PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT

Issued To: Agrium U.S., Inc.
Facility Name/Location: Kennewick Fertilizer Operations
227515 E. Bowles Road
Kennewick, WA 99337
Permit Number: PSD 04-01, Amendment 2
Date of Permit Issuance: May 20, 2020
Effective Date of Permit: May 20, 2020

This PSD permit is issued under the authority of the Washington State Clean Air Act, Chapter 70.94 Revised Code of Washington; the Washington State Department of Ecology regulations for the Prevention of Significant Deterioration of Air Quality as set forth in Washington Administrative Code 173-400-700 through 750.

PREPARED BY:
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Science and Engineering Section
Air Quality Program

APPROVED BY:
Rob Dengel
Deputy Air Quality Program Manager
Washington Department of Ecology
A. Project Description

The amendment requested changing the main NOX controls for plant 9 from hydrogen peroxide (H₂O₂) to selective catalytic reduction (SCR) and ammonia injection. In a 2010 letter, Agrium stated, one of the expanders was rated 277,000 tons of acid per year and second expander was rated at less. In 2020, Agrium indicated that the second expander would be changed to 277,000 tons of acid per year. Only one expander is operated at one time. The applicant indicated that they could stay within the current long-term emission limits. This permit amendment also streamlines the existing permit conditions to provide better clarity of the requirements. See more discussion regarding the changes in the technical support document for this amendment.
B. Facility Description

Agrium U.S., Inc. (Agrium) operates a nitrogen-based fertilizer manufacturing facility, the Kennewick Fertilizer Operations (KFO). KFO manufactures nitric acid in Plants 7 and 9. The nitric acid is used, in part, to manufacture nitrate-based liquid and granular fertilizer in Plants 8 and 10. KFO occupies three non-contiguous areas, about 6.5 kilometers (km) southeast of the Richland-Kennewick-Pasco area, each east of and adjacent to the Columbia River:

- Kennewick area, located at the east end of Bowles Road (227515 East Bowles Road).
- Finley area, located at the east end of Game Farm Road (231610 East Game Farm Road).
- Hedges area, located at the east end of Perkins Road (227108 East Hedges Road).

KFO is located within the Wallula PM10 (particulate matter less than 10 microns in aerodynamic diameter) maintenance area (8/26/2005 Re-designation to attainment – 70 FR 50212). This Class II area straddles the Columbia River from just west of Hedges and Finley to just east of Reese and just north of Burbank and Humorist to an east-west line between Wallula Junction and Port Kelley. The area is currently designated in attainment or unclassified for all other national and state air quality standards (NAAQS). KFO is about 25 km from the Washington-Oregon border, about 175 km from the Washington-Idaho border, and 55 km from the Yakama Tribal Nation.
C. Affected Units Description

<table>
<thead>
<tr>
<th>Emission Unit Description</th>
<th>Design Capacity</th>
<th>New/Modified</th>
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</thead>
<tbody>
<tr>
<td>Plant 7</td>
<td>Tons per day of nitric acid</td>
<td>No change</td>
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<tr>
<td></td>
<td>103,053 tons per year (currently not operating)</td>
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<tr>
<td>Plant 8</td>
<td>450 tons per day of CAN-17</td>
<td>No changes</td>
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<td></td>
<td>(164,250 tons per year)</td>
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<tr>
<td>Plant 9</td>
<td>780 tons per day of nitric acid</td>
<td>Control replacement</td>
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<tr>
<td></td>
<td>(277,000 tons per year)</td>
<td></td>
</tr>
<tr>
<td>Plant 10</td>
<td>700 tons per day of ammonium nitrate</td>
<td>No changes</td>
</tr>
<tr>
<td></td>
<td>(255,500 tons per year)</td>
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</table>

Ecology finds that all requirements for amendment of Permit No. PSD-04-01, amendment 2 is satisfied. Approval of the PSD amendment application is granted subject to the following conditions.
Section A. General Conditions

1. Approval to construct or modify

Approval to construct or modify a major stationary source becomes invalid if construction:

a. is not commenced within eighteen months of the effective date of the approval,

b. is discontinued for a period of eighteen months or more, or

c. is not completed within a reasonable time.

The time period between construction of the approved phases of a phased construction project cannot be extended. Each phase must commence construction within eighteen months of the projected and approved commencement date.

The PSD permittee may submit a written request for the extension of PSD permit in accordance to WAC 173-400-730(5)(b).

