EXHIBIT NO. ___(JMH-3)
DOCKET NO. UE-09___/UG-09___
2009 PSE GENERAL RATE CASE
WITNESS: JOEY M. HENDERSON

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY, INC.,** **Respondent.**	**Docket No. UE-09____** **Docket No. UG-09____**

SECOND EXHIBIT (NONCONFIDENTIAL) TO THE PREFILED DIRECT TESTIMONY OF JOEY M. HENDERSON ON BEHALF OF PUGET SOUND ENERGY, INC.

MAY 8, 2009

SOUTHWEST CLEAN AIR AGENCY

AIR DISCHARGE PERMIT
04-2571R2

Final Date: February 25, 2008

Facility Name:	Mint Farm Energy Center, LLC
Physical Location:	1200 Prudential Blvd Longview, WA 98632
SWCAA ID:	2111

REVIEWED BY: _____
Paul T. Mairose, Chief Engineer

APPROVED BY: _____
Robert D. Elliott, Executive Director

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1. Equipment/Activity Identification

ID No.	Generating Equipment/Activity	# of Units	Control Measure/Equipment	# of Units
1	Combustion Turbine (GE Frame 7FA – 1,900 MMBtu/hr)	1	Dry Low-NO_X Combustor System, SCR/Oxidation Catalyst Systems, Low Sulfur Fuel	1
2	HRSG (Duct Burners – 458 MMBtu/hr)	1	SCR/Oxidation Catalyst Systems, Low Sulfur Fuel	1
3	Cooling Tower (77,000 gal/min)	1	Drift Eliminators	N/A
4	Fire Pump (John Deere – 72 bhp)	1	Low Sulfur Fuel	N/A
5	Emergency Generator (Caterpillar – 824 bhp)	1	Low Sulfur Fuel	N/A
6	Fuel Preheater (Natural Gas – 8.7 MMBtu/hr)	1	Low Emission Burner, Low Sulfur Fuel	1

2. Approval Conditions

The following tables detail the specific requirements of this permit. In addition to the requirements listed below, equipment at this facility may be subject to other federal, state, and local regulations. The permit requirement number is identified in the left hand column. The text of the permit requirement is contained in the middle column. The emission unit, equipment, or activity to which the permit requirement applies is listed in the right hand column.

This Permit supersedes Air Discharge Permit 04-2571R1 in its entirety.

2.1 Emission Limits

No.	Emission Limits	Equipment/ Activity
1.	Emission rates from the combustion turbine/HRSG shall not exceed the following based on a one hour average: Pollutant — Emission Limit NO_X — 21.3 lb/hr CO — 31.1 lb/hr PM_{10} — 23.2 lb/hr VOC — 8.9 lb/hr SO_2 — 20.7 lb/hr NH_3 — 31.4 lb/hr Compliance with the above emission limits shall be based on actual heat input, continuous emission monitor data, and data from periodic emission testing results. Hourly averages shall be based on discrete CEM clock hours (block average).	1-2

No.	Emission Limits	Equipment/ Activity
2.	Short-term emission limits (1-hr or 24-hr averaging time) for the combustion turbine/HRSG shall not apply during periods of startup and shutdown. The manufacturer's temperature design specifications for the oxidation or SCR catalysts shall be submitted to SWCAA in writing prior to commencement of commercial operation as defined in 40 CFR 72.2. After SWCAA's review and acceptance, the proper operating temperature specifications shall be incorporated by reference into the permit. A startup period begins with the introduction of fuel to the turbine and ends when the earlier of the following events occurs: (a) The temperature of both the oxidation and SCR catalysts has been stabilized within the proper operating temperature range, and combustion turbine gross output is greater than 120 MW; (b) 6 hours have elapsed since fuel was first introduced to the turbine on a cold startup. A cold startup is any startup occurring after the turbine has been shutdown for a period of 48 hours or more; (c) 4 hours have elapsed since fuel was first introduced to the turbine on a warm startup. A warm startup is any startup occurring after the turbine has been shutdown for a period of more than 8 but less than 48 hours; or (d) 2 hours have elapsed since fuel was first introduced to the turbine on a hot startup. A hot startup is any startup occurring after the turbine has been shutdown for a period of 8 hours or less. A shutdown period is any operating period in which all of the following are true: (a) The temperature of either the oxidation or SCR catalysts is outside the proper operating temperature range; (b) The turbine is ramping down from normal load for the purposes of shutting down the turbine; and (c) The turbine is at less than 70% load. A shutdown period is considered to have ended when the earlier of the following events occurs: (a) Fuel is no longer being combusted by the turbine; or (b) 30 minutes has elapsed since the shutdown period began.	1-2

No.	Emission Limits	Equipment/ Activity
3.	Emission concentrations from the combustion turbine/HRSG shall not exceed the following when corrected to 15% O_2: Pollutant — Emission Limit NO_X — 2.5 ppmvd, 24-hr avg CO — 6.0 ppmvd, 1-hr avg — 2.0 ppmvd, annual avg NH_3 — 10 ppmvd, 24-hr avg Compliance with the above emission limits shall be based on continuous emission monitoring data and periodic emission testing results. All hourly emission limits apply to discrete CEM clock hours (block average). 24-hr average emission concentrations shall be defined as the average emission concentration during each of the most recent 24 operating hours excluding startup and shutdown periods as defined in this Permit and excused upset events. Annual average emission concentrations shall be defined as the average emission concentration during each operating hour in the most recent 365 calendar days excluding periods of startup and shutdown and excused upset events.	1-2
4.	PM emissions from cooling tower drift shall not exceed 1.08 tpy. Compliance with this emission limit shall be based on the manufacturer's specified drift factor and the most recent measurement of total dissolved solids (TDS) in the cooling water discharge consistent with Section 6.d of the Technical Support Document for this Permit.	3
5.	Emissions from the emergency generator shall not exceed the following: Pollutant — Emission Limit NO_X — 0.87 tpy CO — 0.50 tpy PM_{10} — 0.12 tpy Annual emissions shall be calculated based on data from actual fuel consumption consistent with Section 6.a of the Technical Support Document for this Permit. Annual emissions shall be calculated by summing emissions for a 12 consecutive month period rolled monthly.	5
6.	Emissions from the fuel preheater shall not exceed the following: Pollutant — Emission Limit NO_X — 1.39 tpy, 30 ppmvd @ 3% O_2, 1-hr average CO — 1.41 tpy, 50 ppmvd @ 3% O_2, 1-hr average PM_{10} — 0.29 tpy Annual emissions shall be calculated based on data from the most recent emission test and actual fuel consumption consistent with Section 6.c of the Technical Support Document for this Permit. Annual emissions shall be calculated by summing emissions for a 12 consecutive month period rolled monthly.	6

