



**TECHNICAL SUPPORT DOCUMENT**

**APPLIED PLANT SCIENCE  
SWCAA ID: 2509**

**Air Discharge Permit 18-3264**

**Air Discharge Permit Application CO-980**

**Issued: February 7, 2018**

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## **Abbreviations**

ADP	Air Discharge Permit
AP-42	<u>Compilation of Emission Factors, AP-42, Fifth Edition, Volume 1, Stationary Point and Area Sources</u> – published by the US Environmental Protection Agency
BACT	Best Available Control Technology
BART	Best Available Retrofit Technology
Btu	British thermal unit
Btu/scf	British thermal units per standard cubic feet
CFR	Code of Federal Regulations
CO	Carbon monoxide
CO <sub>2</sub> e	Carbon dioxide equivalent as defined in 40 CFR 98
EPA	U.S. Environmental Protection Agency
HAP	Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act
hp	Horsepower
LAER	Lowest Achievable Emission Rate
lb/hp/hr	Pounds per horsepower hour
lb/hr	Pounds per hour
lb/MMBtu	Pounds per million British thermal units
lb/MMscf	Pounds per million standard cubic feet
lb/yr	Pounds per year
MMBtu/hr	Millions of British thermal units per hour
MMscf	Millions of standard cubic feet
NO <sub>x</sub>	Nitrogen oxides
PM	Particulate matter with an aerodynamic diameter less than 100 micrometers (includes both filterable particulate matter measured by EPA Method 5 and condensable particulate matter measured by EPA Method 202)
PM <sub>10</sub>	Particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (includes both filterable particulate matter measured by EPA Method 201 or 201A and condensable particulate matter measured by EPA Method 202)
PM <sub>2.5</sub>	Particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers (includes both filterable particulate matter measured by EPA Method 201 or 201A and condensable particulate matter measured by EPA Method 202)
ppmvd @ X	Parts per million, dry volume basis, corrected to X% O <sub>2</sub>
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RACT	Reasonably Available Control Technology
RCW	Revised Code of Washington
SQER	Small Quantity Emission Rate listed in WAC 173-460
SO <sub>2</sub>	Sulfur dioxide
SWCAA	Southwest Clean Air Agency
TAP	Toxic air pollutant pursuant to Chapter 173-460 WAC
T-BACT	Best Available Control Technology for toxic air pollutants
tpy	Tons per year
VOC	Volatile organic compound
WAC	Washington Administrative Code

## 1. FACILITY IDENTIFICATION

Applicant Name: Applied Plant Science, Inc.  
Applicant Address: 1625 Heritage Street, Woodland, WA 98674

Facility Name: Applied Plant Science  
Facility Address: 1625 Heritage Street, Woodland, WA 98674  
Contact Person: Joe Shoulders  
SWCAA Identification: 2509

Primary Process: Fertilizer manufacturing (mixing only)  
SIC / NAICS: 2875 / 325314  
Facility Classifications: BACT / Minor Source

## 2. FACILITY DESCRIPTION

This facility blends dry and liquid fertilizer ingredients into proprietary liquid and dry formulations. All fertilizer blending activities are fully enclosed within the building envelope.

## 3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit Application number CO-980 (ADP Application CO-980) received by SWCAA on July 13, 2017. ADP Application CO-980 requests approval to install two new 6.0 MMBtu/hr boilers and one 1.74 MMBtu/hr wastewater evaporator. In addition, existing tankless hot water heaters and facility heating equipment will be addressed in this permitting action.

## 4. PROCESS DESCRIPTION

Hot water is used when making liquid solutions from dry ingredients. In the past hot water for this process had been supplied solely with the six existing natural-gas fired tankless hot water heaters. An increase in production necessitated installation of two identical 6.0 MMBtu/hr Camus boilers. Blending and material handling all occurs within the building envelope and not adjacent open doors or windows. In addition, the facility takes precautions to assure that no fertilizer ingredients can end up in stormwater, therefore fugitive emissions are expected to be negligible.