2. Notification of when construction has commenced and initial start-up

Ecology shall be notified in writing of the date construction has commenced and initial start-up of the new and modified unit(s) authorized under this permit no later than sixty (60) days of such date.

3. Right of entry

Upon presentation of appropriate credentials, for investigating conditions specific to the control, recovery, or release of air contaminants into the atmosphere, personnel from Ecology, or the Title V authority with jurisdiction over the source:

a. must have the power to enter at reasonable times; and

b. to have access to and to copy any records required to be kept under the terms and conditions of this PSD permit; and

c. to inspect any equipment, operation, or method subject to requirements in this PSD permit.

4. Transfer of ownership

In the event of any changes in control or ownership of the facilities to be constructed, this PSD Permit shall be binding on all subsequent owners and operators. Permittee shall notify the succeeding owner and operator of the existence of this PSD Permit and its conditions by letter, a copy of which shall be forwarded to Ecology and the Title V authority with jurisdiction over the source.

5. Facility operation
At all times, including periods of start-up, shutdown, shakedown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate the facility that is subject to this PSD permit, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions.

Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to Ecology or Title V authority with jurisdiction over the source, which may include, but is not limited to, monitoring results, opacity observations, review of operating maintenance procedures and inspection of the facility.

6. Compliance with other laws and regulations

Approval to construct shall not relieve the permittee of the responsibility to comply fully with applicable provisions of the State implementation plan and any other requirements under local, State, or Federal law.

7. Enforcement

Any owner or operator who constructs or operates a source or modification not in accordance with the PSD application submitted or with the terms of any approval to construct, shall be subject to appropriate enforcement action. Ecology or the Title V authority with jurisdiction can conduct enforcement over the source.

8. Relaxation

At such time that a particular source or modification becomes a major stationary source or major modification solely by virtue of a relaxation in any enforceable limitation, on the capacity of the source or modification otherwise to emit a pollutant, such as a restriction on hours of operation, then the requirements in 40 CFR 52.21 paragraphs (j) through (s) shall apply to the source or modification as though construction had not yet commenced on the source or modification.

9. Reasonable possibility circumstances

With respect to any regulated NSR pollutant emitted from the project but not covered by this permit, in circumstances where there is a reasonable possibility, within the meaning of WAC 173-400-720(4)(b)(iii)(D)(vi), may result in a significant emissions increase of such pollutant and the owner or operator elects to use the method specified in paragraphs 40 C.F.R. 52.21 (b)(41)(ii)(a) through (c) for calculating projected actual emissions. The owner or operator shall:

   a. Monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any emissions unit could be affected by the project; and calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular
operations after the change, or for a period of 10 years following resumption of regular operations after the change if the project increases the design capacity of or potential to emit that regulated NSR pollutant at such emissions unit.

b. Submit a report to Ecology within 60 days after the end of each year during which records must be generated under Condition 9.a. setting out the unit's annual emissions during the calendar year that preceded submission of the report.

c. Submit a report to Ecology if the annual emissions, in tons per year, from the project approved by this permit, exceed the baseline actual emissions, by a significant amount (as defined in paragraph 40 C.F.R. 52.21 (b)(23)) for that regulated NSR pollutant, and if such emissions differ from the preconstruction projection. Such report shall be submitted to Ecology within 60 days after the end of such year. The report shall contain the following:

i. The name, address, and telephone number of the major stationary source;

ii. The annual emissions; and

iii. Any other information that the owner or operator wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection).
Section B. Specific Conditions

1. NOX reported as NO2 emissions from Plant 7:

1.1. Agrium shall notify Ecology and BCAA prior to restarting Plant 7.

1.2. Shall not exceed 0.524 lb NOX/Tacid on hourly average excluding start-up and shutdown periods.

1.3. Shall not exceed 140 lb on any calendar day (lb/cal-day) exclusive of start-up and shutdown from 0:00 hr, November 1 through 24:00 hr April 30 in any calendar year.

1.4. Shall not exceed 190 lb/cal-day exclusive of start-up and shutdown from 0:00 hr, May 1 through 24:00 hr October 31 in any calendar year.

1.5. Shall not exceed 27 tons in any consecutive 12-month period including start-up and shutdown periods.

1.6. Start-up shall begin with gauze light-off:

1.6.1. Process flow may bypass the expander, NOX control, and continuous emissions monitoring system (CEMS).

1.6.1.1. For not more than two hours.

1.6.1.2. NOX emissions shall be prorated for determination of annual NOX emissions at a rate of 314 lb NOX/hr during this bypass period.