No.	Emission Limits	Equipment/ Activity
7.	Combined emissions from facility operations shall not exceed: Pollutant — Emission Limit NO_x — 98.79 tpy CO — 70.09 tpy PM_{10} — 99.66 tpy VOC — 44.17 tpy SO_2 — 84.36 tpy NH_3 — 128.05 tpy Annual emissions shall be calculated from actual operation, continuous emission monitor data, and data from periodic emission testing. Compliance with the above emission limits shall be demonstrated based on the sum of emissions from all emission units at the facility for each 12 consecutive month period rolled monthly. Where applicable, the missing data substitution procedures specified in 40 CFR 75 shall be used to estimate emissions when the CEMS is off-line. Emissions from periods of startup and shutdown shall be counted towards compliance with the above emission limits.	1-6
8.	Visible emissions shall not exceed the following for more than 3 minutes in any one hour period as determined by a Certified Observer in accordance with SWCAA Method 9 (Appendix A of SWCAA 400). Emission Unit — Opacity Limit Combustion Turbine/HRSG — 5% Diesel engine exhaust — 10% All other equipment — 0% The visible emissions limit for diesel engine exhaust shall not apply during startup periods.	1-6

2.2 Operating Limits and Requirements

No.	Operating Limits and Requirements	Equipment/ Activity
9.	Reasonable precautions shall be taken at all times to prevent and minimize fugitive emissions from plant operations.	Facilitywide
10.	Operations that cause or contribute to a nuisance odor shall use recognized good practice and procedures to reduce these odors to a reasonable minimum.	Facilitywide
11.	Each pollution control device shall be operated whenever the processing equipment served by that control device is in operation except when startup or shutdown conditions prevent such operation. Control devices shall be operated and maintained in accordance with the manufacturer's specifications. Furthermore, control devices shall be operated in a manner that minimizes emissions.	1-6
12.	Emission units identified in this Permit shall be maintained and operated in total and continuous conformity with the conditions identified in this Permit. SWCAA reserves the right to take any and all appropriate action to maintain the conditions of this Permit, including directing the facility to cease operations until corrective action can be completed.	1-6

No.	Operating Limits and Requirements	Equipment/ Activity
13.	The NO_X emission control system installed for use with the combustion turbine and HRSG shall be guaranteed by the manufacturer to reduce NO_X emission concentrations to 2.5 ppm or less with maintaining NH_3 slip at 10 ppm or less while firing on natural gas.	1-2
14.	The NO_X control system for the combustion/HRSG shall be operated in such a manner as to minimize the arithmetic sum of NO_X and NH_3 emissions on a concentration basis. Emission trials shall be conducted at least once per year in accordance with 04-2571R2, Appendix C to determine the appropriate NO_X and NH_3 target values. This requirement applies when the arithmetic sum of the NO_X and ammonia concentrations in units of ppmvd @ 15% O_2 can be maintained below 5.0.	1-2
15.	Whenever the NO_X control system is unable to maintain NH_3 emission concentrations at or below 5.0 ppmvd @ 15% O_2 (24-hour average), the permittee shall notify SWCAA within two business days. The permittee shall immediately identify any repairs to the control system that are necessary to maintain NH_3 emissions at or below 5.0 ppmvd @ 15% O_2 (24-hour average). If repairs can be completed within 10 business days, the permittee shall make such repairs and submit a report to SWCAA describing the necessary repairs and the date of completion. If repairs can not be completed within 10 business days, the permittee shall submit a repair schedule to SWCAA within the 10 business day period. SWCAA may either accept the proposed repair schedule, or establish an alternative repair schedule by replying in letter format to the permittee within 10 business days of proposal. Control system repairs shall completed no later than the completion date proposed by the permittee or established by SWCAA. At a minimum, the following factors shall be considered in determining an appropriate repair schedule: (a) The cause of the problem; (b) The magnitude of the ammonia emissions; (c) The availability of necessary parts and labor; (d) The time of year (e.g. ozone season; peak electrical demand season) and the potential environmental impact of the repair or delay in repair; (e) If an outage is required, the date of the next scheduled outage; and (f) The need for an extended outage to perform repairs.	1-2
16.	The CEMS and/or PEMS described in Requirement 33 of this Permit shall be certified and operable prior to the commencement of commercial operation. Commercial operation is defined in 40 CFR 72.2. CEMS data shall be available for at least 95% of combustion turbine operating hours (annual average).	1-2
17.	The ammonia concentration of aqueous ammonia stored and used in the ammonia injection system shall be maintained at less than 20%. The storage or use of anhydrous ammonia is prohibited.	1-2
18.	The combustion turbine, HRSG and fuel preheater shall be fired on natural gas only.	1-2, 6
19.	Operation of the fire pump for the purposes of testing and maintenance shall not exceed 50 hr/yr. This limit does not apply to service during actual emergencies. A nonresettable meter shall be installed and maintained to record hours of operation.	4

No.	Operating Limits and Requirements	Equipment/ Activity
20.	The sulfur content of fuel oil fired in the fire pump shall not exceed 0.05% by weight. Fuel supplier certifications of sulfur content may be used to demonstrate compliance with this requirement.	4
21.	Operation of the emergency generator for the purposes of testing and maintenance shall not exceed 170 hr/yr. This limit does not apply to emergency service during actual power outages. A nonresettable meter shall be installed and maintained to record hours of operation.	5
22.	The sulfur content of fuel oil fired in the emergency generator shall not exceed 0.0015% by weight. Fuel supplier certifications of sulfur content may be used to demonstrate compliance with this requirement.	5
23.	The fuel preheater shall be equipped with a dedicated fuelmeter.	6