Wastewater generated in the process area cannot be discharged to the local wastewater system because it could contain dye, therefore the facility proposes to install a 1.74 MMBtu/hr wastewater evaporator.

Natural gas fired heaters are used to heat the facility as necessary and provide freeze protection in the process areas.

## 5. EQUIPMENT/ACTIVITY IDENTIFICATION

5.a Camus Boiler #1. Two identical Camus boilers are used to provide hot water for mixing solutions from dry ingredients. The following details were available.

Make / Model: Camus / DFNH-6014-MHO  
Serial Number: 011724023  
Year Built: 2017  
Heat Input Capacity: 6.000 MMBtu/hr  
Fuel: Natural Gas  
Burner Description: Knitted stainless steel pre-mix burner

Stack Description: ~6" vent capped within ~12" "stack-in-stack" design exhausting vertically ~12' above ground level and 3' above the roof of the building housing the boilers. ~ 45°55'13.59"N, 122°45'52.26"W on west side of the process building.

5.b Camus Boiler #2. Two identical Camus boilers are used to provide hot water for mixing solutions from dry ingredients. The following details were available.

Make / Model: Camus / DFNH-6014-MHO  
Serial Number: 011724024  
Year Built: 2017  
Heat Input Capacity: 6,000 MMBtu/hr  
Fuel: Natural Gas  
Burner Description: Knitted stainless steel pre-mix burner  
Stack Description: ~6" vent capped within ~12" "stack-in-stack" design exhausting vertically ~12' above ground level and 3' above the roof of the building housing the boilers. ~ 45°55'13.59"N, 122°45'52.26"W on west side of the process building.

5.c Wastewater Evaporator. The wastewater evaporator is used to evaporate wastewater from the process area that cannot be sent to the wastewater system due to the presence of dye. The evaporator utilizes two demister pads on the evaporator discharge to prevent solids carryover into the exhaust. The evaporator operates cyclically with wastewater filling continuing until the wastewater level reaches the high-level probe. Wastewater is added again when the wastewater level falls to the low-level probe. The unit is not run dry. The following details were available:

Specifications:

Make / Model: Encon / N66V-165  
Rated Capacity: 165 gallons per hour evaporation rate, 1.74 MMBtu/hr heat input  
Burner Make / Model: (2) Eclipse / TA0100 (ThermAir)  
Burner Capacity: Each of the two burners has a heat input capacity of 1.141 MMBtu/hr (Eclipse advertises a range of 0.835 – 1.141 MMBtu/hr depending on blower size and chamber pressure)  
Manufactured: 2016  
Stack Description: ~18" diameter stack exhausting ~25' above grade and 3' above the building roof near the northwest corner of the building.

5.d Tankless Water Heaters. Six tankless water heaters can be used for the same purpose as the Camus Boilers (to provide hot water for mixing solutions from dry ingredients). Their use has been largely supplanted by the Camus Boilers. The units are advertised as achieving the SCAQMD Rule 1146.2 NO<sub>x</sub> standard (55 ppmvd @ 3% O<sub>2</sub>) that was effective January 1, 2000 to January 1, 2012. The following additional details were available:

Specifications:

Make / Model: (4) Noritz model NC380-SV, (2) Noritz model N-132M  
Heat Input Capacity: 0.380 MMBtu/hr each  
Manufactured: Unknown, however one serial number starts with "2006" – could be year of manufacture  
Stack Description: Exhausting through separate stacks through the roof on the north side of the building, ~25' above grade and 3' above the building roof. Three stacks at ~ 45°55'15.96"N, 122°45'50.92" and three stacks at ~ 45°55'15.82"N, 122°45'49.83"W.

5.e Space Heaters. Approximately 20 natural gas fired heaters are used to heat the facility as necessary and provide freeze protection in the process areas. The 12 forced air units have a combined heat input capacity of approximately 1.6 MMBtu/hr. SWCAA assumed the 8 radiant units have a combined heat input capacity of 0.4 MMBtu/hr (50,000 Btu/hr each).

