NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: XXXXXX XX, 2025

Region: Washington Regional Office
County: Beaufort
NC Facility ID: 0700071
Inspector's Name: Robert Bright
Date of Last Inspection: 06/04/2024
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): PCS Phosphate Company, Inc. - Aurora

Facility Address:
PCS Phosphate Company, Inc. - Aurora
1530 NC Highway 306 South
Aurora, NC 27806

SIC: 2874 / Phosphatic Fertilizers
NAICS: 325312 / Phosphatic Fertilizer Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0530, 02Q .0317
NSPS: N/A
NESHAP: N/A
PSD: Yes
PSD Avoidance: Yes (removed)
NC Toxics: No
112(r): N/A
Other: No

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Khalid Alnahdy Env. & Tech. Services Manager (252) 322-8288 1530 NC Hwy 306 South Aurora, NC 27806	William Ponton General Manager (252) 322-8195 1530 NC Highway 306 South Aurora, NC 27806	Joe Sullivan Environmental Engineering Supervisor (252) 322-8279 1530 NC Hwy 306 South Aurora, NC 27806

Application Data

Application Number: 0700071.24C, 0700071.25A
Date Received: 11/26/2024, 04/30/2025
Application Type: Modification
Application Schedule: TV-Significant

Existing Permit Data
Existing Permit Number: 04176/T72
Existing Permit Issue Date: 05/07/2024
Existing Permit Expiration Date: 11/30/2027

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2023	2337.70	547.62	52.68	384.76	802.33	156.38	79.18 [Hydrogen fluoride (hydrofluori]
2022	2207.78	451.01	55.78	319.05	793.70	154.95	79.07 [Hydrogen fluoride (hydrofluori]
2021	2631.31	532.97	83.52	403.81	812.82	190.11	82.59 [MIBK (methyl isobutyl ketone)]
2020	2240.91	550.33	123.28	410.46	854.43	229.97	122.27 [MIBK (methyl isobutyl ketone)]
2019	2307.21	457.20	160.20	390.70	818.98	268.66	159.36 [MIBK (methyl isobutyl ketone)]

Review Engineer: Emily Supple

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 04176/T73
Permit Issue Date: XXXXX XX, 2025
Permit Expiration Date: November 30, 2027

1. Purpose of Application

PCS Phosphate Company, Inc. - Aurora (PCS) is a major stationary source under PSD and currently holds Air Quality Title V Permit No. 04176T72, issued May 7, 2024 with an expiration date of November 30, 2027. The facility, located in Aurora, Beaufort County, North Carolina, conducts phosphoric rock mining and phosphoric acid manufacturing.

On November 26, 2024, the North Carolina Department of Environmental Quality (NCDEQ), Division of Air Quality (DAQ) received Permit Application No. 0700071.24C via email. The ePay acknowledgement letter was sent on November 27, 2024, and the payment received via ePay on November 30, 2024.

This permitting action will be considered a Title V significant modification under 15A NCAC 02Q .0516. The proposed project will be processed following procedures set out in 15A NCAC 02Q .0501(b). As requested by the application, DAQ will process this application in accordance with the "one-step" procedure in 15A NCAC 02Q .0501(b)(1).

With this application, PCS is requesting a Plantwide Applicability Limit (PAL) for emissions of sulfur dioxide (SO2) from all emissions units emitting SO2 from the facility in accordance with the provisions of 40 CFR 51.166(w) and 15A NCAC 02D .0530.

On April 30, 2025, DAQ received Permit Application No. 0700071.25A for a second step significant modification following the first step significant modification associated with Application No. 0700071.23A. No permit fee is required for the processing of this application. This permitting action will be processed following the procedures of 15A NCAC 02Q .0501(b)(2).

2. Application Chronology

November 26, 2024	Permit Application No. 0700071.24C was received.
November 27, 2024	The ePay acknowledgement letter was sent to PCS via email.
November 30, 2024	The application fee of $8,186 was received via ePay.
January 7, 2025	Application files and spreadsheets were provided by Joe Sullivan of PCS via email.
April 30, 2025	Permit Application No. 0700071.25A was received.
May 9, 2025	The acknowledgement letter was sent to PCS via email.
May 13, 2025	A question about the emissions spreadsheet for the SO_2 PAL baseline emissions was sent via email to Joe Sullivan of PCS Phosphate.
May 14, 2025	Mr. Joe Sullivan of PCS Phosphate sent a revised spreadsheet via email for the SO_2 PAL baseline emissions.
May 30, 2025	Draft documents sent to regional office, applicant, and SSCB. No comments were received from the regional office or SSCB.
June 11, 2025	Comments were received from Mr. Joe Sullivan of PCS Phosphate and are summarized in Section 11 below.
June 12, 2025	One additional comment was received from Mr. Joe Sullivan of PCS Phosphate and is summarized in Section 11 below.
XXXXXX XX, 2025	Draft documents forwarded to public notice and EPA review.

XXXXX XX, 2025	Public comment period ends. Comments?
XXXXX XX, 2025	EPA review period ends. Comments?
XXXXX XX, 2025	Permit 04176T73 issued.