2.3 Monitoring and Recordkeeping Requirements

No.	Monitoring and Recordkeeping Requirements	Equipment/ Activity
24.	With the exception of data recorded by an automated data acquisition system, each record required by this Permit shall include the time and the name of the person making the record entry. If a control device or process is not operating during a specific time period, a record shall be made to that effect.	1-6
25.	All records required by this Permit shall be kept for a minimum period of no less than five years and shall be maintained in a form readily available for inspection by SWCAA representatives.	1-6
26.	Excess emissions and upset conditions shall be recorded for each occurrence.	1-6
27.	Operation of the combustion turbine/HRSG shall be monitored and recorded as follows: (a) Differential pressure across each catalyst bed — Monitored continuously, recorded once per workshift (b) Temperature before and after each catalyst bed — Monitored continuously, recorded once per workshift (c) Hours of Operation — Recorded monthly (d) Start-up and shutdown periods — Recorded for each occurrence (e) CEMS calibration results — Recorded for each occurrence (f) CEMS cylinder gas audit results — Recorded for each occurrence (g) Maintenance/repair activities — Recorded for each occurrence	1-2

No.	Monitoring and Recordkeeping Requirements	Equipment/ Activity
28.	Hourly and 24-hour averages of the following data for the combustion turbine/HRSG shall be recorded by the DAHS and kept readily available for on-site inspection: (a) NO_X emission concentration (ppmvd @ 15% O_2); (b) NO_X emission rate (lb/hr); (c) CO emission concentration (ppmvd @ 15% O_2); (d) CO emission rate (lb/hr); (e) SO_2 emission rate (lb/hr); (f) O_2 concentration (dry volume percent); (g) Fuel consumption (MMscf/hr); (h) Heat input (MMBtu/hr); (i) Turbine gross output and net facility output (MW); (j) NH_3 emission rate (lb/hr); and (k) NH_3 consumption (lb/hr).	1-2
29.	The following records shall be maintained for each delivery of ammonia to the facility: (a) Delivery date; and (b) Supplier's certification of ammonia concentration.	1-2
30.	Operation of the emergency generator and fire pump shall be monitored and recorded as follows: (a) Hours of operation — Recorded monthly (b) Maintenance/repair activities — Recorded for each occurrence	4-5
31.	Operation of the fuel preheater shall be monitored and recorded as follows: (a) Fuel consumption — Recorded monthly (b) Maintenance/repair activities — Recorded for each occurrence	6

2.4 Emission Monitoring and Testing Requirements

No.	Emission Monitoring and Testing Requirements	Equipment/ Activity
32.	The combustion turbine/HRSG shall be emission tested within 60 days of achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup. Subsequent emission monitoring shall be conducted annually, no later than the end of the calendar quarter in which the initial emission testing was performed. Emission testing shall be conducted in accordance with Appendix A of this Permit.	1-2
33.	A CEMS shall be installed to measure emission concentrations of NO_X, CO, and O_2, and emission rates of NO_X and CO from the exhaust stack of the combustion turbine/HRSG. A CEMS or PEMS shall be installed and operated to measure emission concentrations and emission rates of NH_3 from the exhaust stack of the combustion turbine/HRSG. All CEMS and PEMS shall be maintained and certified in accordance with Appendix B of this Permit.	1-2

No.	Emission Monitoring and Testing Requirements	Equipment/ Activity
34.	NO_X control system emission trials for the combustion turbine/HRSG shall be conducted within 60 days of achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup. Subsequent emission trials shall be conducted annually, no later than the end of the calendar quarter in which the initial emission trials were performed. Emission trials shall be conducted in accordance with Appendix C of this Permit.	1-2
35.	The sulfur content of natural gas fired in the combustion turbine/HRSG shall be determined semi-annually in accordance with Appendix D of this Permit.	1-2
36.	During each calendar quarter, a minimum of three samples shall be collected from the cooling water discharge of the cooling tower and analyzed for total dissolved solids (TDS).	3
37.	The fuel preheater shall be emission tested within 90 days of commencing regular operation. Subsequent emission testing shall be conducted on a continuing ten year cycle, no later than the end of the calendar month in which the initial emission testing was performed. Emission testing shall be conducted in accordance with Appendix E of this Permit.	6
38.	Emission monitoring for the fuel preheater shall be conducted within 12 months of the initial emission test conducted pursuant to Requirement 37 of this Permit. Subsequent emission monitoring shall be conducted on a 12 month cycle, no later than the end of the calendar month in which the initial emission monitoring was performed. Emission monitoring shall be performed in accordance with Appendix F of this Permit. Emission monitoring is not required in any year that emission testing is conducted pursuant to Requirement 37 of this Permit.	6

2.5 Reporting Requirements

No.	Reporting Requirements	Equipment/ Activity
39.	An annual emissions inventory report shall be submitted in accordance with SWCAA 400-105(1). In addition to the emissions information required under SWCAA 400-105(1), each annual report shall include an estimate of annual emission quantities for each TAP compound listed in the Technical Support Document for this Permit.	Facilitywide
40.	Upset conditions shall be reported to SWCAA as soon as possible after discovery. The permittee may provide notification to SWCAA via telephone. A message may be left on the answering machine for upset conditions that occur outside of normal business hours.	1-6
41.	Excess emissions and all other deviations from permit requirements shall be reported to SWCAA as follows: • As soon as possible, but no later than 12 hours after discovery for events that represent a potential threat to human health or safety; • As soon as possible, but no later than 48 hours after discovery for events which the permittee wishes to claim as unavoidable; and • No later than 30 days after the end of the month of discovery for all other events.	1-6