5.f Equipment/Activity Summary.

<b>ID No.</b>	<b>Generating Equipment/Activity</b>	<b># of Units</b>	<b>Control Measure/Equipment</b>	<b># of Units</b>
1	Camus Boiler #1 (6.0 MMBtu/hr)	1	Low emission burners, Low sulfur fuel (natural gas)	1
2	Camus Boiler #2 (6.0 MMBtu/hr)	1	Low emission burners, Low sulfur fuel (natural gas)	1
3	Wastewater Evaporator (Encon, 1.74 MMBtu/hr)	1	Low emission burners, Low sulfur fuel (natural gas)	N/A
4	Tankless Water Heaters (0.380 MMBtu/hr each)	6	Ultra-low sulfur diesel fuel	N/A
5	Space Heaters	~20	Low sulfur fuel (natural gas)	N/A

## 6. EMISSIONS DETERMINATION

- 6.a Camus Boilers #1 and #2. Potential annual emissions (PTE) from the combustion of natural gas by these boilers were calculated with the assumption that the boilers will operate at full rated capacity for 8,760 hours per year. The boiler and burner system is designed to achieve a NO<sub>x</sub> emission concentration of 9 ppmvd @ 3% O<sub>2</sub>, however to provide a margin for compliance and for tuning to minimize products of incomplete combustion (e.g. CO), the permit limits NO<sub>x</sub> emissions to 12 ppmvd @ 3% O<sub>2</sub>.

<b>Camus Boilers #1 and #2 (each)</b>						
Heat Input Rating =	6.00 MMBtu/hr					
Natural Gas Heat Content =	1,020 Btu/scf					
Process Gas Firing Rate =	5,882 scfh					
Process Gas Consumption =	51.53 MMscf/yr					
Pollutant	Emissions lb/MMscf	Emissions lb/MMBtu	Emissions lb/hr	Emissions tpy	Emission Factor Source	
NO <sub>x</sub>	15	0.015	0.087	0.38	12 ppmvd @ 3% O <sub>2</sub>	
CO	38	0.037	0.222	0.97	50 ppmvd @ 3% O <sub>2</sub>	
VOC	5.5	0.005	0.0324	0.1417	AP-42 Section 1.4 (07/98)	
SO <sub>x</sub> as SO <sub>2</sub>	0.6	0.001	0.0035	0.0155	AP-42 Section 1.4 (07/98)	
PM	7.6	0.007	0.0447	0.1958	AP-42 Section 1.4 (07/98)	
PM <sub>10</sub>	7.6	0.007	0.0447	0.1958	AP-42 Section 1.4 (07/98)	
PM <sub>2.5</sub>	7.6	0.007	0.0447	0.1958	AP-42 Section 1.4 (07/98)	
Benzene	0.0021	2.1E-06	1.2E-05	5.4E-05	AP-42 Section 1.4 (07/98)	
Formaldehyde	0.075	7.4E-05	4.4E-04	1.9E-03	AP-42 Section 1.4 (07/98)	
Greenhouse Gases	kg/MMBtu	GWP	CO <sub>2</sub> e lb/MMBtu	CO <sub>2</sub> e lb/MMscf	CO <sub>2</sub> e tpy	Emission Factor Source
CO <sub>2</sub>	53.06	1	116.98	119,317	3,074	40 CFR 98
CH <sub>4</sub>	0.001	25	0.055	56	1.4	40 CFR 98
N <sub>2</sub> O	0.0001	298	0.066	67	1.7	40 CFR 98
<b>Total GHG - CO<sub>2</sub>e</b>	<b>53.0611</b>		<b>117.098</b>	<b>119,440</b>	<b>3,077</b>	

In the future, emissions must be calculated using the emission factors identified above unless new emission factors are developed through source testing.

