

DRAFT Statement of Basis  
 Air Pollution Control  
 Title V Permit to Operate for  
 Cloquet Compressor Station No. 5  
 Permit No. V-FDL-2713700066-2016-03

The purpose of this document is to set forth the legal and factual basis for permit conditions, including references to applicable provisions of the Clean Air Act (CAA or Act) and implementing regulations. This document also gives the derivation of conditions as required by 40 C.F.R. § 71.11(b).

1. GENERAL INFORMATION

a. Applicant and Stationary Source Information

Owner/Operator	Facility (SIC Code: 4922, NAICS Code 486210)
Great Lakes Gas Transmission Limited Partnership 5250 Corporate Drive Troy, Michigan 48098-2644	Cloquet Compressor Station No. 5 3741 Brandon Road Cloquet, Minnesota 55720-3376 St. Louis County

Responsible Official	Facility Contact
Anthony M. Kornaga Director, US Gas Pipelines and Storage Operations Plan Dev. 5250 Corporate Drive Troy, Michigan 48098-2644 (248) 205-7465	Melinda Holdsworth Senior Air Quality Specialist (832) 320-5665

b. Facility Description

Great Lakes Gas Transmission Limited Partnership (Great Lakes) operates nearly 2,000 miles of large diameter underground pipeline, which transports natural gas for delivery to customers in the mid-western and northeastern United States and eastern Canada. The Great Lakes pipeline system, and other interstate natural gas transmission pipelines, make up the long-distance link between natural gas production fields, local distribution companies, and end users. The pipeline's 14 compressor stations, located approximately 75 miles apart, operate to keep natural gas moving through the system. Compressors operated at these stations add pressure to natural gas in the pipeline causing it to flow to the next compressor station. The pipeline normally operates continuously, but at varying load, 24 hours per day and 365 days per year.

The Cloquet Compressor Station No. 5 (CS #5 or "the facility") is located approximately 8 miles west of the city of Cloquet, near the intersection of county

roads 847 and 851, on privately-owned fee land within the exterior boundaries of the Fond du Lac Band of Lake Superior Chippewa's Reservation in St. Louis County, Minnesota. The facility's property occupies an area of approximately 20 acres and is owned by Great Lakes.

Four buildings at the facility house the emission units, three compressor buildings and one warehouse building. Two full-time staff are employed at the facility and visitors to the station are infrequent.

The primary function of CS #5 is to provide motive force for natural gas flowing through the pipeline. The facility operates three stationary natural gas-fired turbines, which in turn drive three natural gas compressors. In addition, one natural gas-fired standby electrical generator provides electrical power for critical operations during temporary electrical power outages and during peak loading.

Smaller emission sources at CS #5 include a natural-gas fired boiler used for comfort heating, two space heaters, a 400-gallon aboveground diesel storage tank, a 1,100-gallon aboveground natural gas condensate tank, and an (out-of-service) 40-gallon capacity parts cleaner.

c. Area Classification

St. Louis County, and all Indian country within St. Louis County, is designated attainment for all criteria pollutants. CS #5 is within 25 miles of the state of Wisconsin. CS #5 is not located within 100 kilometers of any of the 158 mandatory Class I federal areas designated by the Clean Air Act. The Appendix contains a map showing the location of CS #5 in relation to the nearest mandatory Class I federal areas.

CS #5 is located on privately-owned fee land within the exterior boundaries of the Fond du Lac Band of Lake Superior Chippewa's Reservation in St. Louis County, Minnesota. In addition, CS #5 is located within 50 miles of the following federally recognized Tribal Lands:

- Off-reservation trust lands held by the Fond du Lac Band;
- The Mille Lacs Band of Ojibwe's Reservation; and
- Off-reservation trust lands held by the Mille Lacs Band.

The Appendix contains a map showing the location of CS #5 in relation to nearby formal and informal reservation lands. The EPA is responsible for issuing and enforcing any air quality permits for the facility until such time that the Tribe has EPA approval to do so.

d. Title V Major Source Status

CS #5 requires a Title V permit because it is a Title V major source. It has the potential to emit more than 100 tons per year of sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and carbon monoxide (CO).

e. Permit History

EPA received the CS #5 2014 Form FEE – Calculation Worksheets, 2013 Actual Air Emissions Calculations, and Fee Filing Form (Form FF) for CS #5 on November 6, 2014. EPA received a Title V permit renewal application on August 14, 2015. The application was deemed complete on October 13, 2015 pursuant to 40 C.F.R. § 71.5(a)(2).

2. EMISSIONS UNITS AND SOURCE EMISSIONS

a. Emissions Units at the Source

The primary function of CS #5 is to provide motive force for natural gas flowing through the pipeline system. CS #5 is equipped with three natural gas-fired turbine/compressors (EU 001, EU 002, and EU 003) and one natural gas-fired standby electrical generator (EU 004). The pipeline normally operates continuously, but at varying loads, 24 hours per day and 365 days per year.

The natural gas-fired standby electrical generator (EU 004), located in the warehouse building, provides electrical power for critical operations during temporary electrical power outages and during peak loading. The four-stroke, lean burn unit (4SLB), installed in 1993, is a Caterpillar model SR4 with a rated heat input of 4.8 MMBtu/hr and a horsepower rating of 600 hp.

Emission unit numbers, stack/vent numbers, and descriptions are provided in the Table below. None of the emission units at CS #5 are currently equipped with air pollution control devices.

**Table 1. Emission Unit Summary**

Emission Unit	GLGT Unit No.	Stack/Vent	Description	Manufacturer /Model	Date of Construction	Maximum Heat Input (MMBtu/hr)
EU 001	501	SV 001	33,700 hp Natural gas-fired turbine	General Electric LM 2500	1989	251.1
EU 002	502	SV 002	16,000 hp Natural gas-fired turbine	Rolls Royce Avon 76G	1969	166.4

EU 003	503	SV 003	23,000 hp Natural gas-fired turbine	General Electric LM 1600	1992	184.0
EU 004	504	SV 004	600 hp Natural gas-fired standby electrical generator	Caterpillar SR-4, 4SLB	1993	4.8

**Table 2. Insignificant Activities**

Unit/Activity	Basis
3 Space heaters	40 C.F.R. § 71.5(c)(11)(i)(D)
1 Diesel storage tank (400 gallons)	40 C.F.R. § 71.5(c)(11)(ii)(A)
Natural-gas fired boiler (4.2 MMBtu/hr)	40 C.F.R. § 71.5(c)(11)(i)(D)
Parts cleaning (10 gallons/year)	40 C.F.R. § 71.5(c)(11)(ii)(A)

b. Emissions Units Being Added or Removed from the Permit

No emissions units are being added or removed from the permit.

c. Previously Unpermitted Emission Units Added to the Permit

There are no previously unpermitted emission units being added to the permit.

d. Potential Emissions

EPA prepared the following table of emission factors using a combination of AP-42 emission factors, source-specific stack test results, and federally enforceable permit limits, as further described in the footnotes below. EPA calculated the maximum fuel usage using the design rated capacity of each unit and source-specific performance test results for brake-specific fuel consumption at rated capacity. A calculation spreadsheet with additional information is provided in the Appendix.