3. Permit Modification/Emission Changes/TVEE Discussion

Addition of SO2 Plantwide Applicability Limit (PAL)

As per the application, PCS is requesting an SO2 PAL to allow the PCS Aurora facility the ability to manage future physical and operational changes, and the impact of those changes on facility-wide emissions, without triggering the need to conduct project-by-project major NSR applicability analyses for SO2.

In accordance with 40 CFR 51.166(w)(3)(i), a list of all emissions units at the source, designated as small, significant, or major based on their potential to emit, shall be included as part of the permit application requesting a PAL. With this application, PCS has identified the following sources of SO2 emissions:

- Sulfuric Acid Plants Nos. 5, 6, and 7 **(ID Nos. S-5, S-6, and S-7)**
- Auxiliary boiler **(ID No. BW)**
- Calciners Nos. 1, 2, 3, 4, 5, and 6 **(ID Nos. 339-051, 339-052, 339-053, 339-054, 339-055, and 339-056)**
- Coal/coke pulverizer and thermal dryer system **(ID Nos. 341-300)**
- Monoammonium/Diammonium Phosphate Plant No. 2 dryer **(ID No. 505-104)**
- Monoammonium/Diammonium Phosphate Plant No. 3 dryer **(ID No. 511-032)**
- Pilot Plant No. 2 **(ID No. PA Pilot No. 2)**
- Superphosphoric Acid Plant No. 1 **(ID Nos. 451-418 and 451-409)**
- Superphosphoric Acid Plant No. 2 **(ID Nos. 451-701 and 451-809)**
- Superphosphoric Acid Plant No. 3 **(ID Nos. 451-316 and 451-308)**
- Superphosphoric Acid Plant No. 4 **(ID Nos. 451-916 and 451-940)**
- Superphosphoric Acid Plant No. 5 **(ID Nos. 451-1100 and 451-1200)**
- Phosphoric Acid Train No. 1 **(ID Nos. 421-201, 421-000, 421-325, 421-327, 421-223, 421-232, 421-218, 421-330, 421-225A)**
- Phosphoric Acid Train No. 2 **(ID Nos. 422-201, 422-000, 422-325, 422-327, 422-223, 422-232, 422-218, 422-330, 422-225A)**
- Phosphoric Acid Train No. 3 **(ID Nos. 423-201, 423-000, 423-325, 423-327, 423-223, 423-232, 423-218, 423-330)**
- Phosphoric Acid Train No. 4 **(ID Nos. 424-201, 424-000, 424-325, 424-327, 424-223, 424-232, 424-218, 424-330)**
- Diesel-fired emergency engine for backup power at DPW water pumps in mine **(ID No. 404-814)**
- LPG emergency engine backup power S-7 **(ID No. I-407-401)**
- WWTP Emergency Diesel Generator **(ID No. I-130-458)**
- Main Lift Station emergency backup diesel generator **(ID No. I-430-457)**
- Radio Tower emergency backup LPG generator **(ID No. I-190-400-484)**
- PAP diesel-fired pump engine **(ID No. I-624-231-484)**
- PAP diesel-fired pump engine **(ID No. I-624-293-484)**
- Ammonia Emergency Deluge System emergency diesel generator **(ID No. I-555-218-484)**
- AHF plant diesel-fired emergency genset (modified engine rating) **(ID No. I-AHF)**
- AHF plant diesel-fired firewater pump genset (new source) **(ID No. I-AHF-FP)**
- Outfall 007 diesel-fired emergency generator pump (new source) **(ID No. I-130-420)**
- Outfall 009 diesel-fired emergency generator pump (new source) **(ID No. I-130-480)**

See Section 5 (PSD Applicability) below for a discussion of emissions from these sources.

Removal of Sources from Permit

With this application, PCS is requesting that the following sources and associated control devices be removed from the permit:

- Phosphate Rock Dryer **(ID No. 332-120)**
- Limestone railcar unloading **(ID No. 381.105)**
- No. 1 limestone silo **(ID No. 381.115)**
- No. 2 limestone silo **(ID No. 381.125)**
- No. 3 limestone silo **(ID No. 381.135)**
- Limestone supply weigh hopper **(ID No. 381.145)**
- Ultra-low sulfur diesel-fired dryer **(ID No. 381.215)**
- Delumper **(ID No. 381.240)**
- Screening/conveying operations **(ID No. 381.SCREEN)**
- Product conveying operations **(ID No. 381.CONVEY)**
- Final screening operations **(ID No. 381.FINAL)**
- Loadout hopper **(ID No. 381.575)**
- Conveyor **(ID No. 381.435)**
- Truck/railcar loadout **(ID No. 381.LOAD)**

According to the application, the phosphate rock dryer **(ID No. 332-120)** and associated control devices were used exclusively to support the Defluorinated Feed Product (DFP) plant, which was decommissioned in 2016 and has been demolished.

Additionally, all emission sources listed in Section 2.1.7 of the permit associated with Calcium Phosphate Production will be removed from the permit as requested in the application because this emission unit will not be constructed. Potential SO2 emissions from this emission unit were not included in the calculation contributing to the PAL because PCS has not commenced construction as of the date of submittal of this permit application.