No.	Reporting Requirements	Equipment/ Activity
42.	Initial start-up of approved emission units shall be reported to SWCAA via letter within 10 days.	1-6
43.	All air pollution related complaints received by the permittee shall be reported to SWCAA within three business days of receipt. Complaint reports shall include the date and time of the complaint, the name of the complainant, and the nature of the complaint.	1-6
44.	The following records shall be reported to SWCAA quarterly no later than 30 days after the end of the calendar quarter: (a) Monthly hours of operation for each emission unit (b) Monthly fuel consumption for the fuel preheater (c) Hourly fuel consumption and power output for the combustion turbine and duct burners (d) Hourly ammonia consumption (lb/hr) (e) Information required under applicable provisions of 40 CFR 60.49a (f) Information required under applicable provisions of 40 CFR 75 (g) Hourly and daily (24-hr) CEMS data for: (i) NO_X exhaust concentration (ppmvd @ 15% O_2) (ii) NO_X emission rate (lb/hr) (iii) CO concentration (ppmvd @ 15% O_2) (iv) CO emission rate (lb/hr) (v) NH_3 emission rate (lb/hr) (vi) Oxygen content (% O_2) (h) Summary of all deviations from permit requirements (i) Summary of facilitywide air pollutant emissions for each month in the reporting period including a 12 month rolling total calculated at the end of each month Reported data shall be corrected to units of measure and averaging times consistent with the emission limits established by this Permit.	1-6
45.	Start-up and shutdown periods for the combustion turbine/HRSG shall be reported to SWCAA within 24 hours of each occurrence.	1-2
46.	Emission monitoring and testing results shall be reported to SWCAA in writing within 45 days of completion.	1-3, 6

3. General Provisions

No.	General Provisions
A.	For the purpose of ensuring compliance with this Permit, duly authorized representatives of the Southwest Clean Air Agency shall be permitted access to the permittee's premises and the facilities being constructed, owned, operated and/or maintained by the permittee for the purpose of inspecting said facilities. These inspections are required to determine the status of compliance with this Permit and applicable regulations and to perform or require such tests as may be deemed necessary.
B.	The provisions, terms and conditions of this Permit shall be deemed to bind the permittee, its officers, directors, agents, servants, employees, successors and assigns, and all persons, firms, and corporations acting under or for the permittee.

No.	General Provisions
C.	The requirements of this Permit shall survive any transfer of ownership of the source or any portion thereof.
D.	This Permit shall be posted conspicuously at or be readily available near the source.
E.	This Permit does not supersede requirements of other Agencies with jurisdiction and further, this Permit does not relieve the permittee of any requirements of any other governmental Agency. In addition to this Permit, the permittee may be required to obtain permits or approvals from other agencies with jurisdiction.
F.	Compliance with the terms of this Permit does not relieve the permittee from the responsibility of compliance with SWCAA General Regulations for Air Pollution Sources, previously issued Regulatory Orders, RCW 70.94, Title 173 WAC or any other applicable emission control requirements, nor from the resulting liabilities and/or legal remedies for failure to comply.
G.	If any provision of this Permit is held to be invalid, all unaffected provisions of the Permit shall remain in effect and be enforceable.
H.	No change in this Permit shall be made or be effective except as may be specifically set forth by written order of the Southwest Clean Air Agency upon written application by the permittee for the relief sought.
I.	The Southwest Clean Air Agency may, in accordance with RCW 70.94 impose such conditions as are reasonably necessary to assure the maintenance of compliance with the terms of this Permit, the Washington Clean Air Act, and the applicable rules and regulations adopted under the Washington Clean Air Act.

Air Discharge Permit 04-2571R2 - Appendix A
Emission Testing Requirements
Combustion Turbine/HRSG

1. Introduction:

The purpose of this testing is to quantify emissions of NO_X, CO, NH_3, PM, and VOCs from the combustion turbine exhaust stack and to demonstrate compliance with the requirements of this Order of Approval and New Source Performance Standards (NSPS) 40 CFR 60 Subpart GG "Standards of Performance for Stationary Gas Turbines" and 40 CFR 60 Subpart Da "Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 19, 1978."

2. Testing Requirements:

a. In accordance with NSPS Subpart GG, an initial source test shall be conducted as specified in 40 CFR 60.335 no later than 60 days after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup of the turbine. Initial testing for NO_X emissions shall be conducted at four points in the normal operating range of the gas turbine including the minimum point in the range and the peak load consistent with the testing requirements of Subpart GG.

b. In accordance with NSPS Subpart Da, an initial source test shall be conducted no later than 60 days after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup of the duct burners. In accordance with 40 CFR 46a(k), a certified CEMS may be used to demonstrate compliance with applicable NO_X requirements.

c. An initial source test to quantify emissions of NO_X, CO, NH_3, PM, and VOCs from the combustion turbine exhaust stack while firing natural gas shall be conducted no later than 60 days after achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup. Subsequent source tests shall be conducted along the following schedule:

Constituent	Test Method or Equivalent[1]	Schedule	Minimum Test Duration
Stack gas velocity	EPA Methods 1 and 2	Annual	N/A
O_2 and CO_2	EPA Method 3 or 3A	Annual	N/A
Moisture	EPA Method 4	Annual	1 hour
Filterable particulate matter	EPA Method 5	Every 5 years	3 hours (90 dscf)
Nitrogen oxides	EPA Method 7E	Annual	1 hour
Opacity of Emissions	EPA Method 9	Annual	6 minutes
Carbon monoxide	EPA Method 10	Annual	1 hour
Volatile organic compounds	EPA Method 18/25A[2]	Every 5 years	1 hour
Condensable particulate matter	EPA Method 202	Every 5 years	3 hours (90 dscf)
Ammonia	BAAQMD Method ST1B	Annual	1 hour

[1] The use of an alternate/ equivalent test methods must be approved by SWCAA in writing.

[2] VOC emission rates shall be reported as propane. The use of a "methane cutter" or the subtraction of methane and ethane concentrations as measured by EPA Method 18 is acceptable in determining VOC concentration.

