

**WASHINGTON STATE DEPARTMENT OF ECOLOGY
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|---------------------------------------|---|----------------------------------|
| IN THE MATTER OF: |] | |
| |] | |
| Northwest Pipeline Corporation |] | NO. PSD-01-08 Amendment 4 |
| Sumas Compressor Station |] | |
| Williams Gas Pipeline–West |] | FINAL APPROVAL |
| 295 Chipeta Way |] | OF PSD APPLICATION |
| Salt Lake City, UT 84158-0900 |] | |

This approval is issued pursuant to the United States Environmental Protection Agency (EPA) regulations for the Prevention of Significant Deterioration (PSD) set forth in Title 40 Code of Federal Regulations Part 52, and regulations set forth in the Washington Administrative Code 173-400-700. The original approval was based upon the complete application submitted by Williams Gas Pipeline–West for the Northwest Pipeline Corporation Sumas Compressor Station dated November 27, 2001, along with additional information dated February 6, February 22, April 4, May 23, August 6, and August 16, 2002. The first amendment was based on a letter of request dated April 23, 2004. The second amendment was based on a July 21, 2004 e-mail request. The third amendment was requested by letter dated February 8, 2006. The fourth amendment was requested by letter dated May 18, 2011. The technical analysis performed by the Department of Ecology (Ecology) finds the following:

FINDINGS

1. The reason for the fourth administrative amendment is to clarify and simplify CO monitoring procedures used by portable CO monitors in preparation for renewal of the facility’s Title V permit. Testing using a portable analyzer to monitor the volume percent of CO every 336 hours has proven adequate to indicate compliance, so the additional calculation of CO mass flow during these periodic tests is no longer required (Approval Condition 5.5.1). If noncompliance is indicated by a portable monitor test, the turbine will now be shut down as soon as reasonably possible and repaired rather than have further emissions testing (Approval Condition 5.5.1.3). No compliance testing conditions for CO (Reference Method 10) are affected by these changes, but the CO limit’s averaging time is reduced from a three to one hour time period, which is more stringent. No physical changes are requested.

The reason for the third amendment was to allow a reduction in the required frequency of carbon monoxide (CO) routine monitoring testing. A portable emissions analyzer is used for these routine monitoring tests. More than three years of testing every 14 days showed that routine testing every 28 days was sufficient to monitor compliance. There were no changes to emission limits in the third amendment.

The reason for the second administrative amendment was to implement changes requested by Northwest Pipeline Corporation (NWP) that were intended to clarify and streamline the

permit. Condition 2.4 was removed. This condition required an initial performance demonstration for a CO concentration limit for the standby generator that did not exist in the original permit. There were no changes to the emission limits in the second amendment.

The reason for the first administrative amendment was that NWP and Ecology discovered the inability of the Predictive Emissions Monitoring System (PEMS) to accurately predict real-time emissions. This finding was based upon completion of one year of PEMS data gathering and analysis, and Ecology agreed with NWP. There were no changes to emission limits in the first amendment.

2. Pursuant to the original permit, NWP expanded their existing Sumas Compressor Station (Sumas Station). The Sumas Station is located at 49°N 00'05" latitude, 122°W 13'19" longitude, which is approximately 3 kilometers east of Sumas, Washington, in Whatcom County, and immediately south of the U.S. Canadian border. It has UTM coordinates of 557.0 kilometers east and 5,427.5 kilometers north.
3. The Sumas Station is located within a Class II area that is currently designated in attainment for all national and state air quality standards. The nearest Class I area, the North Cascades National Park, is approximately 50 kilometers east. PSD permit 01-08 allowed an expansion to this facility described in Findings 4 through 15 below.
4. Pursuant to the original permit, NWP replaced the engines from two existing compressor turbines as well as add new equipment to the Sumas Station. The project consisted of:
 - 4.1. Add one new Solar Mars 90S turbine driven centrifugal compressor (site rated at 12,841 horsepower @ 59°F).
 - 4.2. Replace the engines of the two existing Solar Mars turbines with new, lower-emitting Mars 90S engines (each site rated at 12,841 horsepower @ 59°F). This replacement generates pollution netting credits.
 - 4.3. Add one natural gas-fired Caterpillar 270 kilowatt (kW) generator unit for backup power. This unit is proposed to run a maximum of 500 hours per year.
 - 4.4. Add one natural gas-fired Sellers C60 boiler/heater rated at 2.5 million British Thermal Units per hour.
5. Because the Sumas Station is an existing major stationary source, any modification resulting in a net emissions increase of a regulated pollutant greater than its Significant Emission Rate qualifies the proposed project as a major modification. As a result, the project would be subject to PSD review under WAC 173-400-700 for that pollutant. Additionally, the project is subject to federal PSD review because it qualifies as a major modification under federal rules [40 CFR 52.21(b)(2)(i), 40 CFR 52.21(b)(3)(i), and 40 CFR 52.21(b)(23)(i)].
6. Potential regulated pollutants for the proposed project are shown in Table 1. They are nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), volatile organic carbon compounds (VOC), particulates less than 10 microns in diameter (PM₁₀), and particulates of any diameter (PM). For this project, all PM is considered to be PM₁₀.