Emergency Engine Updates

With this application, PCS is adding several new emergency engines and updating the engine rating for one emergency engine as follows:

- AHF plant diesel-fired emergency genset **(ID No. I-AHF)** – updating engine rating to 800ekW; manufactured February 2019; constructed 2022
- AHF plant diesel-fired firewater pump genset **(ID No. I-AHF-FP)** – new engine, 300 hp; manufactured February 2019; constructed 2022
- AHF plant diesel-fired booster pump **(ID No. I-AHF-BP)** – new engine, 36 ekW; manufactured February 2019; constructed 2022
- Outfall 007 emergency generator **(ID No. I-130-420)** – new engine, 7 ekW; manufactured May 2017; constructed 2021
- Outfall 009 emergency generator **(ID No. I-130-480)** – new engine, 7 ekW; manufactured May 2017; constructed 2021

All emergency engines above will be subject to the emissions standards of NSPS Subpart IIII. The emissions calculations shown in Tables 3.1 through 3.4 below are taken from the emissions spreadsheet submitted by Joe Sullivan of PCS on January 7, 2025. These calculations have been reviewed and verified and appear to be accurate. Potential emissions for the engines I-AHF and I-AHF-FP were calculated assuming 500 hours per year of operation as per EPA guidance[1]. Potential emissions for the remaining engines were calculated assuming 8,760 hours per year of operation to be conservative.

[1] *Calculating Potential to Emit (PTE) for Emergency Generators,* John Seitz, Director, Office of Air Quality Planning and Standards, US EPA, September 6, 1995

Table 3.1: Potential Emissions of I-AHF

Pollutant	Emission Factor	Units	Hourly Emissions (lbs/hr)	Annual Emissions (tons/yr)
PM[1,2]	0.20	g/kW-hr	0.44	1.10E-01
PM_{10}[1,2]	0.20	g/kW-hr	0.44	1.10E-01
$PM_{2.5}$[1,2]	0.20	g/kW-hr	0.44	1.10E-01
NOx[1,3]	6.40	g/kW-hr	14.11	3.53E+00
SO_2[3]	1.21E-05	lb/hp-hr	0.016	4.07E-03
CO[1]	3.50	g/kW-hr	7.72	1.93E+00
VOC [1,2]	1.90E-01	g/kW-hr	0.42	1.05E-01

1) Tier 2 certified engines >560 kW engines.
2) Assumes PM=PM10=PM2.5.
3) Calculated from AP-42 Table 3.4-1 Sulfur Content of 0.0015% (15 ppm).

Table 3.2: Potential Emissions of I-AHF-FP

Pollutant	Emission Factor	Units	Hourly Emissions (lbs/hr)	Annual Emissions (tons/yr)
PM[1,2]	0.54	g/kW-hr	0.33	8.32E-02
PM_{10}[1,2]	0.54	g/kW-hr	0.33	8.32E-02
$PM_{2.5}$[1,2]	0.54	g/kW-hr	0.33	8.32E-02
NOx[1,3]	4.00	g/kW-hr	2.47	6.17E-01
SO_2[3]	1.21E-05	lb/hp-hr	0.0046	1.14E-03
CO[1]	3.50	g/kW-hr	2.16	5.39E-01
VOC [4]	1.50E+00	g/kW-hr	0.93	2.32E-01

1) NSPS standard for firepump engines.
2) Assumes PM=PM10=PM2.5.
3) Calculated from AP-42 Table 3.4-1 Sulfur Content of 0.0015% (15 ppm).
4) VOC factor obtained from AP-42, Section 3.3, Table 3.3-1 for Diesel fuel.

Table 3.3: Potential Emissions of I-AHF-BP

Pollutant	Emission Factor	Units	Hourly Emissions (lbs/hr)	Annual Emissions (tons/yr)
PM[1,2]	0.03	g/kW-hr	0.00	1.34E-02

PM_{10}[1,2]	0.03	g/kW-hr	0.00	1.34E-02
$PM_{2.5}$[1,2]	0.03	g/kW-hr	0.00	1.34E-02
NOx[1,3]	4.70	g/kW-hr	0.48	2.10E+00
SO_2[3]	1.21E-05	lb/hp-hr	0.00075	3.30E-03
CO[1]	5.50	g/kW-hr	0.56	2.46E+00
VOC[4]	1.50E+00	g/kW-hr	0.15	6.71E-01

1) Meets 40 CFR Part 1039 Tier IV emissions standards.
2) Assumes PM=PM10=PM2.5.
3) Calculated from AP-42 Table 3.4-1 Sulfur Content of 0.0015% (15 ppm).
4) VOC factor obtained from AP-42, Section 3.3, Table 3.3-1 for Diesel fuel.