1.6.2. Ammonia (NH3) feed to the NOX control system shall begin not later than when the NOX control system reaches an operating temperature of 375°F.

1.6.3. Start-up shall be complete not later than two hours after initiating ammonia feed to the NOX control system.

1.7. Shutdown:

1.7.1. Shall begin with cessation of NH3 feed to the NH3 oxidizer.

1.7.2. Shall end when the process compressors are turned off.

1.7.3. Compliance monitoring for Conditions 1.1, thru 1.6 shall begin at the time of initial operation of NOX emissions controls equivalent to BACT.

1.7.3.1. Continuous compliance will be monitored by CEMS that measure and records NOX emissions from Plant 7’s tail gas stack on not less than an hourly average basis.

1.7.3.2. The CEMS shall meet the requirements of Condition 5.
2. NO$_X$ reported as NO$_2$ emissions from Plant 8:

2.1. Shall not exceed 1.1 lb NO$_X$/T$_{CAN-17}$ on a calendar day average basis.

2.2. Only HNO$_3$ from Plant 9 shall be used up to 277,000 tons per year.

2.3. Urea [chemical formula CO(NH$_2$)$_2$] shall be added to the limestone-HNO$_3$ mixing step of the CAN-17 production process at a rate of not less than 37 pounds urea per ton CAN-17 on a calendar day average basis.

2.4. Compliance determination, demonstration, and monitoring:

2.4.1. Compliance for Conditions 2.1 shall be determined in accordance with CFR 40 Part 60.74 (test methods and procedures).

2.4.2. Agrium will submit a test plan to BCAA for approval at least 30 days prior to performance testing.

2.4.3. Not less than once every 60 months, Agrium shall conduct a performance test under the terms of Conditions 2.4.3.1 and 2.4.1.

2.4.3.1. During the performance test, Plant 8 shall run at not less than 80 percent of the CAN-17 production capacity.

2.4.4. Agrium shall monitor compliance with Conditions 2.2 and 2.3 by maintaining appropriate logs and urea use records.

3. NO$_X$ reported as NO$_2$ emissions from Plant 9:

3.1. Shall not exceed 0.35 lb NO$_X$/T$_{acid}$ averaged over all operating hours including start-up and shutdown in any continuous 12-month period.

3.2. Shall not exceed 400 lb per calendar day exclusive of start-up and shutdown.

3.3. Shall not exceed 1,300 lb per 24-hour period including start-up and shutdown.

3.4. Shall not exceed 47 tons in any consecutive 12-month period including start-up and shutdown periods.

3.5. Start-up shall begin with gauze light-off:

3.5.1. Agrium shall develop a start-up and shutdown procedures, review and update at least every five years.

3.5.2. Log all events during start-up.

3.5.3. Agrium shall follow the start-up and shutdown procedures and document any deviation.
3.5.4. Ammonia (NH₃) feed to the NOₓ control system shall begin not later than when the NOₓ control system reaches an operating temperature of 375°F. This will be considered the end of start-up and not to exceed 10 hours (start-up/shutdown combined).

3.5.5. The CEMS for NOₓ will continue operation during start-up.

3.6. SCR monitoring:

The exhaust from plant 7 & 9, shall install, and thereafter maintain and operate, continuous monitoring and recording systems according to 40 CFR 60.13 to measure and record the following operational parameters when operating:

3.6.1. The ammonia injection rate of the ammonia injection system of each SCR system; and

3.6.2. Exhaust gas temperature at the inlet to the SCR reactor.

3.7. Shutdown:

3.7.1. Shall begin with cessation of NH₃ feed to the NH₃ converter.

3.7.2. Shall end when the process compressors are turned off and not to exceed ten hours (start-up/shutdown combined).

3.7.3. The CEMS for NOₓ shall continue operation during shutdown.

3.7.4. Log all events during shutdown.

3.7.5. Agrium shall follow the shutdown procedures and document any deviation.

3.8. Compliance determination, demonstration, and monitoring:

3.8.1. Emissions monitoring:

3.8.1.1. Continuous compliance shall be monitored by a CEMS that measure and records NOₓ emissions from Plant 9’s tail gas stack on not less than an hourly average basis.