2. Testing Requirements (continued):

Testing for each constituent shall consist of a minimum of three sampling runs of the duration specified above. Relative Accuracy Test Audit (RATA) sampling runs for NO_X and CO may be used to comply with the annual source testing requirements (i.e. 3 21-minute RATA runs = 1 source test run). All testing shall be conducted at base load with duct burners firing unless otherwise approved by SWCAA.

Source testing performed after the initial source test to comply with the annual testing requirement shall be performed no later than the same calendar quarter of each following year. Particulate and volatile organic compound source testing performed after the initial source test to comply with the periodic source testing requirement shall be performed no later than the same calendar quarter every five years following the initial test. If the testing schedule corresponds with a quarter during which the turbine is not operated, testing shall be conducted during the next operating quarter.

d. A comprehensive test plan shall be submitted to SWCAA for review and approval at least 10 business days prior to each test, except that a test plan must be submitted at least 30 calendar days in advance of the initial performance testing required by NSPS Subparts Da and GG.

e. SWCAA personnel shall be notified at least 5 business days prior to each testing campaign so that they may be present during testing, except that 30 calendar days prior notification is required before the initial performance testing required by NSPS Subparts Da and GG.

3. Source Operation:

a. A complete record of production related parameters including turbine and duct burner firing rates, ammonia addition rate, startups, and shutdowns shall be kept during emissions testing to correlate operations with emissions and shall be recorded in the final report of the test results.

b. Source operations during the emissions test must be representative of maximum intended operating conditions.

4. Reporting Requirements:

a. A final emission test report shall be prepared and submitted to SWCAA within 45 calendar days of test completion and, at a minimum, shall contain the following information:

(1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
(2) Time and date of the test and identification and qualifications of the personnel involved,
(3) Summary of results, reported in units and averaging periods consistent with the application emissions standard or unit,
(4) Summary of control system or equipment operating conditions,
(5) Summary of production related parameters,
(6) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
(7) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
(8) Copies of field data and example calculations,
(9) Chain of custody information,
(10) Calibration documentation,
(11) Discussion of any abnormalities associated with the results, and
(12) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

b. All test results for constituent emission concentration shall be corrected to 15% oxygen.

Air Discharge Permit 04-2571R2 - Appendix B
Continuous Monitoring Requirements
Combustion Turbine/HRSG

1. Introduction:

The purpose of installing and maintaining a CEMS for NO_X, O_2, and CO, and a CEMS or PEMS for NH_3 is to demonstrate compliance with the requirements of this Permit, provide the ability to reduce NO_X emissions while simultaneously minimizing NH_3 ammonia, and comply with the monitoring requirements of 40 CFR 75 - Continuous Emissions Monitoring.

2. Requirements:

a. **NO_X and O_2.** The continuous monitoring system for the concentration and emission rate of NO_X and the concentration of O_2 from the exhaust stack of the combustion turbine/HRSG shall be installed and maintained in accordance with the requirements and specifications found in the following regulations:

- 40 CFR 60 Appendix B, Performance Specification 2.
- 40 CFR 60 Appendix B, Performance Specification 3.
- 40 CFR 60 Appendix F.
- 40 CFR 75.

The following exceptions apply to the requirements of the above referenced regulations:

- The quarterly audit specified in 40 CFR 60 Appendix F need not be conducted in any quarter in which the associated combustion turbine operated less than 168 hours.
- The quarterly audit requirements of 40 CFR 60 Appendix F do not apply to the NO_X CEMS.
- The linearity check specified in 40 CFR 75 may be used in lieu of the cylinder gas audit (CGA) detailed in 40 CFR 60 Appendix F for the O_2 CEMS.

b. **CO.** The continuous monitoring system for the concentration and emission rate of CO from the exhaust stack of the combustion turbine/HRSG shall be installed and maintained in accordance with the requirements and specifications found in the following regulations:

- 40 CFR 60 Appendix B, Performance Specification 4A.
- 40 CFR 60 Appendix F.

The following exceptions apply to the requirements of the above referenced regulations:

- The quarterly audit specified in 40 CFR 60, Appendix F need not be conducted in any quarter in which the associated combustion turbine operated less than 168 hours.
- The criteria for excessive audit inaccuracy in 40 CFR 60 Appendix B, Performance Specification 4a, Section 13.2 is replaced by an RA of no greater than 20% of the average RM value or an absolute average difference between the RM and CEMS of 0.3 ppmv plus the 2.5 percent confidence coefficient.
- The criteria for excessive audit inaccuracy for cylinder gas audits in 40 CFR 60 Appendix F, Section 5.2.3(2) is replaced by a maximum audit inaccuracy of 1.0 ppm.

2. Requirements (continued):

c. **NH_3.** The continuous monitoring system for the concentration and emission rate of NH_3 from the exhaust stack of the combustion turbine/HRSG shall be installed and maintained in accordance with the requirements and specifications found in the following regulations:

- 40 CFR 60 Appendix B, Performance Specification 2.
- 40 CFR 60 Appendix F.

The following exceptions apply to the requirements of the above referenced regulations:

- The quarterly audit specified in 40 CFR 60 Appendix F need not be conducted in any quarter in which the associated combustion turbine operated less than 168 hours.
- In lieu of a full annual relative accuracy test audit (RATA), the permittee may perform a relative accuracy audit (RAA) using the results of the annual NH_3 source test. If this option is chosen, the average of the results from each source test run shall be compared to the average NH_3 concentration determined by the CEMS during the same time period. The average relative accuracy of the CEMS shall not exceed 20% of the reference method data or 1.0 ppmvd @ 15% O_2, whichever is less stringent. The relative accuracy during each sampling period shall be determined according to the following equation:

$$RA = 100 * \frac{(C_{RM} - C_{CEMS})}{C_{RM}}$$

Where: C_{RM} =Reference method concentration
C_{CEMS} =CEMS concentration

d. **RATA Reports.** Relative accuracy test audit (RATA) reports shall be submitted to SWCAA within 45 days of test completion and shall include all of the information required in section 4 of Appendix A.