Table 3.4: Potential Emissions of I-130-420 and I-130-480, each

Pollutant	Emission Factor	Units	Hourly Emissions (lbs/hr)	Annual Emissions (tons/yr)
PM[1,2]	0.40	g/kW-hr	0.01	3.38E-02
PM_{10}[1,2]	0.40	g/kW-hr	0.01	3.38E-02
$PM_{2.5}$[1,2]	0.40	g/kW-hr	0.01	3.38E-02
NOx[1,3]	7.50	g/kW-hr	0.14	6.34E-01
SO_2[3]	1.21E-05	lb/hp-hr	0.00014	6.24E-04
CO[1]	8.00	g/kW-hr	0.15	6.76E-01
VOC[4]	1.50E+00	g/kW-hr	0.03	1.27E-01

1) Meets 40 CFR Part 1039 Tier IV emissions standards.
2) Assumes PM=PM10=PM2.5.
3) Calculated from AP-42 Table 3.4-1 Sulfur Content of 0.0015% (15 ppm).
4) VOC factor obtained from AP-42, Section 3.3, Table 3.3-1 for Diesel fuel.

Each engine above appears to qualify as an insignificant activity per the definition given in 15A NCAC 02Q .0503(8), “"Insignificant activities because of size or production rate" means any activity whose emissions would not violate any applicable emissions standard and whose potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year.”

The above engines will be added to the permit as insignificant activities with this permitting action.

2nd Step Significant Modification (Application No. 0700071.25A)

On April 30, 2025, DAQ received this Part II application from PCS as required by Condition No. 2.2 C.3 of Permit No. 04176T72. This permitting action is a second step significant modification processed in accordance with 15A NCAC 02Q .0501(b)(2).

The first step significant modification, associated with Application No. 0700071.23A, was received on September 15, 2023 and included modifications for the replacement of the MAP/DAP Plant No. 2 Dryer (ID No. 505-104) and associated tailgas scrubbers (ID Nos. 505-147 and 505-148). The MAP/DAP No. 2 Plant commenced operation on July 24, 2024 following the modifications made with Application No. 0700071.23A, but the tailgas scrubbers have not yet been replaced. Thus, this permit application addresses only the new dryer (ID No. 505-104).

This application was received within the 12-month timeframe of commencement of operation of the dryer after modifications have been made. The technical review for the Part I application is attached to this document.

Table of Changes

Page No.	Section	Description of Changes
Cover and throughout	--	• Updated all dates and permit revision numbers.
Throughout	N/A	• Removed Calcium Phosphate Production Area sources (ID Nos. 381.105, 381.115, 381.125, 381.135, 381.145, 381.215, 381.240, 381.SCREEN, 381.FINAL, 381.CONVEY, 381.LOAD, 381.575, and 381.435) and associated control devices (ID Nos. 381.106, 381.110, 381.120, 381.130, 381.150, 381.355, 381.360, 381.365, 381.385, 381.390, 381.555, 381.490, 381.585, and 381.440).
Throughout	N/A	• Removed Phosphate Rock Dryer (ID No. 332-120) and associated control devices (ID Nos. 332-370a and 332-370b).
N/A	2.1.1	• Removed 02D .0530(u) emissions tracking condition for sulfuric acid plants.
7-9	1.	• Removed footnote pertaining to the requirement to file a Title V Air Quality Permit Application on or before 12 months after commencing operation for the MAP/DAP Plant No. 2 Dryer (ID No. 505-104). This requirement was satisfied with Application No. 0700071.25A received April 30, 2025.
30-31	2.1.1 A.6	• Removed requirements for SO_2 emissions monitoring, recordkeeping, and reporting under PSD Avoidance via 02Q .0317.
38	2.1.1 B.4	• Removed requirements for SO_2 emissions monitoring, recordkeeping, and reporting under PSD Avoidance via 02Q .0317.
44	2.1.2 A.3	• Removed 02D .0530(u) emissions tracking requirements for SO_2.
82	2.1.3 B.8	• Removed requirements for SO_2 emissions monitoring, recordkeeping, and reporting under PSD Avoidance via 02Q .0317.
178	2.2 B.1	• Removed 02D .0530(u) emissions tracking requirements for SO_2.
179	2.2 C.1	• Removed 02D .0530(u) emissions tracking requirements for SO_2.
179-180	2.2 C.2	• Removed 02D .0530(u) emissions tracking requirements for SO_2.
180	2.2 C.3	• Removed requirement to file a Title V Air Quality Permit Application on or before 12 months after commencing operation for the MAP/DAP Plant No. 2 Dryer (ID No. 505-104). This requirement was satisfied with Application No. 0700071.25A received April 30, 2025.
187-193	2.6 A	• Added Actuals PAL Permit Requirements for SO_2 PAL.
194-195	3	• Added/updated insignificant emergency engines including: o I-AHF; o I-AHF-FP; o I-AHP-BP; o I-130-420; and o I-130-480.
197-204	4	• Updated general conditions to most recent version (version 8.0, 07/10/2024)

TVEE Review

Updates have been made to Title V Equipment Editor. These changes were reviewed and approved by Connie Horne of DAQ on XXXXX XX, 2025.