**Table 3. PTE Emission Factors**

Emission Factors (lb/MMBtu)								
EU	Unit	PM-10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Lead	Total HAPs
001	Turbine	0.0066 <sup>a</sup>	0.06392 <sup>c</sup>	0.492 <sup>e</sup>	0.087 <sup>e</sup>	0.0021 <sup>a</sup>	ND	0.00103 <sup>a</sup>
002	Turbine	0.0066 <sup>a</sup>	0.06392 <sup>c</sup>	0.29 <sup>d</sup>	1.089 <sup>d</sup>	0.0021 <sup>a</sup>	ND	0.00103 <sup>a</sup>

003	Turbine	0.0066 <sup>a</sup>	0.06392 <sup>c</sup>	NA	0.0392 <sup>c</sup>	0.0021 <sup>a</sup>	ND	0.00103 <sup>a</sup>
004	Generator	0.00999 <sup>b</sup>	0.0615 <sup>b</sup>	4.08 <sup>b</sup>	0.557 <sup>b</sup>	0.118 <sup>b</sup>	ND	0.072 <sup>b</sup>

- (a) Emission factors for EU 001-003 are from EPA AP-42, Tables 3.1-1, 3.1-2a and 3.1-3, Chapter 3.1 for stationary gas turbines, published April 2000, unless otherwise noted. Assumes PM = PM<sub>10</sub>.
- (b) Emission factors for EU 004 are from EPA AP-42, Table 3.2-2, Chapter 3.2 for uncontrolled emission factors for 4-stroke, lean-burn reciprocating engines, published July 2000. The published emission factor assumes sulfur content in natural gas of 2,000 gr/10<sup>6</sup> scf (approximately 0.00065%). The emission factor above has been adjusted to account for the maximum allowable sulfur content of 0.068%.
- (c) The SO<sub>2</sub> emission factor for EU 001-003 is [0.94] x [% sulfur by weight]. The federally enforceable maximum sulfur content is ≤ 20 grains/100cf (0.068%). [Existing permit condition (2.0)(B)(2); 40 C.F.R. § 60.334(h)(3)(i)].
- (d) NO<sub>x</sub> and CO emission factors for EU 002 are from December 1, 2005 performance test, incorporating the source's additional 20% NO<sub>x</sub> safety factor and 45% CO safety factor.
- (e) NO<sub>x</sub> and CO emission factors for EU 001 and 003 are from the October 21-22, 2010 performance test, incorporating the source's additional 20% NO<sub>x</sub> safety factor and 45% CO safety factor.
- N/A Not applicable. No emission factor for NO<sub>x</sub> is used for EU 003, because NO<sub>x</sub> PTE emissions are calculated below using federally enforceable permit conditions.
- ND No data

**Table 4. PTE Summary**

PTE (tons per year)								
EU	Unit	PM-10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Lead	Total HAPs
001	Turbine	7.89	76	588	104	2.51	ND	1.23
002	Turbine	4.81	47	212	793.7	1.53	ND	0.75
003	Turbine	5.32	52	298 <sup>a</sup>	31.6	1.69	ND	0.83
004	Generator	0.07 <sup>b</sup>	0.4 <sup>b</sup>	29 <sup>b</sup>	4.0 <sup>b</sup>	0.85 <sup>b</sup>	ND	0.52 <sup>b</sup>
Total		18	175	1,127	933	6.6		3.3

- (a) For unit EU 003, NO<sub>x</sub> PTE was calculated using the existing permit limit (BACT) of 68 lb/hr and 8,760 hours/year of operation. Permit Condition 2.0(A)(3)(ii): "Total NO<sub>x</sub> emissions from EU 003 shall not exceed 68 pounds per hour at any time during operation."
- (b) The generator EU 004 PTE was calculated using the existing permit limit of 3,000 hours/year. Permit Condition 2.0(A)(3)(iii): "Total operating hours of EU 004 shall not exceed 3,000 hours during any 12-consecutive month period..."
- ND No data

**Example PTE Calculations**

$$PTE = [Emission\ Factor] \times [Rated\ Capacity] \times [Brake-Specific\ Fuel\ Consumption] \times [Operational\ Limitations]$$

Example for EU 001:

Sulfur Dioxide (SO<sub>2</sub>):  $[0.94 \times 0.068 \text{ lb/MMBtu}] \times [33,700 \text{ hp}] \times [8,100 \text{ BTU/hp-hr}] \times [1 \text{ MMBtu}/1\text{E}6 \text{ BTU}] \times [8,760 \text{ hr/yr}] \times [0.0005 \text{ ton/lb}] = 76 \text{ tons per year SO}_2$

Example for EU 004:

Carbon Monoxide (CO):  $[0.557 \text{ lb/MMBtu}] \times [600 \text{ hp}] \times [8,000 \text{ BTU/hp-hr}] \times [1 \text{ MMBtu}/1\text{E}6 \text{ BTU}] \times [3,000 \text{ hr/yr}] \times [0.0005 \text{ ton/lb}] = 4.0 \text{ tons per year CO}$

e. Actual Emissions

The following table contains the facility's reported actual emissions for 2013 for emission units EU 001 through EU 004.