Air Discharge Permit 04-2571R2 - Appendix C
NO_X Control System Emission Trials
Combustion Turbine/HRSG

1. Introduction:

The purpose of testing the NO_X control system is to determine the relationship between NO_X and NH_3 emission concentrations over a range of operational conditions. Collected data will be used to establish target values for NO_X and NH_3 emission concentrations.

2. Requirements:

a. **Trial Schedule.** Emission trials to assess the contemporaneous capability of the NO_X control system shall be conducted within 60 days of achieving the maximum production rate at which the facility will be operated, but no later than 180 days after initial startup. Subsequent emission trials shall be conducted annually, no later than the end of the calendar quarter in which the initial emission trials were conducted.

b. **Trial Procedure.** Each emission trial shall be conducted as follows:

(1) The turbine shall be operated at a full-load condition during the testing.

(2) The NO_X control system shall be adjusted until a NO_X exhaust concentration of 2.5 ppmvd @ 15% O_2 is achieved. The ammonia and NO_X exhaust concentrations shall be monitored and recorded for at least 15 minutes after the exhaust concentrations have stabilized (either $\leq$5% or 0.1 ppm change in concentration per minute).

(3) The NO_X control system shall be adjusted until the NO_X exhaust concentration is lowered by a value of 0.1 ppmvd @ 15% O_2. The ammonia and NO_X exhaust concentrations shall again be monitored and recorded for at least 15 minutes after the exhaust concentrations have stabilized (either $\leq$5% or 0.1 ppm change in concentration per minute). This procedure shall be repeated, targeting incrementally lower NO_X concentrations, until NH_3 emissions exceed 5.0 ppmvd @ 15% O_2 or no further NO_X reductions can be achieved.

c. The plant CEMS may be used to collect required NO_X data.

3. Reporting:

a. Emission trial results shall be reported to SWCAA within 45 days of test completion. Each report shall include:

(1) The time and date of the emission trial.

(2) Identification of the personnel involved.

(3) The following data shall be summarized in the report for each test condition:

- NO_X concentration corrected to 15% O_2;
- NH_3 concentration corrected to 15% O_2;
- Ammonia injection rate (lb/hr);
- Turbine load;
- Temperature of flue gas immediately upstream of the SCR catalyst bed;
- Temperature of flue gas immediately downstream of the SCR catalyst bed.

(4) NO_X and NH_3 CEMS calibration documentation from that day and the most recent cylinder gas audit.

(5) Discussion of any abnormalities associated with the results.

Air Discharge Permit 04-2571R2 - Appendix D
Fuel Sulfur Monitoring Requirement
Combustion Turbine/HRSG

1. **Introduction:**
The purpose of this monitoring requirement is to quantify the fuel gas sulfur content of fuel gas fired in the combustion turbine/HRSG. This data will be used to calculate SO_2 emissions from the combustion turbine/HRSG and demonstrate compliance with the requirements of this Permit.

2. **Testing Requirements:**
   a. **Testing schedule.** Initial gas sampling shall be conducted within 60 days of commencing operation. Subsequent emission testing shall be conducted semi-annually, no later than 6 months after the previous monitoring.

   b. **Test runs/Reference test methods.** A minimum of 3 gas samples shall be collected from fuel gas at the facility. Each sample shall be analyzed using one of the test methods identified below. Alternate methods may be used if they are approved in writing by SWCAA prior to sampling.

Constituent	Reference Test Method
Fuel gas sulfur content	ASTM D1072-80, 90
	ASTM D3246-81, 92, 96
	ASTM D4468-85
	ASTM D6667-01

3. **Reporting Requirements:**
   a. A final sampling report shall be prepared and submitted to SWCAA within 45 calendar days of sampling completion. At a minimum, the report shall contain the following information:

      (1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
      (2) Time and date of the test and identification and qualifications of the personnel involved,
      (3) Summary of results, reported in units and averaging periods consistent with the application emissions standard or unit,
      (4) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
      (5) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
      (6) Copies of field data and example calculations,
      (7) Chain of custody information,
      (8) Calibration documentation,
      (9) Discussion of any abnormalities associated with the results, and
      (10) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

Air Discharge Permit 04-2571R2 - Appendix E
Emission Testing Requirements
Fuel Preheater

1. **Introduction:**
The purpose of this testing is to quantify emissions from the fuel preheater, and demonstrate compliance with the requirements of this Permit and applicable air quality regulations.

2. **Testing Requirements:**
   a. **Test plan.** A comprehensive test plan shall be submitted to SWCAA for review and approval at least 10 business days prior to each test. SWCAA personnel shall be informed at least five business days prior to testing so that a representative may be present during testing.

   b. **Testing schedule.** An initial emission test shall be conducted at the preheater exhaust stack no later than 90 days after commencing regular operation. Subsequent emission testing shall be conducted every ten years by the end of the calendar month in which the initial emission test was conducted.

   c. **Test runs/Reference test methods.** A minimum of three (3) test runs shall be performed for each constituent listed below to ensure the data are representative. Compliance shall be demonstrated by averaging the results of the individual sampling runs. The sampling methods identified below shall be used unless alternate methods are approved in writing by SWCAA in advance of the emission testing.

Constituent	Reference Test Method	Minimum Test Run Duration
Flow rate, temperature	EPA Methods 1 and 2	N/A
O_2, CO_2 content	EPA Method 3 or 3A	60 minutes
Moisture content	EPA Method 4	60 minutes
NO_x	EPA Method 7E	60 minutes
CO	EPA Method 10	60 minutes

3. **Source Operation:**
   a. **Source operations.** Source operations during the emissions test must be representative of maximum intended operating conditions.

   b. **Record of production parameters.** Production related parameters and equipment operating conditions shall be recorded during emissions testing to correlate operating conditions with emissions. Recorded parameters shall, at a minimum, include preheater fuel consumption and process startup/shutdown events that occur during testing. All recorded production parameters shall be documented in the test results report.