4. Regulatory Review

This permit modification impacts the following States regulations:

- 15A NCAC 02D .0524, New Source Performance Standards (NSPS Subpart IIII)
- 15A NCAC 02D .0530, Prevention of Significant Deterioration
- 15A NCAC 02Q .0317, Avoidance Conditions (Avoidance of PSD)
- 40 CFR 51.166(w), Actuals PAL for SO2

a. 15A NCAC 02D .0524, New Source Performance Standards

See Section 5.a below for a discussion on NSPS applicability.

b. 15A NCAC 02D .0530, Prevention of Significant Deterioration

See Section 5.c below for a discussion of PSD applicability.

c. 15A NCAC 02Q .0317, Avoidance Conditions (Avoidance of PSD)

With this application, PCS has requested to obtain an Actuals PAL for SO2 for facility wide operations. Presently, the permitted emission sources at this facility must comply under three separate PSD avoidance limitations for SO2 emissions as per the current permit. By requesting an Actuals PAL for SO2, the Permittee wishes to obtain operational flexibility and thus, permission to make changes to the facility operations without having to address NSR permitting. Thus, the PSD Avoidance conditions for SO2 will be removed with this permitting action.

Specifically, the following conditions will be removed*:

- Condition No. 2.1.1 A.7, PSD Avoidance for SO2 emissions from the Sulfuric Acid Plants (ID Nos. S-5, S-6, and S-7).
    - 40 tons per consecutive 12-month period SO2 emission limit
    - No performance testing required
    - Required recordkeeping includes monthly records of sulfuric acid produced (tons/month) and monthly records of sulfuric acid loaded in loading station (ID No. I-SAL)
    - CEMS required
    - Monthly calculations of SO2 emissions required using equations given in permit
    - Semiannual reporting of monitoring and recordkeeping activities required
- Condition No. 2.1.1 B.4, PSD Avoidance for SO2 emissions from the Auxiliary Boiler (ID No. BW)
    - 40 tons per consecutive 12-month period SO2 emission limit
    - No performance testing required
    - Required recordkeeping includes monthly records of fuel usage and monthly SO2 emissions calculations
    - Semiannual reporting of monitoring and recordkeeping activities required
- Condition No. 2.1.3 B.8, PSD Avoidance for SO2 emissions from Diammonium Phosphate (DAP)/Monoammonium Phosphate (MAP) Plant No. 3
    - 226.2 tons per consecutive 12-month period SO2 emission limit
    - No performance testing required
    - Required recordkeeping includes monthly records of SO2 emissions calculations
    - Semiannual reporting of monitoring and recordkeeping activities required

*All conditions listed above apply to multiple pollutants. Only the portion of the conditions above pertaining to SO2 emissions will be removed with this permitting action.

d. 40 CFR 51.166(w), Actual PAL for SO2

With this permitting action, PCS is requesting an Actuals PAL for SO2 for facility wide operations. As discussed in Section 4.c above, three PSD avoidance limitations for SO2 emissions apply to various sources at the facility. These PSD avoidance conditions will be removed and replaced with the SO2 actuals PAL to provide operational flexibility.

The PAL provisions as implemented through 02D .0530 are included in 40 CFR 51.166(w) as shown below. The PAL permit shall be written in accordance with 40 CFR 51.166(w)(7), "Contents of the PAL Permit".

§ 51.166(w)(7)(i) – Name of PAL Pollutant and Applicable Source-wide Emissions Limit in Tons Per Year

This PAL permit for PCS is for its facility wide SO2 emissions. The requested PAL in tons per year is 4,171 tons per year.

This limit has been established using the procedures in §51.166(w)(6), "Setting the 10-year Actuals PAL Level".

The actuals PAL for a major stationary source shall be established as the sum of the baseline actual emissions of the PAL pollutant for each emissions unit at the source plus an amount equal to the applicable significant level for the PAL pollutant. When establishing the actuals PAL for a PAL pollutant, only one consecutive 24-month period must be used to determine the baseline actual emissions for all existing emissions units. Emissions associated with units that were permanently shut down after this 24-month period must be subtracted from the PAL level. The permitting authority shall specify a reduced PAL level in tons per year in the PAL permit to become effective on the future compliance date of any applicable Federal or State regulatory requirement(s) that the reviewing authority is aware of prior to issuance of the PAL permit. Finally, for newly constructed units (which do not include modifications to existing units) on which actual construction began after the 24-month period, in lieu of adding the baseline actual emissions, the emissions must be added to the PAL in an amount equal to the potential to emit (PTE) of the units.

The Permittee has calculated baseline actual emissions using the actual VOC emissions for the time period January 2015 through December 2016.

This PAL application was deemed completed as of November 30, 2024.

As per the requirements in 02D .0530(b)(1)(A) to establish baseline actual emissions, the Permittee is required to select any 24-month consecutive period from the 5-year lookback period from the receipt of the completed application. However, this provision also includes that the DAQ can approve a different baseline period from the longer look-back period up to 10 years from the receipt of the completed application, if the Permittee can demonstrate that it reflects the normal source operation.