**Table 5. 2013 Actual Emissions Summary**

Actual Emissions (tons per year)								
EU	Unit	PM-10	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOC	Lead	Total HAPs
001	Turbine	0.13	0.06	9.35	1.65	0.040	n/a	0.02
002	Turbine	0.05	0.03	2.28	8.63	0.017	n/a	0.01
003	Turbine	0.92	0.47	56.58	5.43	0.291	n/a	0.14
004	Generator	0.01	0.0008	5.74	0.78	0.166	n/a	0.10
Total		1.11	0.56	73.95	16.49	0.51	n/a	0.27

### 3. APPLICABLE REQUIREMENTS

In accordance with 40 C.F.R. § 71.3(a)(1), all major stationary sources are required to obtain a Title V operating permit. "Major source" is defined in 40 C.F.R. § 71.2 as any stationary source belonging to a single major industrial grouping that directly emits, or has the potential to emit, 100 tons per year or more of any criteria pollutant. Since CS #5 has the potential to emit greater than 100 tons per year of NO<sub>x</sub>, SO<sub>2</sub>, and CO, it is a major source subject to Title V.

#### a. PSD Permit

This permit incorporates the requirements of the June 30, 2005 PSD permit PSD-FDL-R50001-04-01. CS #5 has not undergone any construction activities that would have triggered PSD since that time. The requirements established within the PSD permit consist of:

- Total NO<sub>x</sub> emissions from EU 001 shall not exceed 191 ppmv at 15 percent oxygen and on a dry basis. [PSD Permit Condition 2.0(A)(1)(i)]
- Total NO<sub>x</sub> emissions from EU 003 shall not exceed 196 ppmv at 15 percent oxygen and on a dry basis. [PSD Permit Condition 2.0(A)(1)(ii)]
- EU 001 and EU 003 shall not burn any fuel which contains sulfur in excess of 0.8 percent by weight. [PSD Permit Condition 2.0(A)(2)]
- NO<sub>x</sub> emission from EU 003 shall not exceed 160 ppmv at 15 percent oxygen and on a dry basis. [PSD Permit Condition 2.0(A)(3)(i)]
- Total NO<sub>x</sub> emissions from EU 003 shall not exceed 68 pounds per hour at any time during operation. [PSD Permit Condition 2.0(A)(3)(ii)]
- Total operating hours of EU 004 shall not exceed 3,000 hours during any 12-consecutive month period. By the last day of each month the Permittee will calculate and record the number of operating hours from EU 004 for the previous calendar month and the number of operating hours the previous 11 month period (12-month rolling sum). [PSD Permit Condition 2.0(A)(3)(iii)]
- Good Air Pollution Control Practices. [PSD Permit Condition 2.0(A)(4)]
- Monitoring and Testing. [PSD Permit Condition 2.0(B)]
- Recordkeeping and Reporting. [PSD Permit Condition 2.0(C)]
- Notification. [PSD Permit Condition 2.0(D)]
- Facility-Wide Performance Testing Requirements. [PSD Permit Condition 3.0(A)]
- Facility-Wide Notification Requirements. [PSD Permit Condition 3.0(B)]
- Facility-Wide Recordkeeping and Reporting Requirements. [PSD Permit Condition 3.0(C)]

#### b. Restrictions on Potential To Emit

The facility has no other limitations that were adopted for the purpose of restricting its potential to emit.

c. 40 C.F.R. Part 60 - New Source Performance Standards (NSPS)

*40 C.F.R. Part 60, Subpart GG (Standards of Performance for Stationary Gas Turbines)*

The provisions of Subpart GG are applicable to all stationary gas turbines with a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour, based on the lower heating value of the fuel fired. Any such facility which commences construction, modification, or reconstruction after October 3, 1977 is subject to the requirements of Subpart GG except as provided in paragraphs (e) and (j) of § 60.332. [40 C.F.R. § 60.330]

The facility was built prior to August 7, 1980, the date of applicability for PSD. New Source Review applicability to the individual emission units would be based on installation date and quantity of emissions.

EU 002 was installed in 1969, and has not commenced modification or reconstruction since that time. Therefore EU 002 is not subject to 40 C.F.R. Part 60, Subpart GG. Future modifications or reconstruction of this turbine may make it subject to 40 C.F.R. Part 60, Subpart GG.

EU 001 and EU 003 were constructed after October 3, 1977. EU 001 and EU 003 each have a heat input at peak load equal to or greater than 10.7 gigajoules (10 MMBtu) per hour based on the lower heating value of the fuel fired. Therefore, EU 001 and EU 003 are subject to 40 C.F.R. Part 60, Subpart GG, in accordance with 40 C.F.R. § 60.330(a)-(b). The following requirements of Subpart GG apply to EU 001 and EU 003:

1. NSPS SO<sub>2</sub> emission limit

The Permittee has elected to comply with 40 C.F.R. § 60.333(b), which requires that “[n]o owner or operator subject to provisions of [Subpart GG] shall burn in any stationary gas turbine any fuel which contains sulfur in excess of 0.8 percent by weight (8000 ppmw).”

2. NSPS Total Sulfur Content Monitoring

40 C.F.R. § 60.334(h)(3) provides that an owner/operator may elect not to monitor total sulfur content of the gaseous fuel combusted in a turbine, if the gaseous fuel is demonstrated to meet the definition of natural gas in 40 C.F.R. § 60.331(u), regardless of whether an existing custom schedule approved by EPA for Subpart GG requires such monitoring. Great Lakes makes this demonstration using a current tariff sheet for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is 20.0 grains/100 scf or less, in accordance with 40 C.F.R. § 60.334(h)(3)(i).

3. NSPS NO<sub>x</sub> emission limit

According to Subpart GG of the NSPS, 40 C.F.R. § 60.332(d), “[s]tationary gas turbines with a manufacturer’s rated base load at ISO conditions of 30 megawatts or less . . . shall comply with [40 C.F.R. § 60.332(a)(2)].”

