur Dioxide (SO₂), and opacity. Amendment No. 2 authorized a change in the stack height extension completion date for Boilers No. 7 and No. 8, the option of submitting an alternative compliance plan instead of the stack height extension, and the option of monitoring Oxygen (O₂) or Carbon Dioxide (CO₂). Amendment No. 3 removed the requirement for the Boiler No. 7 stack extension due to the boiler fuel restriction to only natural gas, added the natural gas fuel restriction for Boiler No. 7, removed the requirement to install an SO₂ CEM on Boiler No. 7, and removed the requirement to submit an opacity compliance plan for Boiler No. 7. Amendment No. 4 changed the allowable fuels limit for Boiler No. 7 from strictly natural gas to natural gas and coal until February 15, 1994, and natural gas only, thereafter. Amendment No. 5 set natural gas usage restrictions for Boilers No. 7, No. 8, and No. 10. The purpose of these fuel use limits was to limit the potential NO_x emissions to past actual levels plus less than the significant increase under PSD (40 tons per year), so that the addition of Boiler No. 10 would not be a major modification to the facility for federal New Source Review purposes. Limits on natural gas and coal usage were set separately for Boilers No. 7, 8, 9, and No. 10. This amendment changed the limits on fuel use from separate boiler limits to total facility limits. This amendment also changed some compliance requirements for Boiler No. 10.

Most of the operating conditions of the permit will remain the same as in the existing operating permit and amendments. Changes made include the requirement for Particulate Matter (PM) testing on a five year frequency for Boilers No. 8 and No. 9, the allowance for the burning of oily cellulose-based sorbents (including oily rags) in Boiler No. 9 only, the requirement for the reporting of deviations from permit terms once every six months, and the requirement for an annual certification of compliance with the permit by the plant's General Manager. The permit also meets the requirements of Minn. R. 7007.0800, that specifies requirements for the content of Part 70 permits. This Title V permit also requires NO_x stack testing to verify compliance with the NO_x emissions cap stated in Amendment 5 to the previous total facility permit. The NO_x compliance equation stated in this amendment has an emission factor for NO_x from each of the four boilers for each fuel it combusts. It was decided that the No. 7 boiler, which is strictly a natural gas boiler and has not been operated since January of 1994, does not need stack testing until the decision is made to operate it in a more continual manner. If it is fired up and used for only short periods of time here and there, it is still not necessary to stack test this unit; the AP-42 emission factor listed in the NO_x compliance equation is sufficient for this type of use. For the No. 8 boiler a stack test for NO_x burning coal and another test burning natural gas are required. For the No. 9 boiler a stack test for NO_x on coal only is required. Once this stack testing has been approved by the agency, the NO_x compliance equation (listed in the total facility section of the permit) shall be updated with these more accurate emission factors and used to determine NO_x emissions. For the No. 10 boiler, no stack testing is required because the CEM will be used to determine NO_x emissions. Note that it was determined to not be necessary to require stack testing for particulate matter from boiler No. 7 and boiler No. 10 (the strictly natural gas-fired boilers) because No. 7 has the very lenient state PM limit of 0.6 lbs/MMBtu and compliance is easily expected and because No. 10 did a PM test a few years back and was less than 20 percent of the standard and thus no further PM testing is felt to be justifiable or necessary.

The application for issuance of the Part 70 total facility operating permit, dated September 15, 1995, was received by the MPCA on September 18, 1995.

1.3. Emissions of the Facility

1.3.1 Criteria Pollutants

The following is a summary of the potential emission rates, in tons per year (tpy), attributable to the facility. Emission calculations are in the appendices.

Table 1. Total Facility Potential to Emit Summary and Attainment Status:

Pollutant	Potential to Emit* (Tons/year)	Actual Emissions (Tons/year)	Attainment or Unclassified? (Yes or No)
Particulate Matter less than 10 micron (PM ₁₀)	106	24	Yes
Sulfur Dioxide (SO ₂)	3,569	644	Yes
Nitrogen Oxides (NO _x)	877	537	Yes
Carbon Monoxide (CO)	445	138	Yes
Lead	0.28	0.08	Yes
Volatile Organic Compounds	9	2	NA
Combined HAPs	11	2	NA

*Potential emissions based on permit limits

Table 2. Facility Classification

Classification (put x in appropriate box)	Major	Synthetic Minor	Minor	N/A
Prevention of Significant Deterioration	x			
Non Attainment Area (SO ₂ and CO)				x
Operating Permit Program	x			