Table 1. Total Criteria Pollutant Potential to Emit (PTE) For New Equipment

| Pollutant | Total of 3 Mars 90 Turbines (tpy) | Generator (tpy) | Boiler (tpy) | Total PTE From Proposed New Equipment (tpy) | PSD Significant Emission Rate (SER) (tpy) |
|------------------|-----------------------------------|-----------------|--------------|---|---|
| NO _x | 126.0 ^a | 0.03 | 1.08 | 127.1 | 40 |
| CO | 139.5 ^b | 0.13 | 0.91 | 140.5 | 100 |
| SO ₂ | 4.47 | 0.00042 | 0.01 | 4.48 | 40 |
| VOC | 9.12 | 0.02 | 0.06 | 9.20 | 40 |
| PM ₁₀ | 8.68 | 0.01 | 0.08 | 8.77 | 15 |
| PM | 8.68 | 0.01 | 0.08 | 8.77 | 25 |

a. Annual Potential to Emit of NO_x of each turbine limited to 42 tons per year.
b. Annual Potential to Emit of CO of each turbine limited to 46.5 tons per year.

7. A netting analysis for CO and NO_x compared the potential emissions from the proposed project against the actual emissions of the removed equipment. No other contemporaneous increases or decreases were found. The netting analysis determined that CO is the only pollutant that has a significant net emissions increase. Emissions of CO will be subject to PSD Review. Table 2 shows these figures.

Table 2. Significant Net Emission Increases as the Result of the Proposed Project

| Pollutant | Past Actual Emissions 1/99 to 12/00 (Removed Unit #7 & #8) (tpy) | Total Potential to Emit (New Equipment) (tpy) | Net Emissions Increase (tpy) | PSD Significant Emission Rate (tpy) | PSD Significant? |
|-----------------|--|---|------------------------------|-------------------------------------|------------------|
| NO _x | 89.9 | 127.1 | 37.2 | 40 | No |
| CO | 8.5 | 140.5 | 132.0 | 100 | Yes |

8. The emissions of all air pollutants from the proposed modification are subject to review under Chapter 173-400 WAC, Chapter 173-460 WAC, and the regulations of the Northwest Clean Air Agency (NWCAA). Chapter 173-400 WAC includes provision for PSD review (WAC 173-400-700). This permit considers only PSD-applicable pollutants. All other air quality related notice of construction approval issues are subject to permitting by NWCAA. The NWCAA approval will contain federally enforceable NO_x provisions including annual limits totaling 127.1 tons per year that ensure compliance with the project's NO_x netting analysis.
9. The conditions of the existing PSD-92-4 Amendment 1 are not altered by this PSD approval.
10. There are no NSPS requirements for CO emissions from the proposed project equipment.
11. Only natural gas will fuel the proposed equipment.

12. Best Available Control Technology (BACT) determinations for CO emissions are:
 - 12.1. Good Combustion Practices for the Mars 90S turbines.
 - 12.2. Three-way nonselective catalyst for the Caterpillar 270 kW backup generator.
 - 12.3. Good Combustion Practices for the Sellers C60 boiler/heater.
13. Allowable emissions from the new emissions units will not cause or contribute to air pollution in violation of:
 - 13.1. Any National Ambient Air Quality Standard (NAAQS) or any Washington State or local air authority ambient air quality standard.
 - 13.2. Any PSD increment. There is no PSD increment standard for CO, so no increment analysis was required.
 - 13.3. Any visibility impacts. Visibility impact analysis is not required for CO.
14. Deposition of PSD pollutants on soils and vegetation in Class I or Class II areas is not affected by CO.
15. No significant effect on industrial, commercial, or residential growth in the Sumas, Washington area is anticipated as a result of this project.
16. Ecology finds that all requirements for PSD have been satisfied. Approval of the PSD application is granted subject to the following conditions.