EU 001 applicability:  $33,700 \text{ hp} \times (745.54 \text{ W/hp}) \times (1 \text{ MW}/10^6 \text{ W}) = 25.1 \text{ MW}$

EU 003 applicability:  $23,000 \text{ hp} \times (745.54 \text{ W/hp}) \times (1 \text{ MW}/10^6 \text{ W}) = 17.15 \text{ MW}$

As indicated in Condition 2.0(A)(1) of PSD-FDL-R50001-04-01, Great Lakes shall comply with 40 C.F.R. § 60.332(a)(2), which requires that

[n]o owner or operator subject to the provisions of [40 C.F.R. Part 60, Subpart GG] shall cause to be discharged into the atmosphere from any stationary gas turbine, any gases which contain NO<sub>x</sub> in excess of:

$$STD = 0.0150 \frac{(14.4)}{Y} + F$$

where:

STD = allowable ISO corrected (if required as given in § 60.335(b)(1)) NO<sub>x</sub> emission concentration (percent by volume at 15 percent oxygen and on a dry basis),

Y = manufacturer's rated heat rate at manufacturer's rated peak load (kilojoules per watt hour), or actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour, and

F = NO<sub>x</sub> emission allowance for fuel-bound nitrogen as defined in paragraph 40 C.F.R. § 60.332 (a)(4).

Applied to EU 001: Total NO<sub>x</sub> emissions from EU 001 shall not exceed 191 ppm by volume at 15 percent oxygen and on a dry basis.

Applied to EU 003: Total NO<sub>x</sub> emissions from EU 003 shall not exceed 196 ppm by volume at 15 percent oxygen and on a dry basis.

#### 4. Performance Monitoring

40 C.F.R. § 60.8 and 40 C.F.R. § 60.335 contain NSPS performance monitoring requirements, test methods and procedures. These requirements are further described in Section 5 of this document.

d. 40 C.F.R. Parts 61 and 63 - National Emission Standards for Hazardous Air Pollutants (NESHAP)

*40 C.F.R. Part 63, Subpart ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines)*

40 C.F.R. Part 63, Subpart ZZZZ applies to sources that own or operate a stationary reciprocating internal combustion engine (RICE) at a major or area source of hazardous air pollutant (HAP) emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand [40 C.F.R. § 63.6585]. The facility's 600 hp natural gas-fired generator (EU 004), installed in 1993, is an existing 4SLB engine. The facility is an area source of HAPs. Therefore, EU 004 is subject to 40 C.F.R. Part 63, Subpart ZZZZ. The following paragraphs further evaluate under which subcategory of stationary RICE EU 004 is classified:

**Non-Emergency Stationary RICE:** 40 C.F.R. Part 63, Subpart ZZZZ defines "emergency stationary RICE" in § 63.6675, whose definition includes compliance with the requirements specified in § 63.6640(f): "For the engine to be considered an emergency stationary RICE under [Subpart ZZZZ], any operation other than emergency operation, maintenance and testing, emergency demand response, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1) through (4) of 40 C.F.R. § 63.6640(f), is prohibited."

Except as provided in paragraphs (f)(4)(i) and (ii) of § 63.6640, the 50 hours per year for non-emergency situations cannot be used for peak shaving or non-emergency demand response, or to generate income for a facility to an electric grid or otherwise supply power as part of a financial arrangement with another entity [40 C.F.R. § 63.6640(f)(4)].

The permit application materials indicate that EU 004 provides electrical power for critical source operations during temporary electrical power outages and during peak loading. The application materials also indicate that EU 004 operated for 586.3 hours in 2013. The application materials did not distinguish what portion of the 586.3 hours were in emergency operation versus other uses. Based on the use of EU 004 during peak loading, we conclude that the generator is not an "emergency stationary RICE" for the purposes of 40 C.F.R. Part 63, Subpart ZZZZ.

**Non-Remote Stationary RICE:** 40 C.F.R. Part 63, Subpart ZZZZ defines "remote stationary RICE" in 40 C.F.R. § 63.6675. An existing, non-emergency, spark ignition (SI), four-stroke lean-burn (4SLB), stationary RICE with a site rating of more than

500 HP located at an area source of HAP must meet the definition of remote stationary RICE on the initial compliance date for the engine, October 19, 2013, in order to be considered a remote stationary RICE under Subpart ZZZZ. Furthermore, owners and operators of such remote stationary RICE must evaluate the status of their stationary RICE every 12 months, and keep records of initial and annual evaluations of the status of the engine [40 C.F.R. § 63.6603(f)]. The applicant has not submitted information indicating that EU 004 meets the definition of a remote stationary RICE under Subpart ZZZZ.

**Non-Black Start Engine:** 40 C.F.R. Part 63, Subpart ZZZZ distinguishes between “black start engines” and other engines, as defined in 40 C.F.R. § 63.6675. “Black start engine” means an engine whose only purpose is to start up a combustion turbine. EU 004 is used to provide electrical power for critical operations during temporary electrical power outages and during peak loading. Therefore, EU 004 is not a black start engine.

As an existing, non-emergency, SI, 4SLB, non-remote stationary RICE, with a site rating of more than 500 hp, located at an area source of HAP, operated more than 24 hours per calendar year, the following requirements of Subpart ZZZZ apply to EU 004:

- 40 C.F.R. § 63.6580
- 40 C.F.R. § 63.6585(a), (c)
- 40 C.F.R. § 63.6590(a)
- 40 C.F.R. § 63.6595(a), (c)
- 40 C.F.R. § 63.6603(a)
- 40 C.F.R. § 63.6605
- 40 C.F.R. § 63.6620
- 40 C.F.R. § 63.6625(b), (h)
- 40 C.F.R. § 63.6630(a), (c), (e)
- 40 C.F.R. § 63.6635
- 40 C.F.R. § 63.6640(a), (b), (c), (e)
- 40 C.F.R. § 63.6645(a), (g), (h)
- 40 C.F.R. § 63.6650(a), (b), (c), (d), (e), (f)
- 40 C.F.R. § 63.6655
- 40 C.F.R. § 63.6660
- 40 C.F.R. § 63.6665
- 40 C.F.R. § 63.6670
- 40 C.F.R. § 63.6675
- 40 C.F.R. Part 63, Subpart ZZZZ, Table 2d, Item (9)
- 40 C.F.R. Part 63, Subpart ZZZZ, Table 4, Item (3)(a)
- 40 C.F.R. Part 63, Subpart ZZZZ, Table 5, Item (13)(a)
- 40 C.F.R. Part 63, Subpart ZZZZ, Table 6, Item (14)(a)
- 40 C.F.R. Part 63, Subpart ZZZZ, Table 7, Item (3)
- 40 C.F.R. Part 63, Subpart ZZZZ, Table 8

e. Protection of Stratospheric Ozone [40 C.F.R. Part 82]

40 C.F.R. Part 82, Subpart F applies to any person servicing, maintaining or repairing “appliances,” defined in 40 C.F.R. § 82.152 as “any device which contains and uses a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer.” The subpart applies to appliance owners and operators, as well as any person servicing, maintaining, or repairing appliances. The subpart also applies to persons disposing of appliances, including small appliances.