Air Discharge Permit 04-2571R2 - Appendix E
Emission Testing Requirements
Fuel Preheater

4. Reporting Requirements:

a. A final emission test report shall be prepared and submitted to SWCAA within 45 calendar days of test completion and, at a minimum, shall contain the following information:

(1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
(2) Time and date of the test and identification and qualifications of the personnel involved,
(3) Summary of results, reported in units and averaging periods consistent with the application emissions standard or unit,
(4) Summary of control system or equipment operating conditions,
(5) Summary of production related parameters,
(6) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
(7) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
(8) Copies of field data and example calculations,
(9) Chain of custody information,
(10) Calibration documentation,
(11) Discussion of any abnormalities associated with the results, and
(12) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

b. All test results shall be corrected to 3% oxygen.

Air Discharge Permit 04-2571R2 - Appendix F
Emission Monitoring Requirements
Fuel Preheater

1. Introduction:

a. The purpose of periodically monitoring the fuel preheater exhaust streams is to minimize emissions and provide a reasonable assurance that the preheater is operating properly.

b. Periodic monitoring may be conducted with an electrochemical cell combustion analyzer, analyzers used for reference method testing, or other analyzers pre-approved by SWCAA.

2. Monitoring Procedure:

a. Monitoring of preheater exhaust gases to determine emission concentrations of the following constituents shall be conducted within 12 months of the initial emission test performed in accordance with Appendix E of this Permit. Subsequent emission monitoring shall be conducted on a 12 month cycle, no later than the end of the calendar month in which the initial emission monitoring was performed. Emission monitoring is not required during any year in which emission testing is performed pursuant to Appendix E of this Permit.

Constituents to be Measured
Carbon Monoxide (CO)
Nitrogen Oxides (NO_X)
Oxygen (O_2)

b. Source operation during testing must be representative of maximum intended operating conditions during that year.

c. Alternative testing methodologies must be pre-approved by SWCAA.

3. Minimum Quality Assurance/Quality Control Measures:

a. The analyzer(s) response to span gas of a known concentration shall be determined before and after testing. No more than 12 hours may elapse between span gas response checks. The results of the analyzer response shall not be valid if the pre and post response check results vary by more than 10% of the known span gas value.

b. The CO and NO_X span gas concentrations shall be no less than 50% and no more than 200% of the emission concentration corresponding to the permitted emission limit. Ambient air may be used to zero the CO and NO_X cells/analyzer(s) and span the oxygen cell/analyzer.

c. Sampling shall consist of at least 1 test consisting of at least 5 minutes of data collection following a "ramp-up phase." The "ramp-up phase" ends when analyzer readings have stabilized (less than 5% per minute change in emission concentration). Emission concentrations shall be recorded at least once every 30 seconds during the data collection phase. All test data collected following the ramp-up phase(s) shall be reported to SWCAA. A sample data sheet is attached for reference.

3. Minimum Quality Assurance/Quality Control Measures (continued):

If the monitoring results from any monitoring event indicate that emission concentrations exceed applicable permit limits, the permittee shall either perform 60 minutes of additional monitoring to more accurately quantify CO and NO_X emissions, or initiate corrective action. Additional monitoring or corrective action shall be initiated as soon as practical but no later than three days after the exceedance is identified. Corrective action includes tuning, maintenance by service personnel, limitation of unit load, or other action taken to maintain compliance with permitted limits. Monitoring of unit emissions must be conducted within three days following completion of any corrective action to confirm that the corrective action has been effective. Initiation of corrective action does not shield the permittee from enforcement.

4. Reporting:

a. All monitoring results shall be recorded at the facility and reported to SWCAA in writing within 15 calendar days of completion. The following information shall be included in the report:

(1) Time and date of the performance monitoring;
(2) Identification of the personnel involved;
(3) A summary of results, reported in units consistent with the applicable emission standard or limit;
(4) A summary of equipment operating conditions;
(5) A description of the evaluation methods or procedures used including all field data, quality assurance/quality control procedures and documentation; and
(6) Analyzer response check documentation.

b. Reported monitoring results shall be corrected to 3% O_2 in the exhaust gas and corrected for the analyzer response to zero and span gas.

Southwest Clean Air Agency
Combustion Equipment Monitoring Data Sheet

Company Name: _____ Date: _____

Emission Unit Identification (Boiler B-1, etc): _____

Make of Emission Unit: _____
Model of Emission Unit: _____
Serial Number of Emission Unit: _____

Company Performing Test: _____
Analyst: _____

Make of Instrument(s) Used: _____
Model of Instrument(s) Used: _____

Permitted NO_X Concentration _____ppm @ _____% O_2/CO_2 Permit Number: _____
Permitted CO Concentration _____ppm @ _____% O_2/CO_2 Permit Number: _____
Target/Permitted O_2/CO_2 concentration (%) _____ Permit Number: _____

Span Gas (as applicable)[1]	Span Gas Concentration	Pre-Test Span Gas Reading	Post-Test Span Gas Reading[2]	Pre-Test Zero Reading	Post-Test Zero Reading[2]
$NO_{(X)}$					
NO_2[4]					
CO					
O_2					

Time of Pre-Test Analyzer Response Check[3]: _____
Time of Post-Test Analyzer Response Check[3]: _____

[1] The span gas concentration must not be less than 50% of the target/permitted pollutant concentration nor more than 200% of the target/permitted pollutant concentration.
[2] The results of the analyzer response shall not be valid if the pre and post response check results vary by more than 10% of the know span gas value.
[3] No more than 12 hours may elapse between the pre-test and post-test analyzer response checks.
[4] Calibration and use of an NO_2 cell is required if significant quantities of NO_2 are expected (i.e. after specific catalysts, afterburners, etc.) and if no $NO_2 \rightarrow NO$ converter is integral or used in conjunction with the combustion analyzer.