3.8.1.2. The CEMS shall meet the requirements of Condition 5.

4. PM emissions from Plant 10:

4.1. Hardening agent equivalent to Galoryl® GR 210-M4 shall be added to the granulator feed at a rate of not less than 75 milliliters per minute averaged over all operating hours on a calendar day basis.

4.2. PM emissions from the ammonium nitrate (NH₄NO₃) granulator exhaust stack shall not exceed 0.011 gr/dscft a 3-hour average basis.
4.3. PM emissions from the fluid bed cooler exhaust stack shall not exceed 0.085 gr/dscft a 3-hour average basis.

4.4. The sum of PM emissions from the NH₄NO₃ granulator and fluid bed cooler exhaust stacks shall not exceed 99.7 tons in any consecutive 12-month period.

4.5. Compliance determination, demonstration, and monitoring: CFR 40 Part 60, Appendix A, Reference Method 5, shall determine Compliance with Conditions 4.2 and 4.3.

4.6. Agrium will monitor compliance with Conditions 4.2 and 4.3:

4.6.1. Not less than once every 60-month period the following emissions testing shall be performed:

4.6.2. For the duration of the performance test, Plant 10 shall be operated at not less than 80 percent of its design capacity.

4.6.3. Compliance will be monitored by:

4.6.3.1. CFR 40 Part 60, Appendix A, Reference Method 5, or

4.6.3.2. An equivalent mass emission rate calculation method may be used if approved in advance by Ecology.

4.6.3.3. Agrium will submit a test plan to BCAA for approval at least 30 days prior to initial performance testing.

4.7. Agrium will monitor continuing compliance with Condition 4.1:

4.7.1. By maintaining daily records of hardening agent use and granular ammonium nitrate production from Plant 10.

4.8. Agrium will monitor continuing compliance with Condition 4.4:

4.8.1. Determine the arithmetic mean of PM emissions on a pound per hour basis from the respective source test results performed within each 60 consecutive month period on the NH₄NO₃ granulator and fluid bed cooler exhaust stacks pursuant to Condition 4.6.

4.8.2. Multiply the sum of the values determined pursuant to Condition 4.8.2 by the number of Plant 10 operating hours over the most recent 12 consecutive months.

4.8.3. An equivalent mass emission rate calculation method may be used if approved in advance by Ecology.

5. Continuous Emission Monitoring Systems: CEMS for NOₓ shall meet 40 CFR 60.73a

6. Agrium shall notify and report to Ecology and BCAA as follows:
6.1. Notifications and reports shall be in a written or electronic format approved by Ecology and BCAA.

6.2. The following notifications shall be submitted to Ecology and BCAA:

6.2.1. Begin actual construction of selective catalytic reduction (SCR): In accordance with CFR 40 Part 60.7(a)(1), no later than 30 calendar days after such date.

6.2.2. Beginning operation of SCR: In accordance with CFR 40 Part 60.7(a)(3), no later than 15 calendar days after such date.

6.2.3. Completion of the entry into the operation and maintenance manual of the items specified in Condition 7, within 15 days after such entries were completed.

6.3. The following reports shall be submitted to BCAA:

6.3.1. Continuing performance monitoring reports required under Condition 6.3.2 shall be submitted for each 6-month period ending in June and December:

6.3.1.1. Postmarked no later than one calendar month after the close of each respective 6-month period (Title V).

6.3.1.2. In accordance with BCAA, report format requirements.

6.3.1.3. Another reporting schedule may be used if approved by BCAA.

6.3.2. Continuing performance monitoring reports shall include, but not necessarily be limited to the following:

6.3.2.1. Certification by the responsible party for the facility that the relevant equipment was operated and maintained in accordance with the operational parameters and practices developed pursuant to Condition 7.

6.3.2.2. Pursuant to compliance under Conditions 1.1 through 1.5, 2.1, 3.1, 3.2, and 3.4, NOx emissions since the last report.

6.3.2.3. Pursuant to compliance under Condition 2.2, certification from the

6.3.2.4. Responsible party for the facility that only HNO3 from Plant 9 was used to produce CAN-17 in Plant 8 since the last report.

6.3.2.5. Pursuant to compliance under Condition 2.3, urea use in Plant 8 since the last report.

6.3.2.6. Pursuant to compliance under Condition 4.1, hardening agent use in Plant 10 since the last report.

6.3.2.7. Pursuant to compliance under Conditions 4.2 and 4.3, results of any source tests for PM since the last report.
6.3.2.8. The duration and nature of any CEMS downtime excluding zero and span checks since the last report.