The permit application indicates that the requirements of Stratospheric Ozone regulations are applicable to the source. The permit includes regulations pertaining to recycling and emissions reduction pursuant to 40 C.F.R. Part 82, Subpart F except as provided for motor vehicle air conditioners.

4. NONAPPLICABILITY DETERMINATIONS

**40 C.F.R. Part 60, Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units:** This standard is applicable to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 MW (100 MMBtu/hr) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). This standard is not applicable to CS #5 because there are no natural gas-fired boilers with a design heat input capacity of less than 29 MW (100 MMBtu/hr) but greater than 2.9 MW (10 MMBtu/hr) or greater.

**40 C.F.R. Part 60, Subpart K - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973 and prior to May 19, 1978:** This regulation applies to petroleum liquids storage vessels with storage capacity greater than 40,000 gallons and constructed, reconstructed, or modified after June 11, 1973 but before May 19, 1978. There are no petroleum storage vessels with capacity greater than 40,000 gallons at this facility. Therefore, this regulation is not applicable.

**40 C.F.R. Part 60, Subpart Ka - Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978 and prior to July 23, 1984:** This regulation applies to petroleum liquids storage vessels with storage capacity greater than 40,000 gallons and for which construction is commenced after May 18, 1978. There are no petroleum storage vessels with capacity greater than 40,000 gallons at this facility. Therefore, this regulation is not applicable.

**40 C.F.R. Part 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984:**

This regulation applies to volatile organic liquid storage vessels with storage capacity greater than 75 cubic meters (19,812.9 gal) and constructed, reconstructed, or modified after July 23, 1984. There are no volatile organic liquid storage vessels with capacity greater than 75 cubic meters at this facility. Therefore, the regulation is not applicable.

**40 C.F.R. Part 60, Subpart KKK - Standards of Performance for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants:** This regulation is not applicable to CS #5 because the facility is not a natural gas processing plant as defined in 40 C.F.R. § 60.631. A Natural Gas Processing Plant is defined as "any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both." The facility does not engage in extraction of natural gas liquids from field gas or fractionate mixed natural gas liquids to natural gas products. Therefore, this regulation is not applicable.

**40 C.F.R. Part 60, Subpart LLL - Standards of Performance for Onshore Natural Gas Processing: SO<sub>2</sub> Emissions:** This regulation is applicable to a sweetening unit and a sulfur recovery unit at a natural gas processing plant. CS #5 does not operate a sweetening unit or a sulfur recovery unit. Therefore, this regulation is not applicable.

**40 C.F.R. Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE):** This regulation applies to certain manufacturers, owners or operators of stationary CI ICE. CS #5 does not operate any stationary CI ICE. Therefore, this regulation is not applicable.

**40 C.F.R. Part 60, Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines (SI ICE):** This regulation applies to owners or operators of stationary SI ICE that commence construction, modification or reconstruction after June 12, 2006 and to manufacturers of applicable SI. The Caterpillar SR4 generator at CS #5 was constructed in 1993, prior to June 12, 2006 and has not been modified or reconstructed since June 12, 2006. Therefore, this regulation is not applicable.

**40 C.F.R. Part 60, Subpart KKKK - Standards of Performance for Stationary Combustion Turbines:** The standards of performance for Stationary Combustion Turbines, applies to combustion turbines with peak load heat input greater than or equal to 10 MMBtu/hour, constructed, modified, or reconstructed after February 18, 2005. The three turbines at CS #5 are all greater than 10 MMBtu/hr, but were installed prior to, and have not been modified or reconstructed since, February 18, 2005. Therefore, this regulation is not applicable.

**40 C.F.R. Part 61, Subpart V - National Emission Standard for Equipment Leaks (Fugitive Emission Sources):** This regulation is not applicable to CS #5 because the provisions of this subpart apply to sources that are intended to operate in

volatile hazardous air pollutant (VHAP) service. In VHAP service, as defined at 40 C.F.R. § 61.241, means "that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 10 percent by weight a VHAP as determined according to the provisions of 40 C.F.R. § 61.245(d)." CS #5 processes do not have any sources that operate in VHAP service.

**40 C.F.R. Part 63, Subpart HH - NESHAP from Oil and Natural Gas Production Facilities:** This regulation is not applicable to CS #5 because the facility is a transmission facility and is not an oil or natural gas production facility as defined in this regulation.

**40 C.F.R. Part 63, Subpart HHH - NESHAP from Natural Gas Transmission and Storage Facilities:** Subpart HHH establishes national emission limitations and operating limitations for natural gas transmission and storage facilities that are major sources of HAP emissions. CS #5 is not a major source of HAP emissions. Therefore, the facility is not subject to this regulation.

**40 C.F.R. Part 63, Subpart YYYY - NESHAP for Stationary Combustion Turbines:** Subpart YYYY establishes national emission limitations and operating limitations for HAP emissions from stationary combustion turbines located at major sources of HAP emissions. CS #5 is not a major source of HAP emissions. Therefore, the facility is not subject to this regulation.

**40 C.F.R. Part 63, Subpart DDDDD - NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters:** Subpart DDDDD is applicable to new and existing industrial, commercial, or institutional boilers and process heaters located at major sources of HAP emissions. This rule is not applicable to the boiler located at CS #5 since the Station is an area source of HAP.

**40 C.F.R. Part 63, Subpart JJJJJ - NESHAP for Industrial, Commercial, and Institutional Boilers Area Sources:** Subpart JJJJJ is applicable to new, reconstructed, or existing industrial, commercial, or institutional boilers located at area sources of HAP emissions. Per 40 C.F.R. § 63.11195(e), gas-fired boilers, as defined in 40 C.F.R. § 63.11237, are not subject to Subpart JJJJJ. The 4.18 MMBtu/hr natural gas-fired York Shipley boiler is a gas-fired boiler because, as indicated in the permit application, it burns only natural gas not combined with any solid fuels. As such, CS #5 is not subject to this regulation.