1.3.2 Hazardous Air Pollutants

No limits have been set in the permit for hazardous air pollutants, and currently no ambient standards exist for hazardous air pollutants. Section 112(n)(1)(A) of the Clean Air Act mandates that the EPA perform a study, to be presented in a report to congress, of the hazards to public health reasonably anticipated to occur as a result of emissions of the HAPs by fossil fuel-fired electric utility steam generating units. The report will include; an assessment of HAP emission factors and rates from fossil fuel fired utility boilers, consideration of control strategies, and a determination as to whether hazardous air pollutants emission control from these sources is warranted. The study is referred to as the "utility HAP study." EPA has received many extensions to the deadline for submittal of this report. The report was originally due to Congress in November of 1993. The latest deadline was May 31, 1996, and was not met. In October of 1996, the interim draft report was finally submitted. This draft report did not contain information on HAP control techniques but another report due later in the year will contain this information. The MPCA will amend any existing permit to be consistent with EPA's rulemaking.

The Utility HAP study will develop more accurate emission factors for various boiler types for HAPs than exist now. Currently, emission factors that are available are not considered to be highly accurate. Nonetheless, the City of Virginia Department of Public Utilities was required to estimate HAP emissions using available factors and submit those estimates with their Part 70 permit application. Those estimates are attached.

2. Applicable Rules

2.1 Federal New Source Review

The City of Virginia Department of Public Utilities is located in an attainment area for all pollutants, and so the applicable new source review regulations are found under 40 CFR § 52.21, (PSD). The facility is classified as a major source as defined in that rule. Three of the boilers (Boilers No. 7, No. 8, and No. 9) were constructed prior to the effective date of PSD. However, Boiler No. 10 was installed after the effective date of PSD, but the installation netted out of PSD requirements by removal of old boilers, establishment of a Boiler No. 10 NO_x emission limit more stringent than the applicable standard of performance, and the limitation of total facility NO_x emissions.

2.2 Federal New Source Performance Standards

Boilers No. 7 and No. 8 were constructed prior to the effective date of the new source performance standards (NSPS) found in 40 CFR pt. 60, and thus NSPS does not apply to them. Boiler No. 9 was built after the August 1971, effective date of NSPS subpart D but has a continuous design heat input capacity less than the subpart D threshold of 250 MMBtu/hr. Much discussion went on during this Title V permitting process as to the applicability of subpart D for this boiler. The Title V application listed this boiler as a 266 MMBtu/hr boiler by mistake. After much discussion and letters from the facility documenting the design capacity of the boiler, it was finally shown that the true design continuous capacity is 249.5 MMBtu/hr. Attachment 3 contains more information on the rating of Boiler No. 9 including boiler manufacturer design data, historical coal Btu content data, and historical steam flow data (including a summary of steam flows that show that three 1-hour steam flow readings exceeded the design rating over the history of the boiler (deemed to be acceptable by Region 5 EPA). Boiler No. 10 heat input capacity exceeds 250 MMBtu/hr and was constructed after September 18, 1978, and therefore is subject to the requirements of NSPS Subp. Da (40 CFR pt. 60, subp. Da).

2.3 Acid Rain Program

Title IV of the Clean Air Act Amendments of 1990, requires electric utilities to substantially reduce emissions of sulfur dioxide and nitrogen oxides, the primary pollutants that contribute to acid rain. However, under Title IV, the City of Virginia Department of Public Utilities is not is not an Acid Rain source and therefore is not subject to Title IV.

2.4 National and State Ambient Air Quality Standards (40 CFR pt. 50)

The National Ambient Air Quality Standards (NAAQS), as found in 40 CFR pt. 50, and the Minnesota Ambient Air Quality Standards (MAAQS), set the maximum concentration of pollutants allowed in the ambient air. As such, they apply to all air emissions sources. For Title V permits computer dispersion modeling will be used to determine whether a facility is in compliance with these standards by predicting the maximum ambient concentrations of pollutants that will result from maximum facility operation. The required modeling for SO₂ emissions was already performed and approved by the MPCA Air Quality Division on December 5, 1991.

The permit contains SO₂ limits derived from the results of the computer dispersion modeling already performed. Those limits remain in the permit.

2.5 National Emission Standards for Hazardous Air Pollutants

At this time, there are no promulgated or proposed standards for utility boilers.