APPROVAL CONDITIONS

1. The Mars 90S turbines, the standby generator, and the boiler/heater shall only burn natural gas.
2. The Caterpillar 270 kW standby generator:
 - 2.1. The standby generator shall be operated no more than 500 hours in any consecutive 12-month period.
 - 2.2. Compliance with Condition 2.1 shall be determined by installing and operating a nonresettable hour meter with monthly recording of the operating hour meter reading to determine the operating hours, or by automated data collection.
 - 2.3. A three-way catalytic converter shall be installed on the standby generator. It shall be Model EQ-601-08-C2 or another model that is approved by Ecology in writing prior to installation.
3. The Sellers C60 boiler/heater: The CO emissions shall be reported as per Condition 9.2, and calculated using AP 42 emission factors or other methods agreed to in writing by Ecology.
4. NWP shall keep a record of the number of turbine start-up and shutdown events.
5. Emissions of CO from each combustion turbine are limited as follows:
 - 5.1. Volume percent CO of not greater than 50 parts per million dry volume (ppmdv) over a 1-hour average corrected to 15 percent O₂.

- 5.2. Mass emission of CO not greater than 14 pounds per hour (lb/hr) per turbine on a 1-hour average.
- 5.3. Mass emission of CO not greater than 46.5 tons per turbine for any consecutive 12-month period.
- 5.4. NWP shall demonstrate compliance with Condition 5.1 and Condition 5.2 initially and annually thereafter:
 - 5.4.1. Initial compliance shall be demonstrated within 180 days after initial start-up, performed by an independent testing firm. Annual compliance shall be demonstrated no sooner than 10 months after the previous test and no later than 13 months after the previous test.
 - 5.4.2. Compliance shall be demonstrated in accordance with 40 CFR 60 Subpart GG and 40 CFR 60 Appendix A, Method 10 except that the instrument's span shall be reduced as appropriate.
 - 5.4.3. NWP shall submit a test plan to Ecology and NWCAA for approval at least 30 days prior to testing. NWP shall submit a complete test report to the NWCAA no later than 60 days after completion of the tests.
- 5.5. Compliance monitoring:
 - 5.5.1. NWP shall monitor compliance with Condition 5.1 by measuring the CO concentration of the turbine exhaust stack not less frequently than every 336 hours of turbine operation.
 - 5.5.1.1. NWP may conduct these measurements by use of a portable emissions analyzer capable of adjustment to the 15 percent oxygen concentration basis, and verify as accurate in accordance with the process outlined in Condition 6.
 - 5.5.1.2. Testing shall be in accordance with USEPA Designated Conditional Test Method 034. An alternate or modified test method may be used if approved in writing by Ecology prior to the test.
 - 5.5.1.3. NWP shall perform three consecutive tests using the portable emissions analyzer. If the average of the three test results indicates noncompliance with Condition 5.1, NWP shall shut down the unit as soon as is practical and contact the NWCAA as promptly as possible and in no event more than 12 hours later. Exceedance of the limit imposed by Condition 5.1 as indicated by the average of the three consecutive tests shall be prima facie evidence of a violation of Condition 5.1.
 - 5.5.1.4. Upon submission of six consecutive months monitoring results during which every test using the portable emissions analyzer indicates compliance with Condition 5.1 for a given turbine, NWP may submit a request that the testing frequency for that turbine be reduced to not less frequently than every 672 hours of operation.

The requests must include an analysis of the accuracy of the portable emissions analyzer using recent accuracy verification data and an analysis of the portable emissions data collected during the monitoring period and an explanation as to why these data support the request. Upon Ecology's approval of the request, NWP may test at the reduced frequency until such time as the results indicate potential noncompliance with Condition 5.1. If this occurs, NWP must revert to the 336 hour testing frequency for the turbine in potential noncompliance with Condition 5.1 for at least six consecutive months at which time NWP may again request the reduced testing frequency using the same process as above.

- 5.5.2. Within twenty days of the end of each month, pursuant to Condition 5.3, NWP shall determine the tons of CO emissions from each of the turbines for the most recent consecutive twelve months. For this calculation, NWP shall utilize a time-weighted average of the relevant stack test results wherein the results of each source test shall be the presumed emission rate until the next source test.
6. NWP shall verify the accuracy of any portable emissions analyzers used to satisfy the monitoring requirements of this permit no less than once every calendar year.
 - 6.1. NWP shall submit a protocol to Ecology and NWCAA for written approval by Ecology for verifying the accuracy of any portable emissions analyzer.
 - 6.2. NWP shall use the procedure specified in the protocol required by Condition 6.1 to verify the accuracy of any portable emissions analyzer prior to its use in satisfaction of the monitoring requirements of this permit.
 - 6.3. NWP shall keep records of the portable emissions analyzer accuracy verifications on site for not less than five years for Ecology or NWCAA review.
7. NWP shall provide safe access and sampling ports for source testing or compliance determination for the standby generator, the heater/boiler, and each turbine being installed for this project:
 - 7.1. Safe access for the standby generator and the heater/boiler shall consist of scaffolding, a man lift, or other access arrangements acceptable to Ecology.
 - 7.2. Safe access for the Mars 90S turbine shall consist of permanently constructed platforms on the respective stacks with sampling ports that meet the requirements of 40 CFR 60, Appendix A, Method 20.
 - 7.3. Other arrangements may be acceptable if approved by Ecology prior to installation.
8. NWP shall notify Ecology and NWCAA when construction commences on each of the turbines, the generator unit, and the boiler/heater, and when each is placed into service.
9. NWP shall report the monitoring and process data from the Sumas Station to Ecology and NWCAA not less than once each calendar quarter or on another reporting schedule approved by Ecology, and in the format approved by Ecology. The reports shall include, but not necessarily be limited to the following:

- 9.1. For the standby generator: Total hours of operation for the 12 immediately preceding months.
- 9.2. For the Sellers C60 boiler: Total monthly CO emissions.
- 9.3. For each combustion turbine stack:
 - 9.3.1. All exhaust stack CO concentrations since the last report pursuant to measurement under Condition 5.5.1.
 - 9.3.2. The total CO mass emissions for the 12 immediately preceding months.
 - 9.3.3. Report any scheduled portable analyzer tests that were not completed. Include:
 - 9.3.3.1. Reason for not completing the test.
 - 9.3.3.2. Description of corrective actions taken.
 - 9.3.4. Results of any compliance monitoring source tests conducted in accordance with Condition 5.5.1 since the last quarterly report including annual verification of the accuracy of CO concentration portable analyzers (Condition 5.5.1). If reported separately, these results need not be duplicated in the quarterly reporting.
 - 9.3.5. For each occurrence of CO monitored emissions in excess of the concentration limits or mass limits, report the:
 - 9.3.5.1. Time of the occurrence.
 - 9.3.5.2. Magnitude of the emission or process parameters excess.
 - 9.3.5.3. The duration of the excess.
 - 9.3.5.4. The probable cause.
 - 9.3.5.5. Corrective actions taken or planned.
 - 9.3.5.6. Any other agency contacted.
- 9.4. NWP shall maintain Sumas Station monitoring and process records for at least five years.
 - 9.4.1. NWP shall inform Ecology and NWCAA on the location of the monitoring and process records.
 - 9.4.2. NWP shall provide Ecology and NWCAA with the monitoring and process records for any period within the 5-year archive within 10 working days of the request.
 - 9.4.3. The monitoring and process records maintained in the 5-year archive shall include, but not necessarily be limited to the following:
 - 9.4.3.1. Fuel monitoring records.
 - 9.4.3.2. Operating hours records.
10. An Operation and Maintenance (O&M) Equipment Manual for the facility must be developed and maintained.

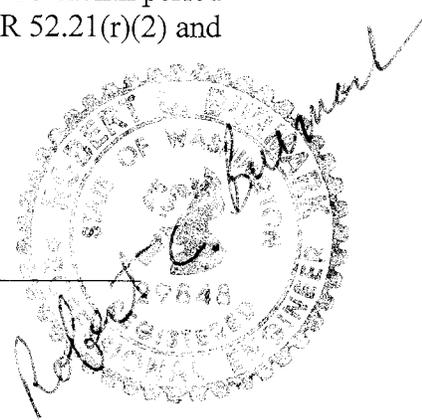
- 10.1. Within 90 days of start-up, NWP shall identify operational procedures for the standby generator, Sellers C60 boiler, and combustion turbines that constitute proper operation relative to compliance with the emission limitation conditions of this permit.
- 10.2. NWP shall include these operational procedures in the Sumas Station O&M Equipment Manual. As a minimum, these shall include:
 - 10.2.1. Manufacturers' operating instructions and design specifications.
 - 10.2.2. Normal operating parameters and design specifications.
 - 10.2.3. Updates to reflect any modifications of the equipment or its operating procedures.
- 10.3. NWP shall keep the Sumas Station O&M Equipment Manual up to date.
- 10.4. NWP shall assure that the Sumas Station O&M Equipment Manual is readily available at the facility for review by state, federal, and local agencies.
11. Nothing in this determination shall be construed so as to relieve NWP of its obligations under any state, local, or federal laws or regulations.
12. NWP shall permit the Environmental Protection Agency, state, and local regulatory personnel access to the source upon request for the purposes of compliance assurance inspections. Failure to allow such access is grounds for an enforcement action.
13. This approval shall become invalid if construction of the project is not commenced within eighteen (18) months after receipt of the final approval, or if construction of the facility is discontinued for a period of eighteen (18) months, unless NWP extends the 18-month period upon satisfactorily showing that an extension is justified pursuant to 40 CFR 52.21(r)(2) and applicable EPA guidance.

Reviewed by:



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10/6/2011
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10/6/11
Date