**40 C.F.R. Part 64 - Compliance Assurance Monitoring (CAM):** Enhanced monitoring requirements have been adopted into 40 C.F.R. Part 64. The enhanced monitoring requirements are referred to as Compliance Assurance Monitoring (CAM). CAM is applicable to sources that have a potential to emit in excess of major source thresholds, not considering "tailpipe" emission controls, and use an "active" control device to achieve compliance with the emission limit. Combustion controls may be considered in evaluating the potential to emit. An emission unit is subject to CAM if all of the following criteria are satisfied:

- The unit is located at a major source that is required to obtain a Part 70 or Part 71 permit;
- The unit is subject to an emission limitation or standard for the applicable regulated air pollutant;
- The unit uses a control device to achieve compliance with any such emission limitation or standard, and
- The unit has potential pre-control device emissions of the applicable regulated air pollutant above the major source threshold.

The potential emissions of NO<sub>x</sub> from each of the three natural gas-fired turbines exceed the major source threshold. EU 001 and EU 003 are subject to NO<sub>x</sub> emission limitations of 191 ppmv and 160 ppmv at 15% oxygen on a dry basis, respectively (Section 2.0(A)(1) and 2.0(A)(3) of the Title V Operating Permit). However, none of the turbines use a control device to control NO<sub>x</sub> emissions. Therefore, the CAM rule does not apply to these units at this time.

**40 C.F.R. § 68.10 - Accidental Releases:** Applicability to this regulation is based on the type and quantity of certain regulated substances stored at a facility, and CS #5 does not exceed the applicability thresholds [40 C.F.R. § 68.10]. Therefore, the station is not subject to the Risk Management Programs for Chemical Accidental Release Prevention Requirements.

**40 C.F.R. Part 72, Subpart A - Acid Rain Requirements:** Utilities and other facilities that combust fossil fuel and generate electricity for wholesale or retail sale may be subject to acid rain program requirements, including the requirements to hold an acid rain permit under 40 C.F.R. Part 72, Subpart A. CS #5 does not contain any process units that fall into the definition of utility unit and is therefore not subject to the Acid Rain Requirements. [40 C.F.R. § 72.6(b)(8)]

## 5. MONITORING REQUIREMENTS

This section summarizes all monitoring requirements in the permit and evaluates whether the permit contains sufficient recordkeeping and reporting to ensure compliance with applicable requirements.

### a. Monitoring Required by Applicable Requirements

- i. The Permittee shall install and continuously operate a device to measure and record the fuel consumption in EU 001 and EU 003 as required by Condition 2.0(B)(1) of PSD-FDL-R50001-04-01.
- ii. The Permittee has elected not to monitor the total sulfur content of the gaseous fuel combusted in the turbine, as allowed by 40 C.F.R. § 60.334(h)(3). The Permittee must demonstrate that the gaseous fuel meets the definition of natural gas in § 60.331(u). The Permittee shall make this demonstration through the use of gas quality characteristics in a current, valid

purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is 20.0 grains/100 scf or less, or through representative fuel sampling data which shows that the sulfur content of the gaseous fuel does not exceed 20.0 grains/100 scf. [40 C.F.R. § 60.334(h)(3)]

iii. Testing Required by 40 C.F.R. Part 60, Subpart GG and PSD-FDL-R50001-04-01: The Permittee shall perform periodic performance testing for NO<sub>x</sub> for EU 001 and EU 003 every five calendar years, on or about the anniversary date of the initial compliance tests.

iv. Monitoring Required by 40 C.F.R. Part 63, Subpart ZZZZ

1. The Permittee shall install a continuous parametric monitoring system (CPMS) to continuously monitor catalyst inlet temperature according to the requirements in 40 C.F.R. § 63.6625(b), or install equipment to automatically shut down the engine if the catalyst inlet temperature exceeds 1350 °F. [40 C.F.R. Part 63, Subpart ZZZZ, Table 5, Item (13)(a)(ii)]
2. The permittee shall demonstrate continuous compliance with the requirement to install an oxidation catalyst by conducting annual compliance demonstrations as specified in 40 C.F.R. § 63.6640(c) to show that the average reduction of emissions of CO is 93 percent or more, or the average CO concentration is less than or equal to 47 ppmvd at 15 percent O<sub>2</sub>. [40 C.F.R. Part 63, Subpart ZZZZ, Table 6, Item (14)(a)(i)]
3. The permittee shall collect the catalyst inlet temperature data according to 40 C.F.R. § 63.6625(b), reduce these data to 4-hour rolling averages, and maintain the 4-hour rolling averages within the limitation of greater than 450 °F and less than or equal to 1350 °F for the catalyst inlet temperature. [40 C.F.R. Part 63, Subpart ZZZZ, Table 6, Item (14)(a)(ii)]

b. Periodic Monitoring Requirements Created in this Permit

No new periodic monitoring requirements created pursuant to 40 C.F.R. § 71.6(a)(3)(i)(B) are included in this permit.

c. Sufficiency Monitoring Requirements Created in this Permit

No new sufficiency monitoring requirements created pursuant to 40 C.F.R. § 71.6(c) are created in this permit.

d. Streamlined Monitoring and Testing Requirements

### **Streamlined NO<sub>x</sub> Emission Requirements for EU 003:**

Condition 2.0(A)(3)(i) of PSD-FDL-R50001-04-01 requires that NO<sub>x</sub> emissions from EU 003 shall not exceed 160 ppmv at 15 percent oxygen and on a dry basis.

40 C.F.R. § 60.332(a)(2) and Condition 2.0(A)(1)(ii) of PSD-FDL-R50001-04-01 requires that NO<sub>x</sub> emissions from EU 003 shall not exceed 196 ppmv at 15 percent oxygen and on a dry basis.

The compliance method used to determine compliance with the 160 ppmv NO<sub>x</sub> requirement is as stringent as the NSPS requirement. The periodic performance testing will use the test methods in appendix A of 40 C.F.R. Part 60 and methods and procedures of 40 C.F.R. § 60.335.

Therefore, compliance with the 160 ppmv NO<sub>x</sub> requirement in condition 2.0(A)(3)(i) of PSD-FDL-R50001-04-01 will also assure compliance with the applicable requirement of Condition 2.0(A)(1)(ii) of PSD-FDL-R50001-04-01. This title V permit will streamline the two permit conditions into one permit condition.