6.b Wastewater Evaporator. Potential annual emissions (PTE) from the combustion of natural gas were calculated with the assumption that the boilers will operate at full rated capacity for 8,760 hours per year. Based on a review of the types of materials that could be present in the wastewater, no significant emissions are expected from evaporation of the wastewater itself.

<b>Wastewater Evaporator</b>						
Heat Input Rating =	1.74 MMBtu/hr					
Natural Gas Heat Content =	1,020 Btu/scf					
Process Gas Firing Rate =	1,706 scfh					
Process Gas Consumption =	14.94 MMscf/yr					
Pollutant	Emissions lb/MMscf	Emissions lb/MMBtu	Emissions lb/hr	Emissions tpy	Emission Factor Source	
NO <sub>x</sub>	124	0.121	0.21	0.93	AP-42 Section 1.4 (07/98)	
CO	75	0.074	0.13	0.56	AP-42 Section 1.4 (07/98)	
VOC	5.5	0.0054	0.0094	0.0411	AP-42 Section 1.4 (07/98)	
SO <sub>x</sub> as SO <sub>2</sub>	0.6	0.0006	0.0010	0.0045	AP-42 Section 1.4 (07/98)	
PM	7.6	0.0075	0.0130	0.0568	AP-42 Section 1.4 (07/98)	
PM <sub>10</sub>	7.6	0.0075	0.0130	0.0568	AP-42 Section 1.4 (07/98)	
PM <sub>2.5</sub>	7.6	0.0075	0.0130	0.0568	AP-42 Section 1.4 (07/98)	
Benzene	0.0021	2.1E-06	3.6E-06	1.6E-05	AP-42 Section 1.4 (07/98)	
Formaldehyde	0.075	7.4E-05	1.3E-04	5.6E-04	AP-42 Section 1.4 (07/98)	
Greenhouse Gases	kg/MMBtu	GWP	CO <sub>2</sub> e lb/MMBtu	CO <sub>2</sub> e lb/MMscf	CO <sub>2</sub> e tpy	Emission Factor Source
CO <sub>2</sub>	53.06	1	116.98	119,317	892	40 CFR 98
CH <sub>4</sub>	0.001	25	0.055	56	0.4	40 CFR 98
N <sub>2</sub> O	0.0001	298	0.066	67	0.5	40 CFR 98
<b>Total GHG - CO<sub>2</sub>e</b>	<b>53.0611</b>		<b>117.098</b>	<b>119,440</b>	<b>892</b>	

In the future, emissions must be calculated using the emission factors identified above unless new emission factors are developed through source testing.



6.c Tankless Water Heaters. Potential annual emissions (PTE) from the combustion of natural gas by these units were calculated with the assumption that the units will operate at full rated capacity for 8,760 hours per year.

<b>Tankless Water Heaters (all 6 water heaters combined)</b>						
Heat Input Rating =	2.28 MMBtu/hr					
Natural Gas Heat Content =	1,020 Btu/scf					
Process Gas Firing Rate =	2,235 scfh					
Process Gas Consumption =	19.58 MMscf/yr					
Pollutant	Emissions lb/MMscf	Emissions lb/MMBtu	Emissions lb/hr	Emissions tpy	Emission Factor Source	
NO <sub>x</sub>	68	0.067	0.152	0.67	SCAQMD Rule 1146.2	
CO	84	0.0824	0.188	0.82	AP-42 Section 1.4 (07/98)	
VOC	5.5	0.0054	0.0123	0.0538	AP-42 Section 1.4 (07/98)	
SO <sub>x</sub> as SO <sub>2</sub>	0.6	0.0006	0.0013	0.0059	AP-42 Section 1.4 (07/98)	
PM	7.6	0.0075	0.0170	0.0744	AP-42 Section 1.4 (07/98)	
PM <sub>10</sub>	7.6	0.0075	0.0170	0.0744	AP-42 Section 1.4 (07/98)	
PM <sub>2.5</sub>	7.6	0.0075	0.0170	0.0744	AP-42 Section 1.4 (07/98)	
Benzene	0.0021	2.1E-06	4.7E-06	2.1E-05	AP-42 Section 1.4 (07/98)	
Formaldehyde	0.075	7.4E-05	1.7E-04	7.3E-04	AP-42 Section 1.4 (07/98)	
Greenhouse Gases	kg/MMBtu	GWP	CO <sub>2</sub> e lb/MMBtu	CO <sub>2</sub> e lb/MMscf	CO <sub>2</sub> e tpy	Emission Factor Source
CO <sub>2</sub>	53.06	1	116.98	119,317	1,168	40 CFR 98
CH <sub>4</sub>	0.001	25	0.055	56	0.6	40 CFR 98
N <sub>2</sub> O	0.0001	298	0.066	67	0.7	40 CFR 98
<b>Total GHG - CO<sub>2</sub>e</b>	<b>53.0611</b>		<b>117.098</b>	<b>119,440</b>	<b>1,169</b>	