6.3.2.9. Results of any CEMS audits or accuracy checks since the last report.

6.3.3. Each occurrence of monitored NOx emissions (Conditions 1.1 through 1.5, 2.1, 3.1, 3.2, 3.4, and monitored PM emissions (Conditions 4.2, 4.3, and 4.4), measured in excess of the limits, failure to comply with HNO3 source limitations for Plant 8 (Condition 2.2), failure to use the required amount of urea in CAN-17 production (Condition 2.3) or failure to use the required amount of hardening agent in granulated NH4NO3 production (Condition 4.1) shall be reported in writing to BCAA. Such reports shall as a minimum include:

6.3.3.1. The time of the occurrence.

6.3.3.2. Magnitude of divergence from the limit.

6.3.3.3. The duration of the divergence.

6.3.3.4. The probable cause.

6.3.3.5. Corrective actions taken or planned.

6.3.3.6. Any other agency contacted.

6.3.4. Agrium shall report all start-up and shutdown since the last report and any deviation from the procedures as per WAC 173-400-109.

6.4. Agrium shall maintain monitoring, source test, CEM audit tests, and process records:

6.4.1. At the Kennewick facility.

6.4.2. For at least five years.

6.4.3. Agrium shall provide BCAA with the monitoring and process records for any period within the five year archive within 10 working days of request.

7. Operation and maintenance (O&M) manual for the facility:

7.1. Within 90 days of the final and effective date of this permit, Agrium shall identify operational parameters and practices for Plants 7, 8, 9, and 10 that constitute proper operation relative to compliance with the emission limitation conditions of this permit.

7.2. Agrium shall include these operational parameters and practices in the KFO O&M manual. As a minimum, and to the extent they relate to the emission limitations and operating requirements specified in the conditions of this PSD permit, these shall include:

7.2.1. Manufacturers’ operating instructions and design specifications.
7.2.2. Normal operating parameters.

7.2.3. Updates to reflect any modifications of the equipment or its operating procedures.

7.3. Agrium shall keep the operational parameters and practices in the O&M manual up to date to the extent that they relate to the emission limitations and operating requirements specified in the conditions of this PSD permit.

7.4. Agrium shall keep the O&M manual readily available at KFO for review by state, federal, and local agencies.

7.5. Within 30 days of request from Ecology or BCAA, Agrium shall submit the O&M manual to the requesting agency for approval of any elements relevant to the emission limitations specified in the conditions of this PSD permit.

8. This permit cancels and supersedes PSD No. 04-01, Amendment 1.
# Section C. Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Agrium</td>
<td>Agrium U.S., Inc.</td>
</tr>
<tr>
<td>BACT</td>
<td>Best Available Control Technology</td>
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<td>BCAA</td>
<td>Benton Clean Air Agency</td>
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<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
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<tr>
<td>CEMS</td>
<td>Continuous Emissions Monitoring System</td>
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<tr>
<td>CO</td>
<td>carbon monoxide</td>
</tr>
<tr>
<td>Ecology</td>
<td>Washington Department of Ecology</td>
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<td>United States Environmental Protection Agency</td>
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<td>gal</td>
<td>gallon(s)</td>
</tr>
<tr>
<td>Gr/dscf</td>
<td>grains/dry standard cubic feet</td>
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<tr>
<td>HNO₃</td>
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<td>Kennewick Fertilizer Operations</td>
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<td>NAAQS</td>
<td>National Ambient Air Quality Standard</td>
</tr>
<tr>
<td>NH₃</td>
<td>ammonia</td>
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<td>NH₄NO₃</td>
<td>ammonium nitrate</td>
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<tr>
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<td>nitrogen oxides</td>
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<tr>
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<td>New Source Review</td>
</tr>
<tr>
<td>O&amp;M</td>
<td>Operations and Maintenance</td>
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</table>
PM  particulate matter

PM$_{10}$  particulate matter less than 10 micrometers in diameter

PM$_{2.5}$  particulate matter less than 2.5 micrometers in diameter

ppm  parts per million

ppmv  parts per million by volume

ppmvd  parts per million by volume on a dry basis

PSD  Prevention of Significant Deterioration of Air Quality

SCR  selective catalytic reduction

tpy  tons per year

WAC  Washington Administrative Code