## **6. CHANGES BETWEEN THE PREVIOUS PERMIT AND DRAFT PERMIT**

The permit has been reformatted using a new permit template. As a result, the permit condition numbering system has changed from the previous permit. In addition to formatting changes, the following substantive changes have been made to the permit:

### 40 C.F.R. Part 63, Subpart ZZZZ (NESHAP for Stationary Reciprocating Internal Combustion Engines)

- Permit requirements have been modified to reflect the status of EU 004 as an existing, non-emergency, SI, 4SLB, non-remote stationary RICE, with a site rating of more than 500 hp, located at an area source of HAP, operated more than 24 hours per calendar year.

### Notifications to the Fond du Lac Band of Lake Superior Chippewa

- The semi-annual reporting and deviation reporting requirements have been modified to include notifications to the Fond du Lac Band of Lake Superior Chippewa.

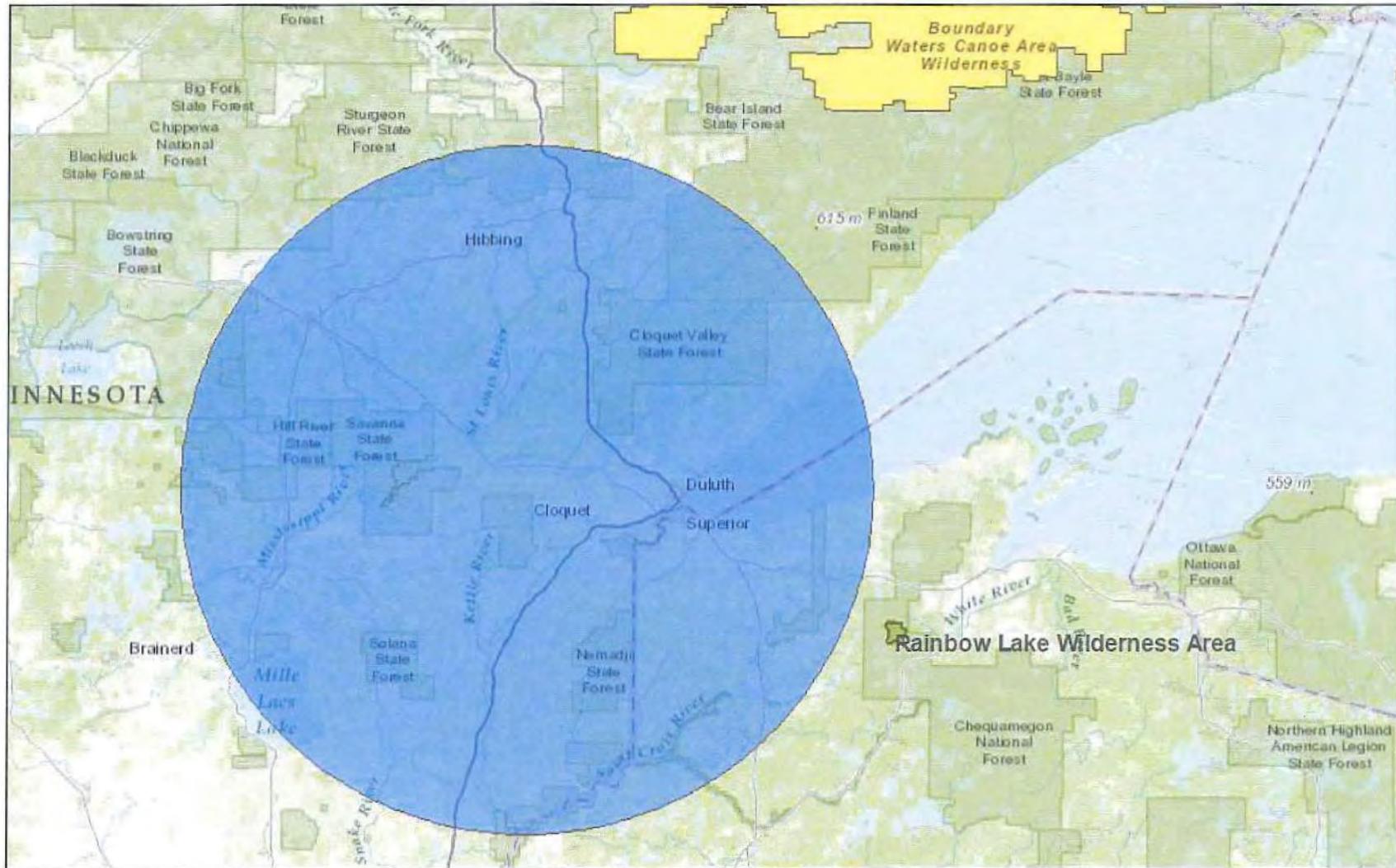
APPENDIX

Proximity to Mandatory Class I Federal Areas

Proximity to Formal and Informal Reservation Lands

Potential to Emit Calculation Spreadsheet

# Mandatory Federal Class 1 Areas



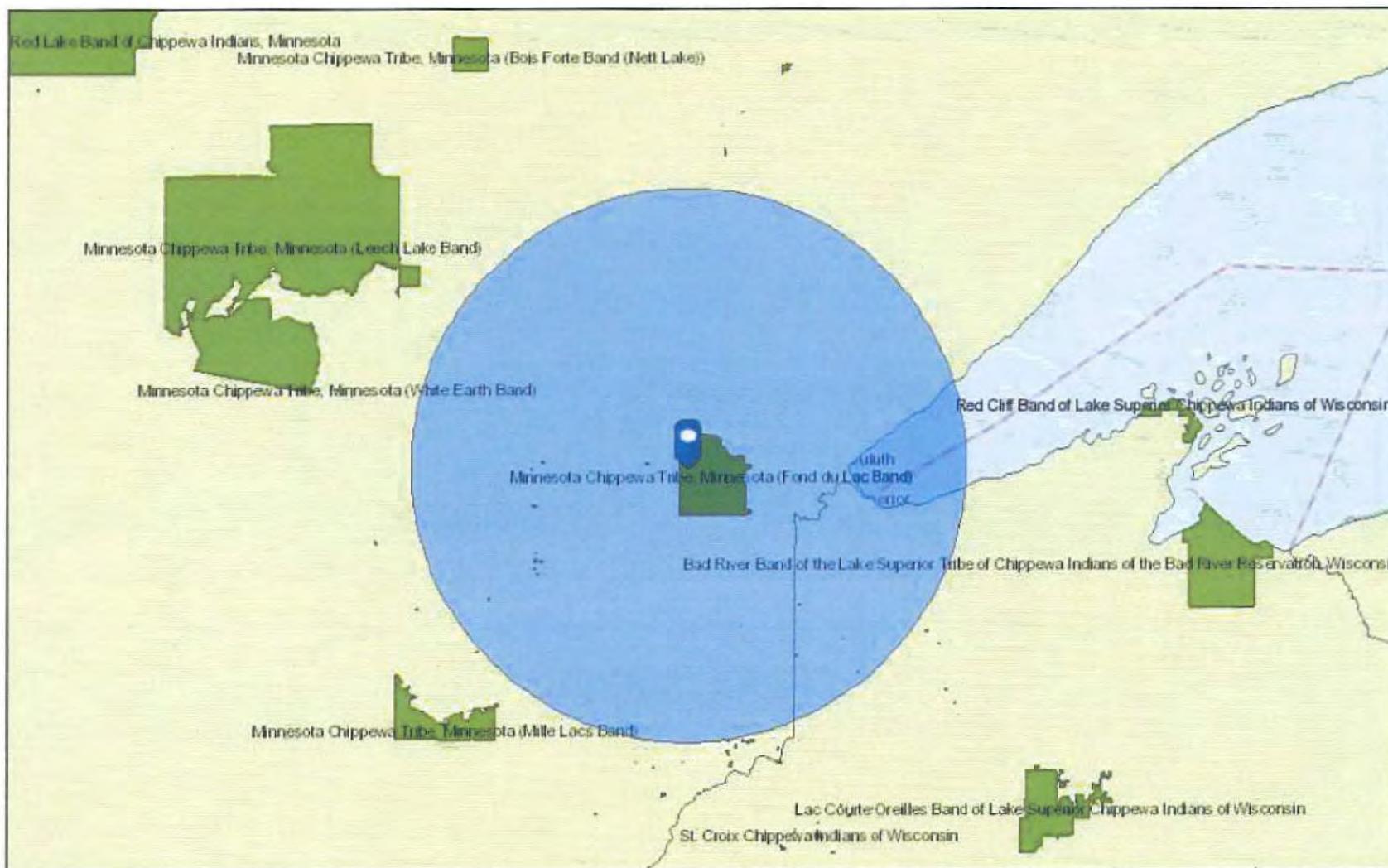
November 6, 2015

- 100 km Radius from Source
- Mandatory Class 1 Federal Areas

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey,

Paymon Danesh  
Esri, DeLorme, FAO, USGS, EPA, NPS | Web service: US-EPA Office of Air Quality Planning and Standards (OAQPS). Data: EPA, NPS, FS, FWS, BIA.

## Proximity to Formal and Informal Reservation Lands



November 13, 2015



**Source**

3741 Brandon Rd, Cloquet, Minnesota, 55720



**50 Mile Radius from Source**

Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeBCase, IGN, Kataster NL, Ordnance Survey,

Paymon Danesh  
Esri, DeLorme, FAO, USGS, EPA, NPS | EPA/CEI

Potential to Emit

EU	Unit	Emission Factors (lb/MMBtu)						
		PM-10	SO2	NOx	CO	VOC	Lead	Total HAP
001	Turbine	0.0066	0.06392	0.492	0.087	0.0021	ND	0.00103
002	Turbine	0.0066	0.06392	0.29	1.0890	0.0021	ND	0.00103
003	Turbine	0.0066	0.06392	N/A	0.0392	0.0021	ND	0.00103
004	Generator	0.00999	0.0615	4.08	0.557	0.118	ND	0.072