In the future, emissions must be calculated using the emission factors identified above unless new emission factors are developed through source testing.

6.d Space Heaters. Potential annual emissions (PTE) from the combustion of natural gas by these units were calculated with the assumption that the units will operate at full rated capacity for 8,760 hours per year.

<b>Space Heaters (represents combined potential of ~20 units)</b>						
Heat Input Rating =	2.00 MMBtu/hr					
Natural Gas Heat Content =	1,020 Btu/scf					
Process Gas Firing Rate =	1,961 scfh					
Process Gas Consumption =	17.18 MMscf/yr					
Pollutant	Emissions lb/MMscf	Emissions lb/MMBtu	Emissions lb/hr	Emissions tpy	Emission Factor Source	
NO <sub>x</sub>	100	0.0980	0.196	0.86	AP-42 Section 1.4 (07/98)	
CO	84	0.0824	0.165	0.72	AP-42 Section 1.4 (07/98)	
VOC	5.5	0.0054	0.0108	0.0472	AP-42 Section 1.4 (07/98)	
SO <sub>x</sub> as SO <sub>2</sub>	0.6	0.0006	0.0012	0.0052	AP-42 Section 1.4 (07/98)	
PM	7.6	0.0075	0.0149	0.0653	AP-42 Section 1.4 (07/98)	
PM <sub>10</sub>	7.6	0.0075	0.0149	0.0653	AP-42 Section 1.4 (07/98)	
PM <sub>2.5</sub>	7.6	0.0075	0.0149	0.0653	AP-42 Section 1.4 (07/98)	
Benzene	0.0021	2.1E-06	4.1E-06	1.8E-05	AP-42 Section 1.4 (07/98)	
Formaldehyde	0.075	7.4E-05	1.5E-04	6.4E-04	AP-42 Section 1.4 (07/98)	
Greenhouse Gases	kg/MMBtu	GWP	CO <sub>2</sub> e lb/MMBtu	CO <sub>2</sub> e lb/MMscf	CO <sub>2</sub> e tpy	Emission Factor Source
CO <sub>2</sub>	53.06	1	116.98	119,317	1,025	40 CFR 98
CH <sub>4</sub>	0.001	25	0.055	56	0.5	40 CFR 98
N <sub>2</sub> O	0.0001	298	0.066	67	0.6	40 CFR 98
<b>Total GHG - CO<sub>2</sub>e</b>	<b>53.0611</b>		<b>117.098</b>	<b>119,440</b>	<b>1,026</b>	

In the future, emissions must be calculated using the emission factors identified above unless new emission factors are developed through source testing.

6.e Facilitywide Potential Emissions (PTE) Summary.