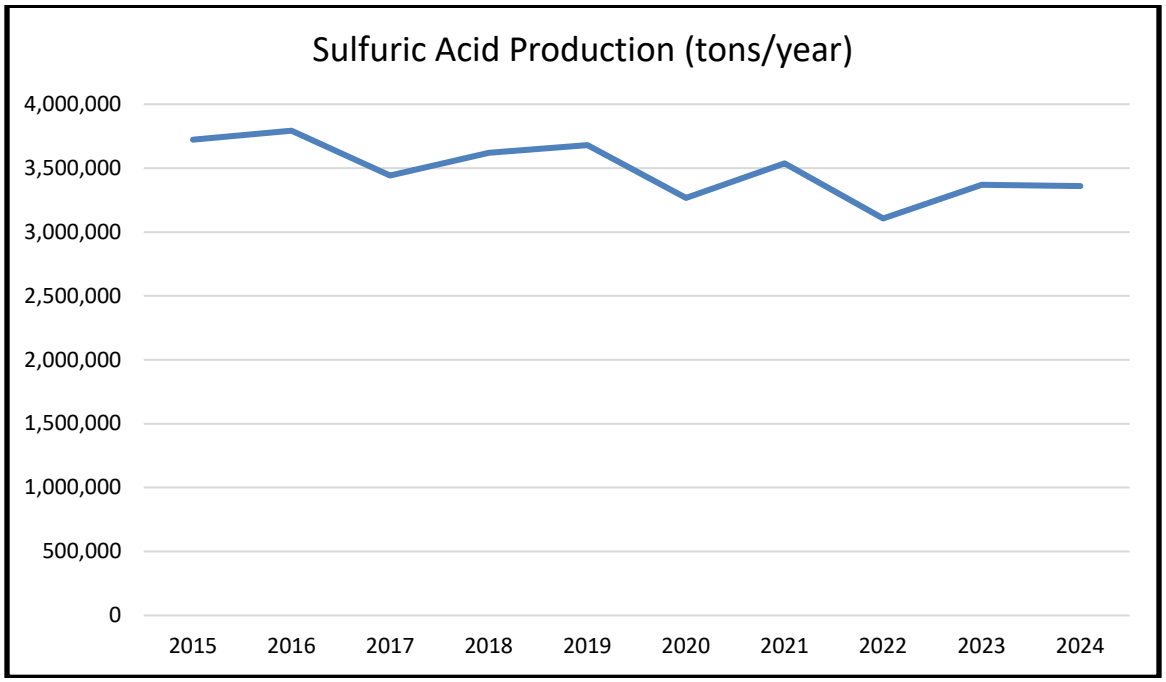
The 5-year and 10-year lookback periods for this application are November 30, 2019 through November 29, 2024 and November 30, 2014 through November 29, 2024, respectively.

PCS has provided production data in the application to support the use of a 10-year lookback period for calculation of baseline actual emissions. The following Table 4.1 and Figure 4.1 are taken from the application:

Table 4.1 Sulfuric Acid During Baseline Period

10-Year Baseline	Production (tpy)
2015	3,721,534
2016	3,792,856
2017	3,442,515
2018	3,619,856
2019	3,679,222
2020	3,265,855
2021	3,536,095
2022	3,106,142
2023	3,370,584
2024	3,360,000

Figure 4.1 Sulfuric Acid Production During Baseline Period



The application states that PCS did not have representative production levels from 2017 to 2024 due to the following considerations:

2017 to 2019

During years 2017 to 2019, production was impacted during extended maintenance outages. Each year one of the three sulfuric acid plants undergoes a planned maintenance turnaround event during which time scheduled maintenance is conducted over a normal outage period of 21 days. These maintenance events occur at each of the three sulfuric acid plants on a three-year rotating basis, such that plant has a planned maintenance outage every three years.

During this timeframe each of the plants undergoing turnaround was required to upgrade its SO_2 catalyst systems to meet new emission control standards required by the EPA. During these upgrades, each plant outage was increased to approximately 45 days. The extended outages resulted in an approximate 7%

decrease in annual production for each plant, which in turn resulted in a 2% to 3% decrease in total sulfuric acid production for the year. While there were presumably additional factors that resulted in lower production in 2017, impacts attributable to the extended outage was significant.

2020 to 2021

In 2020 and 2021, Phosphoric Acid and Sulfuric Acid Production were impacted by the Covid pandemic, periodically affecting staffing of operations and maintenance at the plant level and supporting corporate operations involved in sales. Although such impacts are impossible to quantify with any level of specificity, facility staff consulted believe the pandemic to be a primary contributor to the slightly lower production levels during this period.

2022 to 2023

In mid-August of 2022, there was a major structural collapse of a feed bin providing surge capacity to the facility's calciners. The cascading effects of this collapse led to an immediate shutdown of all calciners and much of the phosphoric acid production processes. Even though calciners operations were gradually restored through mid-December, wet phosphate rock feed to the calciners was restored using less efficient portable heavy equipment loaders and conveyors, resulting in substantially reduced green phosphoric acid production rates. These work-around feed systems were used through most of the first quarter of 2024, impacting production.

Furthermore, cascading business-confidential ramifications of the feed bin eventually impacted phosphate rock beneficiation processes, which led to deleterious solids entrainment in the phosphoric acid production and downstream processes, which in effect caused considerable equipment downtime and reduced production capacity for the first half of 2024.

2024

At the beginning of 2024, a production target of 3.7 million tons per year was optimistically set as the facility anticipated returning to near historical production levels. This goal was set somewhat lower than maximum production levels recognizing there would be challenges associated with relocation of mining operations to a new mining area located several miles further away from ore beneficiation and chemical plant operations.