- (a) Emission factors for EU 001-003 are from EPA AP-42, Tables 3.1-1, 3.1-2a and 3.1-3, Chapter 3.1 for stationary gas turbines, published April 2000, unless otherwise noted. Assumes PM = PM-10.
- (b) Emission factors for EU 004 are from EPA AP-42, Table 3.2-2, Chapter 3.2 for uncontrolled emission factors for 4-stroke, lean-burn reciprocating engines, published July 2000. The published emission factor assumes sulfur content in natural gas of 2,000 gr/10<sup>6</sup> scf (approximately 0.00065%). The emission factor above has been adjusted to account for the maximum allowable sulfur content of 0.068%.
- (c) The emission factor for SO2 for EU 001-003 is [0.94] x [% sulfur by weight]. The elected, federally enforceable maximum sulfur content is ≤ 20 grains/100cf (0.068%). [Existing permit condition (2.0)(B)(2); 40 CFR 60.334(h)(3)(i)].
- (d) NOx and CO emission factors for EU 002 are from the December 1, 2005 performance test, incorporating the source's additional 20% NOx safety factor and 45% CO safety factor.
- (e) NOx and CO emission factors for EU 001 and 003 are from the October 21-22, 2010 performance test, incorporating the source's additional 20% NOx safety factor and 45% CO safety factor.
- N/A Not applicable. No emission factor for NOx is used for EU 003, because NOx PTE emissions are calculated below using federally enforceable permit conditions.
- ND No data

EU	Rated Capacity (hp)	BSFC (Btu/hp-hr)	Calculated Maximum Heat Input (MMBtu/hr)	Emissions (tons per year)						
				PM-10	SO2	NOx	CO	VOC	Lead	Total HAP
001	33,700	8,100	273	7.89	76	588	104.0	2.51	ND	1.23
002	16,000	10,400	166.4	4.81	47	212	793.7	1.53	ND	0.75
003	23,000	8,000	184	5.32	52	298	31.6	1.69	ND	0.83
004	600	8,000	4.8	0.07	0.4	29	4.0	0.85	ND	0.52
Total Potential Emissions				18	175	1127	933	6.6		3.3

- (a) For unit EU 003, NOx PTE was calculated using the existing permit limit (BACT) of 68 lb/hr and 8,760 hours/year of operation. Permit Condition 2.0(A)(3)(i): "Total NOx emissions from EU 003 shall not exceed 68 pounds per hour at any time during operation."
- (b) The generator EU 004 PTE was calculated using the existing permit limit of 3,000 hours/year. Permit Condition 2.0(A)(3)(iii): "Total operating hours of EU 004 shall not exceed 3,000 hours during any 12-consecutive month period..."
- ND No data