Pollutant	Potential Annual Emissions (tons per year)
Nitrogen oxides	3.22
Carbon monoxide	4.05
Volatile organic compounds	0.43
Sulfur oxides as sulfur dioxide	0.05
Particulate matter	0.59
PM <sub>10</sub>	0.59
PM <sub>2.5</sub>	0.59
Toxic Air Pollutants	0.0060
Hazardous Air Pollutants	0.0060
CO <sub>2</sub> e	9,242

## 7. REGULATIONS AND EMISSION STANDARDS

Regulations have been established for the control of emissions of air pollutants to the ambient air. Regulations applicable to the proposed facility that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the following regulations, codes, or requirements. These items establish maximum emissions limits that could be allowed and are not to be exceeded for new or existing facilities. More stringent limits are established in this Permit consistent with implementation of Best Available Control Technology (BACT):

- 7.a Revised Code of Washington (RCW) 70.94.141 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act [RCW 70.94] and enforce the same by all appropriate administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 ex. sess.
- 7.b RCW 70.94.152 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an Air Discharge Permit for installation and establishment of an air contaminant source.
- 7.c Washington Administrative Code (WAC) 173-460 "Controls for New Sources of Toxic Air Pollutants" (as in effect February 14, 1994) requires Best Available Control Technology for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants and demonstration of protection of human health and safety.
- 7.d WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM<sub>10</sub>, PM<sub>2.5</sub>, lead, sulfur dioxide, nitrogen dioxide, ozone, and carbon monoxide in the ambient air, which shall not be exceeded.
- 7.e SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, sulfur dioxide, concealment and masking, and fugitive dust.
- 7.f SWCAA 400-040(1) "Visible Emissions" requires that no emission of an air contaminant from any emissions unit shall exceed twenty percent opacity for more than three minutes in any one hour at the emission point, or within a reasonable distance of the emission point.
- 7.g SWCAA 400-040(2) "Fallout" requires that no emission of particulate matter from any source shall be deposited beyond the property under direct control of the owner(s) or operator(s) of the source in sufficient quantity to interfere unreasonably with the use and enjoyment of the property upon which the material is deposited.
- 7.h SWCAA 400-040(3) "Fugitive Emissions" requires that reasonable precautions be taken to prevent the fugitive release of air contaminants to the atmosphere.
- 7.i SWCAA 400-040(4) "Odors" requires that any person who shall cause or allow the generation of any odor from any source, which may unreasonably interfere with any other property owner's use and enjoyment of their property use recognized good practices and procedures to reduce these odors to a reasonable minimum.
- 7.j SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met and that no person shall cause or permit the emission of particulate matter from any combustion or incineration unit in excess of 0.23 grams per dry cubic meter (0.1 grains per dry standard cubic foot) of exhaust gas at standard conditions.

- 7.k SWCAA 400-110 "New Source Review" requires that an Air Discharge Permit Application be filed with SWCAA, and an Air Discharge Permit be issued by SWCAA, prior to establishment of the new source, emission unit, or modification.
- 7.l SWCAA 400-113 "Requirements for New Sources in Attainment or Nonclassifiable Areas" requires that no approval to construct or alter an air contaminant source shall be granted unless it is evidenced that:
- (1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
  - (2) Best Available Control Technology will be employed for all air contaminants to be emitted by the proposed equipment;
  - (3) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
  - (4) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

The facility is located in an area that is in attainment or nonclassifiable for each criteria air pollutant, therefore this regulation is applicable to this facility.

## 8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate Best Available Control Technology (BACT) for the types and amounts of air contaminants emitted by the processes as described below:

### New BACT Determinations

- 8.a BACT Determination – Camus Boilers. These boilers use natural gas in a pre-mixed fiber mesh burner designed to achieve nitrogen oxides (NO<sub>x</sub>) emissions at or below 9 ppmvd @ 3% O<sub>2</sub>. SWCAA believes that limiting NO<sub>x</sub> emissions to 12 ppmvd @ 3% O<sub>2</sub> and carbon monoxide (CO) emissions to 50 ppmvd @ 3% O<sub>2</sub> combined with periodic performance monitoring meets the requirements of BACT for the two Camus boilers. While CO emissions levels are not guaranteed by the manufacturer, SWCAA believes these units are capable of maintaining emissions below 50 ppmvd @ 3% O<sub>2</sub> based on the initial source emissions testing results from November 2017, testing results from similar burners, the manufacturer's suggested setup CO levels of less than 100 ppm, and the fact that SWCAA is setting the NO<sub>x</sub> limit at a level slightly higher than the manufacturer's advertised capability. SWCAA believes it is appropriate to set the NO<sub>x</sub> limit at 12 ppmvd @ 3% O<sub>2</sub> to allow for greater ability to tune for minimum production of carbon monoxide and related products of incomplete combustion and to allow a reasonable margin for compliance.
- 8.b BACT Determination – Wastewater Evaporator. The use of a larger unit (but capable of lower emissions) in place of the proposed unit with standard burners reduces NO<sub>x</sub> and CO emissions from approximately 100 ppmvd @ 3% O<sub>2</sub> and 100 ppmvd @ 3% O<sub>2</sub> respectively to approximately 30 ppmvd @ 3% O<sub>2</sub> and 50 ppmvd @ 3% O<sub>2</sub> respectively. The larger unit referenced in this example (a Lakeview XLT) costs approximately \$120,000 more. Assuming that the larger unit used in this analysis was suitable for this application and was used to evaporate the same amount of wastewater at the same efficiency, this would prevent up to 0.47 tons per year of NO<sub>x</sub> and 0.35 tons per year of CO assuming 100% capacity utilization of the proposed unit. Using a 7% cost of capital and a 20 year equipment life, this would result in a NO<sub>x</sub> cost-effectiveness of ~\$17,000 per ton and a combined NO<sub>x</sub> and CO cost-effectiveness of ~\$12,000 per ton. The applicant was unable to find other low-emission units that might be applicable to this application. Based on this analysis, use of the proposed natural-gas fired Encon wastewater evaporator with standard burners meets the requirements of BACT with emission limits for NO<sub>x</sub> and CO based on 100 ppmvd @ 3% O<sub>2</sub> for each pollutant.
- 8.c Prevention of Significant Deterioration (PSD) Applicability Determination. This permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.

- 8.d Compliance Assurance Monitoring (CAM) Applicability Determination. CAM is not applicable to any emission unit at this facility because it is not a major source and is not required to obtain a Part 70 permit.

## 9. AMBIENT IMPACT ANALYSIS

Incremental increases in toxic air pollutant emissions will not exceed the applicable Small Quantity Emission Rates (SQER) listed in WAC 173-460 (in effect February 14, 1994); therefore, toxic impacts are presumed to be below regulatory significance. Potential emissions of criteria air pollutants (nitrogen oxides, carbon monoxide, sulfur dioxide, PM<sub>10</sub>) and volatile organic compounds are all at or below 4.1 tons per year each from the facility from all sources combined. At these emission rates, no adverse ambient air quality impact is anticipated.

### Conclusions

- 9.a Operation of the fertilizer manufacturing facility as proposed in ADP Application CO-980 will not cause the ambient air quality standards established by Title 40 Code of Federal Regulations Part 50 (40 CFR 50), "National Primary and Secondary Ambient Air Quality Standards" to be violated.
- 9.b The proposed equipment at the fertilizer manufacturing facility, if properly installed and maintained, can be operated without causing a violation of the applicable emission standards, which include the limits established under SWCAA 400-040 "General Standards for Maximum Emissions."
- 9.c Operation of the fertilizer manufacturing facility as proposed in ADP Application CO-980 will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants," (in effect February 14, 1994) or WAC 173-476 "Ambient Air Quality Standards" to be violated.