2.6 State Performance Standards

Boilers No. 7, No. 8, and No. 9 are subject to the opacity, particulate matter, and sulfur dioxide emission limits in Minn. R. for Existing Indirect Heating Equipment

2.7 Environmental Assessment

No new construction or increases in emissions are allowed by this permit. Consequently, no environmental assessment is required.

2.8 Mercury Emissions

Coal-fired power plants emit mercury because it exists in trace quantities in coal. Mercury is an environmental problem because it is a neurotoxin and can concentrate in fish to the point that consumption of fish is hazardous. Virtually all mercury reaches lakes through air pollution, which is the result of many sources, some near and some far away. According to the 1994, MPCA report "Strategies for Reducing Mercury in Minnesota", coal-fired power plants constitute approximately 25 percent of the states man-made mercury emissions, excluding emissions from paint and fungicides (mercury is no longer used in these products). Municipal waste combustors are the second-largest category of mercury emitters, accounting for roughly 20 percent of the state's mercury emissions.

No regulations currently exist which require emissions control or set emission limits for coal-fired power plants. Mercury emission limits were recently promulgated for municipal waste combustors (MWC). However, emissions from coal-fired power plants typically contain one-tenth the concentration of mercury found in exhaust gas from waste combustors (although the concentration of mercury in waste combustor emissions is decreasing as mercury use in products decreases). Therefore mercury control technology which is effective for a MWC is not necessarily transferable to a coal-fired power plant. Various groups, including the Electric Power Research Institute, are in the process of developing technology for reducing mercury emissions from coal combustion.

U.S. Environmental Protection Agency (EPA) is currently working on two studies which relate to mercury emissions: the Electric Utility HAPs study, and the Mercury Study. Federal regulatory programs aimed at reducing mercury emissions from power plants may result from one or more of these EPA projects.

The MPCA Mercury Task Force is considering working on a state initiative to reduce mercury emissions. The proposed initiative would apply to all significant mercury sources, including coal-fired power plants. The Task Force has recently received funding from the EPA and is under way with the development of the group.

Requirements

3.1 Total Facility Requirements:

All general requirements and some site specific conditions are listed at the total facility level. (See attached CD-01 forms for specific limits). Overall, the Permittee will be required to submit an annual report evaluating the compliance status of the facility for the past calendar year, and to report deviations from permit conditions each six months. The total facility requirements also include requirements for recordkeeping, inspection and entry, the requirements to submit an operation and maintenance plan, deviations notifications, application for amendment, the acid and alkaline fallout limits, requirements for procedures for notifications in the event of equipment shutdown/breakdown, and submittal of a fugitive emissions control plan.

In addition, the total facility requirements include a facility NO_x emissions limit and emissions equation, and recordkeeping to keep the installation of Boiler No. 10 a non-major modification under PSD. There is also the requirement to conduct dispersion modeling for PM-10 and NO_x emissions. The Permittee already conducted SO₂ dispersion modeling, so this does not have to be repeated.

3.2 GP 001: EU 002 and EU 003

Applicable Regulations: EU 002 and EU 003 (Boilers No. 8 and No. 9) are the coal-burning boilers at the facility. Two SO₂ emission limits based on dispersion modeling are located in GP 001. One of the limits applies when only one of the two boilers are burning coal (either Boiler No. 8 or Boiler No. 9); the other limit applies when both boilers are burning coal.

3.3 EU 001/Boiler No. 7

Boiler No. 7, is a natural gas-fired unit with a heat input capacity of 175 mmBtu per hour.

Applicable Regulations: The boiler's emission limits for particulate matter and opacity are derived from Minnesota Performance Standards for Existing Indirect Heating Equipment.

Fuel Use Limits: Permitted fuel is natural gas only.

Compliance Demonstration: Since the boiler is dispatched only in emergencies and burns only natural gas, NO_x performance testing is not required until the boiler changes to a more frequent operating status. Also, because the boiler rarely operates and burns only natural gas, there are no requirements for continuous emissions monitors. Monthly records of fuel usage are required for use in calculating total facility NO_x emissions using the equation in the total facility requirements.

3.4 EU 002/Boiler No. 8

Boiler No. 8 has a rated heat input capacity of 250.07 mmBtu per hour and burns pulverized coal and natural gas. Particulate matter emissions are controlled with an electrostatic precipitator.

Applicable Regulations: The boiler's emission limits are derived from Minnesota Performance Standards for Existing Indirect Heating Equipment.

Fuel Use Limits: Permitted fuels are natural gas and coal.