Thus, due largely to maintenance needs and the COVID-19 pandemic, production levels from 2017 through 2024 have been adversely affected. PCS has requested to use a 10-year lookback period from the date of application receipt of November 30, 2024 and selected January 2015 through December 2016 as the baseline period for calculation of the baseline actual emissions. Based on the above justification, DAQ agrees with the Permittee on the rationale to allow the use of the longer lookback period not to exceed 10 years and will approve the baseline period of January 2015 through December 2016.

Baseline Actual Emissions Adjustments

It should be noted that the emissions sources are subject to emissions limits under the following regulations for SO2 emissions:

- 15A NCAC 02D .0501(c), Compliance with National Ambient Air Quality Standards
- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0517, Emissions from Plants Producing Sulfuric Acid
- 15A NCAC 02D .0524, New Source Performance Standards (NSPS Subpart H)
- 15A NCAC 02D .0530, Prevention of Significant Deterioration
- Consent Decree Civil Action No. 14-707-BAJ-SCR

Pursuant to 15A NCAC 02D .0530(b)(1)(A)(iii), for calculation of the baseline actual emissions, for an existing emissions unit (other than an electric utility steam generating unit), the average rate shall be adjusted downward to exclude any emissions that would have exceeded an emission limitation with which the major stationary source must currently comply.

The baseline emissions calculations from all existing sources of sulfur dioxide, except for the sulfuric acid plants **(ID Nos. S-5, S-6, and S-7)**, as discussed below, do not require any downward adjustments because there are no emissions that would have exceeded an emission limitation with which the major stationary source must currently comply.

Table 4.2 below shows the currently applicable SO_2 emission limits for the sulfuric acid plants **(ID Nos. S-5, S-6, and S-7):**

Table 4.2: Currently Applicable Emission Limits for Sulfuric Acid Plants

Regulation	**Emission Limit**	**In compliance with limit during baseline period?**
15A NCAC 02D .0517	27 pounds per ton of 100% Sulfuric Acid produced	Yes
15A NCAC 02D .0524(NSPS Subpart H)	4 pounds per ton of 100% Sulfuric Acid produced	Yes
Consent Decree Civil Action No. 14-707-BAJ-SCR	**Sulfuric Acid Plant No. 5 (ID No. S-5):** 3.2 pounds per ton of 100% sulfuric acid produced (short-term limit/3-hour rolling average) 2.5 pounds per ton of 100% sulfuric acid produced (long-term limit/365-day rolling average) **Sulfuric Acid Plant No. 6 (ID No. S-6):** 3.3 pounds per ton of 100% sulfuric acid produced (short-term limit/3-hour rolling average) 2.5 pounds per ton of 100% sulfuric acid produced (long-term limit/365-day rolling average) **Sulfuric Acid Plant No. 7 (ID No. S-7):** 3.0 pounds per ton of 100% sulfuric acid produced (short-term limit/3-hour rolling average) 1.75 pounds per ton of 100% sulfuric acid produced (long-term limit/365-day rolling average)	No, emissions for each plant must be adjusted downward.

During the selected 2015 and 2016 baseline period, the sulfuric acid plants **(ID Nos. S-5, S-6, and S-7)** were only subject to the NSPS Subpart H emissions limitation of 4.0 lb SO2/ton of 100% sulfuric acid produced. However, PCS is subject to the terms and conditions of Consent Decree Civil Action No. 14-707-BAJ-SCR, effective February 26, 2015, and the following emission limits apply:

Sulfuric Acid Plant No. 5

Short term SO_2 limit: 3.2 pounds per ton of 100% sulfuric acid produced (3-hour rolling average)
Long term SO_2 limit: 2.5 pounds per ton of 100% sulfuric acid produced (365-day rolling average)

The compliance date for Sulfuric Acid Plant No. 5 is January 1, 2020.

Sulfuric Acid Plant No. 6

Short term SO_2 limit: 3.3 pounds per ton of 100% sulfuric acid produced (3-hour rolling average)
Long term SO_2 limit: 2.5 pounds per ton of 100% sulfuric acid produced (365-day rolling average)

The compliance date for Sulfuric Acid Plant No. 6 is January 1, 2018.

Sulfuric Acid Plant No. 7

Short term SO_2 limit: 3.0 pounds per ton of 100% sulfuric acid produced (3-hour rolling average)
Long term SO_2 limit: 1.75 pounds per ton of 100% sulfuric acid produced (365-day rolling average)

The compliance date for Sulfuric Acid Plant No. 7 is January 1, 2019.

The above short term emission limits do not apply during periods of startup, shutdown, or malfunction. The above long term emission limits apply at all times, including during periods of startup, shutdown, and malfunction.

The SO_2 emission limits above pursuant to the Consent Decree Civil Action No. 14-707-BAJ-SCR[2] are more stringent than any other SO_2 emission limit for the sulfuric acid plants and did not come into effect until after the selected baseline period of January 2015 through December 2016. Thus, both long-term and short-term SO2 emissions from the sulfuric acid plants were adjusted downward in the baseline emissions calculations to be in compliance with the currently applicable emission limits in accordance with 15A NCAC 02D .0530(b)(1)(A)(ii) and (iii).