Fuel Flow Rate/Unit Load During Monitoring: Start: _____ End: _____

Source Operation Notes: Please note the operating conditions of the source including unit load, fuel flow, damper position, oxygen set point, use of flue gas recirculation, steam pressure, afterburner temperature, etc. as applicable:

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

SWCAA FORM NO. 52 9/24/2003

Southwest Clean Air Agency
Combustion Equipment Monitoring Data Sheet

Emissions Data Summary

Test Start Time: _____ Test Stop Time: _____

(Record at least 5 minutes of data)

Time (min)	NO_X Reading (ppm)	NO_2 Reading (if applicable) (ppm)	CO Reading (ppm)	O_2 Reading (%)
00:00				
00:30				
01:00				
01:30				
02:00				
02:30				
03:00				
03:30				
04:00				
04:30				
05:00				
05:30				
06:00				
06:30				
07:00				
07:30				
08:00				
08:30				
09:00				
09:30				
10:00				
Average				
Corrected				

Please correct the average pollutant concentrations to the appropriate oxygen or carbon dioxide basis listed on page 1 using one of the following equations as applicable:

$$\text{Corrected concentration} = (C - Co)\left(\frac{Cma}{Cm - Co}\right)\left(\frac{20.9 - X\%O_2}{20.9 - Y\%O_2}\right)$$ Where:

C = Average analyzer gas response
Co = Average initial and final analyzer zero check response (note: Co=0 if analyzer is zeroed)
Cma = Actual span gas known value
Cm = Average of initial and final analyzer span check response
X = Oxygen percentage for which concentration will be corrected to
Y = Average analyzer oxygen response

Notes: _____

Attach copy of analyzer data print out if available. Submit results to SWCAA within 15 days of tune-up.
Questions? Contact the Southwest Clean Air Agency at (360) 574-3058 - fax (360) 576-0925.

northwest Clean Air agency

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Original issuance: June 25, 1991

Revision A: None

Revision B: November 17, 1997

Revision C: August 3, 1998

Revision D: March 27, 2009

Northwest Clean Air Agency (NWCAA) hereby issues

Order of Approval to Construct (OAC) #304d

Project Summary: Construct a combined cycle, natural gas fired combustion turbine power plant rated at 125 megawatts. Ancillary equipment includes a 3-cell cooling tower and 500 kilowatt standby diesel generator. Nitrogen oxide (NOx) emissions are controlled with steam injection and selective catalytic reduction. This cogeneration plant has the ability to send low pressure steam to Socco Forest Products for use in their kilns.

OPERATOR

Sumas Generating Station
1340 Thompson Lane
PO Box 220
Sumas, WA 98295

OWNER

Puget Sound Energy, Inc.
PO Box 90868
Bellevue, WA 98009-0868

FACILITY LOCATION:

1340 Thompson Lane, Sumas, Washington 98295

Permit History

- As of the date of issuance, this Order supersedes NWCAA Order of Approval to Construct #304c dated August 3, 1998.

Note that in addition to other applicable rules and regulations, this project is subject to applicable portions of the following federal regulations.

New Source Performance Standards

- 40 CFR 60 Subpart A — General Provisions
- 40 CFR 60 Subpart GG — Standards of Performance for Stationary Gas Turbines

Acid Rain Program

- 40 CFR 72 through 75 — Acid Rain Provisions

As authorized by the Northwest Clean Air Agency Regulation Section 300, this order is issued subject to the following restrictions and conditions:

1. Emissions from the plant stack shall not exceed any of the following:

   a. Nitrogen oxides:

      6 ppmdv corrected to 15% oxygen, calendar day average, ISO standard conditions

      18.1 lb/hour, calendar day average

      75 tons/year

   b. Carbon monoxide:

      6 ppmdv corrected to 15% oxygen, one-hour average, ISO standard conditions

      12.6 lb/hour

      52 tons/year

      Carbon monoxide emissions limits shall apply at all times except during a time period not to exceed two hours during startup.

   c. Opacity:

      Not to exceed five percent (5%) at the point of exhaust or within a reasonable distance of that point for more than six minutes in any one-hour period. Opacity shall be determined by U.S. EPA Reference Method 9 or other method approved by the Control Officer.

   d. Ammonia:

      10 ppmdv corrected to 15% oxygen, one hour average, ISO standard conditions

      13.3 lb/hour

      55 tons/year

2. The following continuous emission monitors shall be installed and operated on the stack:

   a. Oxygen - in accordance with Performance Specification 3 (40 CFR 60 Appendix B)

   b. Nitrogen oxides - in accordance with Performance Specification 2 (40 CFR 60 Appendix B)

   The continuous emission monitors shall be used for continuous compliance determinations and shall be installed and operated in accordance with NWCAA 367, NWCAA Appendix A and 40 CFR Part 75.

3. A record of the amount of time the turbine is in used shall be maintained. Natural gas consumption for the turbine, and the ratio of steam to fuel being fired in the turbine shall be monitored and recorded.

4. Annual source testing for carbon monoxide (CO) and ammonia (NH_3) emissions shall be conducted for the gas turbine stack using EPA Method 10 and BAAQMD Method ST-1B, respectively. Testing shall be conducted at least once per calendar year. All source testing shall be conducted, and plans and test results submitted in accordance with NWCAA Section 367 and NWCAA Appendix A.

5. The following information shall be reported to the NWCAA on a calendar month basis within 30 days following the end of the previous month.
    a. Concentration of NO_X in ppmdv corrected to 15% oxygen, calendar day average, and NO_X emissions in lb/calendar day for the gas turbine stack.
    b. Total MMBtu of natural gas burned in the turbine during the month.
    c. Number of hours the turbine operated during the month.
    d. Number of hours the standby diesel generator has operated during the calendar year

6. The turbine shall burn pipeline grade natural gas only.

7. The Cummins Diesel Turbo 500 kW standby generator shall not be operated more than 132 hours in any calendar year.

Dan Mahar, P.E. Engineer	Mark Buford, P.E. Assistant Director, Engineering	Lynn Billington, P.E. Director, Engineering

Revision A: There was no revision A.

Revision B: NOx limit changed from hourly to a 24-hour average. Remove monthly CO reporting requirement.

Revision C: CO control catalyst may be removed after completion of six months of continuous CO monitoring. Add a 2-hour CO limit exemption during turbine startup.

Revision D: Update with new owner information. Delete obsolete and non-applicable requirements, including removing VOC and PM/PM-10 limits and their initial source test requirements. Add annual source testing for CO and ammonia. Clarify reporting requirements.