Compliance Demonstration: Continuous emissions monitors are used to measure opacity, carbon dioxide, and sulfur dioxide emissions. Monitor operation and QA/QC requirements are located under EU 002. Based on past stack testing for PM and opacity, opacity is the "limiting" pollutant and therefore the COM is used as an indicator of PM compliance. Monthly records of fuel usage are required for use in calculating total facility NO_x emissions using the equation in the total facility requirements.

Performance testing is required for particulate matter emissions once every 5 years to determine compliance with the emission limit. The testing frequency is based on the results of stack testing and MPCA internal policy on boiler stack testing frequency. In addition, NO_x emission testing is required to verify the NO_x emission factor used in Equation 1 in the total facility requirements.

3.5 EU 003/Boiler No. 9

EU 003 is a coal-fired spreader stoker boiler with a design heat input capacity of 249.5 MMBtu per hour (equivalent to 178,000 lbs of steam per hour). Particulate matter emissions are controlled with an electrostatic precipitator. Boiler No. 9 is also permitted to burn oily cellulose-based materials (including oily rags). At one point this permit contained requirements to derate the boiler to below the NSPS subpart D threshold of 250 MMBtu/hr. This occurred when it is falsely believed that this boiler was rated at 266 MMBtu/hr like the original Title V application the facility submitted stated. This error was later corrected and the true design continuous rating of the boiler was determined to be 249.5 MMBtu/hr (see Attachment 3 for more details).

Applicable Regulations: The boiler's emission limits are derived from Minnesota Performance Standards for Existing Indirect Heating Equipment.

Fuel Use Limits: Permitted fuels are coal and oily cellulose-based materials.

Compliance Demonstration: Continuous emissions monitors are used to measure opacity, carbon dioxide, and sulfur dioxide emissions. Monitor operation and QA/QC requirements are located under EU 003. Based on past stack testing for PM and opacity, both particulate matter and opacity emissions are low, but particulate matter is the "limiting pollutant" Therefore the COM along with monitoring/record keeping of the number of ESP fields on-line will be used as an indicator of PM compliance. Monthly records of fuel usage are required for use in calculating total facility NO_x emissions using the equation in the total facility requirements.

Performance testing is required for particulate matter emissions once every five years to determine compliance with the emission limit. The testing frequency is based on the results of stack testing and MPCA internal policy on boiler stack testing frequency. In addition, NO_x emission testing is required to verify the NO_x emission factor used in Equation 1 in the total facility requirements.

3.6 EU 004/Boiler No. 10

Boiler No. 10 has a rated input of 266 MMBtu per hour, and is restricted to burning only natural gas.

Applicable Regulations: The boiler is subject to New Source Performance Standards (40 CFR pt. 60 Subp. Da) for opacity, sulfur dioxide, nitrogen oxides, and particulate matter emissions. Installation of Boiler No. 10 avoided the requirements of 40 CFR § 52.21, (PSD) by removal of old boilers, establishment of a Boiler No. 10 NO_x emission limit more stringent than the applicable Subp. Da standard of performance, and the limitation of total facility NO_x emissions.

Fuel Use Limits: Fuel use is restricted to natural gas.

Compliance Demonstration: Continuous monitoring is required for NO_x and CO₂ or O₂. Monitor operation and QA/QC requirements are located under EU 004. No particulate matter emissions testing is required due to the fuel use restriction. NO_x CEM data is used in calculating total facility NO_x emissions using Equation 1 in the total facility requirements.

3.7 EU 005/Makeup Air Heater

The Makeup Air Heater is limited by design to combusting only natural gas. This unit is used to preheat combustion air for Boiler No. 10, or to provide space heat in the plant, and vents directly into the plant. The NO_x emissions from EU 005 are measured by the NO_x CEM on EU 004, and included in the total facility NO_x calculation made with Equation 1.

4. Conclusion

Based on the information provided by the City of Virginia Department of Public Utilities, the MPCA has reasonable assurance that the continued operation of the emission facility, as described in the Air Emission Permit No. 13700028-001 and this TSD document; will not cause or contribute to a violation of Minnesota or Federal Air Pollution Rules.

Attachments:

1. Stack Test Frequency Justification
2. Criteria Pollutant and HAP Emission Calculations
3. Correspondence from the City of Virginia on the rating of Boiler 9

Need further information?

Permit Engineer: Brett A. Ballavance, P.E.
Telephone No.: (218) 723-4837

ATTACHMENT 1

ATTACHMENT 2

ATTACHMENT 3