## 10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue Air Discharge Permit 18-3264 in response to ADP Application CO-980. Air Discharge Permit 18-3264 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

- 10.a General Basis. Approval conditions for equipment affected by this permitting action incorporate the operating schemes proposed by the permittee in the Air Discharge Permit application.
- 10.b Emission Limits. See Section 8 for a discussion of short term limits for the Camus boilers and the Wastewater Evaporator. Annual emission limits for the Camus boilers and the Wastewater Evaporator were based on the assumption that the units could be operated for 8,760 hours per year at full capacity at the permitted emission concentrations.
- 10.c Operating Limits and Requirements. To minimize the impact of emissions on ambient air quality, the discharges from the Camus boilers and the Wastewater Evaporator are required to be exhausted vertically above the level of the roof in which the units are housed. Any device that obstructs or prevents vertical discharge (such as a traditional rain cap) is prohibited. This is good engineering practice and is required by SWCAA 400-200(1).
- 10.d Monitoring and Recordkeeping. Sufficient monitoring and recordkeeping was established to document compliance with the annual emission limits and provide for general requirements (e.g. upset reporting, annual emission inventory submission).

Monthly fuel consumption records may consist of monthly billing summaries from the natural gas supplier.

- 10.e Emission Monitoring and Testing Requirements. See Section 12.

- 10.f Reporting. Specific reporting deadlines were established for each reporting requirement. The submittal date refers to the earlier of the date the report is delivered to SWCAA or the postmarked date if sent through the US Post Office.

Upset conditions with the potential to cause excess emissions must be reported immediately in order to qualify for relief from penalty in accordance with SWCAA 400-107 for unavoidable exceedances. In addition, prompt reporting allows for prompt and accurate investigation into the cause of the event and the prevention of similar future incidents.

The permit requires reporting of the annual air emissions inventory, and reporting of the data necessary to develop the emission inventory. The total amount of natural gas consumed by Camus Boiler #1, Camus Boiler #2, the Wastewater Evaporator and the Tankless Water Heaters (all 6 tankless heaters combined) must be detailed separately because all of these units can utilize different emission factors. Because it is not expected that individual units will be equipped with fuel meters and emissions from individual units are relatively minor, fuel use may be apportioned between individual units using operating records instead. Some amount of individual judgment will necessarily be involved in how the operating records are used for this purpose.

## **11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION**

- 11.a Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology based emission standards and control technology determinations shall take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA shall include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

The permittee did not identify any startup and shutdown periods during which the proposed equipment is not capable of achieving continuous compliance with any applicable emission standard or approval condition. Therefore, specific startup and shutdown provisions were not included in the permit.

- 11.b Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were accommodated by the approval conditions.

- 11.c Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures were identified by either the permittee or SWCAA separate or in addition to those measures required under BACT considerations. Therefore, none were included in the permit requirements.

## **12. EMISSION MONITORING AND TESTING**

Performance monitoring of Camus Boiler #1, Camus Boiler #2, and the Wastewater Evaporator with a combustion analyzer or equivalent is required at least annually. In SWCAA's experience this monitoring is relatively inexpensive compared to the quantity of emissions that can be prevented by this procedure. It is unlikely that emissions will degrade rapidly enough that more frequent monitoring is necessary to maintain proper operation. In addition, more comprehensive source emissions testing of Camus Boiler #1 and Camus Boiler #2 is required initially and by the end of November every 5 years following the initial source test. SWCAA believes that this testing regime provided a reasonable assurance of on-going compliance with the permitted emission limits.

### **13. FACILITY HISTORY**

This is the first air quality permitting action for this facility.

### **14. PUBLIC INVOLMENT**

- 14.a Public Notice for Air Discharge Permit Application CO-980. Public notice for Air Discharge Permit Application CO-980 was published on the SWCAA internet website for a minimum of 15 days beginning on July 18, 2017.
- 14.b Public/Applicant Comment for Air Discharge Permit Application CO-980. SWCAA did not receive formal comments, a comment period request, or any other inquiry from the public or the applicant regarding this Air Discharge Permit application. Therefore, no public comment period was provided for this permitting action.
- 14.c State Environmental Policy Act. SWCAA issued Determination of Non-Significance 18-006 on February 7, 2018 for this permitting action.