PCS monitors SO2 emissions from the sulfuric acid plants using SO2 CEMS. CEMS data generated during the selected baseline period of 2015 and 2016 were used to calculate the baseline actual emissions. Downward adjustments were made in a two-step process, first making downward adjustments for any emissions exceeding the less stringent short-term emission limitation, then making downward adjustments for emissions exceeding the more stringent long-term (annual) emissions limitation. Details regarding each adjustment are shown below. All baseline actual emissions adjustments are included in Appendix B of this application.

For the first step, PCS reduced every hour of SO2 CEMS data in which emissions exceeded the applicable short-term (3-hour rolling average) limit, regardless of whether the emissions could have been categorized as startup, shutdown, or malfunction. It should be noted that this calculation method is conservative because: 1) startup, shutdown, and malfunction emissions may be excluded from the calculation of the short-term emission averages under the permit, and 2) the downward adjustment of each hour of data is more conservative than adjusting only the three-hour averages because there may be instances in which

[2] Consent Decree with US EPA and Louisiana Department of Environmental Quality; Case 3:14-cv-00707-BAJ-SCR; November 6, 2014

hourly emissions could have exceeded the three-hour limit while the corresponding three-hour average may not necessarily have exceeded the limit even if the hourly data had not been adjusted.

The following Table 4.3 is taken from the application and shows an example of a downward adjustment of hourly emissions from a sulfuric acid plant:

Table 4.3: Example Downward Adjustment of Hourly Emissions for Sulfuric Acid Plant No. 6

Date	Time	Hourly Average lb SO_2/ton	Hourly Production Rate (tons)	Hourly SO_2 Emissions (lbs)	Exceed 3.3 lb/ton?	Adjusted Hourly SO_2 Emissions (lbs)
1/2/2015	10:00-10:59	3.56	151.91	539.68	Yes	501.31

As per the application, the following description is provided of the calculation for downward adjustments of the hourly data:

For each hour of data, actual hourly lb SO2/ton 100% sulfuric acid produced shown in the "Hourly Average" column was compared to the applicable limit shown in the "Exceed 3.3 lb/ton" column. If the emission factor for the hour was less than or equal to the regulatory limit, actual hourly emissions from "Hourly Production" column was carried over to the "Adjusted Hourly SO2 Emissions" column without adjustment. In the example above, since the actual emission factor in the "Hourly Average" column exceeded the applicable short-term limit, SO2 emissions for that hour were recalculated (adjusted downward) by multiplying the currently applicable short-term limit of 3.3 lb SO2/ton by the tons of acid produced and the recalculated value was input into the "Adjusted Hourly SO2 Emissions" column.

For the example shown above, the hourly average emissions of 3.56 lb SO2/ton acid exceeded the short-term limit of 3.3 lbs/ton, so the hourly average SO2 emissions were adjusted as follows:

*Hourly emissions = (3.3 lb SO2/ton) * (151.91 tons/hr) = 501.31 lbs SO2*

All adjusted and unadjusted emissions from CEMS data for January 2015 through December 2016 for all three sulfuric acid plants are provided in Tables 1 through 3 of Appendix B of this application.

For the second step of emissions adjustments, after the downward adjustments have been made for the short-term emission limits, downward adjustments were made to the annual emissions for each sulfuric acid plant based on the long-term (365-day rolling average) emission limits. Similarly to the hourly adjustments as described above, the average emissions for the calendar year were compared to the long-term emission limit for each sulfuric acid plant, and if the calculated emissions for the plant exceeded the long-term emission limit, the annual SO2 emissions were recalculated by multiplying the total acid production for the 365-day period by the applicable emission limit. Table 4.4 below is taken from the application and shows an example of a downward adjustment of the annual emissions from a sulfuric acid plant.

Table 4.4: Example Downward Adjustment of Annual Emissions for Sulfuric Acid Plant No. 5

Date	Rolling 365 Day Sum Acid (tons)	Rolling 365 Day Sum SO_2 (lbs)	Calculated Rolling 365 Day Average (lb SO_2/ton)	Is 365 Day Rolling Ave>2.5?	Adjusted Adjusted Annual SO_2 (lbs)
12/31/2015	1,007,625	2,820,589	2.80	Yes	2,519,062

Tables 1 through 3 of Appendix B of this application present adjustments made based on the 365-day rolling average data. As shown, no adjustments were required for the first year of operation until the last

hour of the last day of 2015, which effectively becomes the annual emission rate for the first year of the 24-month baseline emissions.

For purposes of showing adjustments to the 365-day rolling average, emissions adjustments for every day of 2016 for each of the sulfuric acid plants are provided in Appendix B. Although this information is presented to show how emissions data would be adjusted during the interim period of the first to last day of 2016, only the final adjustment to the last hour of 2016 becomes relevant to the requirement to adjust emissions downward to be compliant with the currently applicable requirement. The adjustment of emissions at this last hour of 2016 effectively becomes the annual emission rate for the second year of the 24-month baseline period.

After making the downward adjustment to the last hour of each year for 2015 and 2016 such that the emissions would be compliant with the currently applicable 365-day rolling average emission limit, the baseline emission rate becomes the average emission rate for 2015 and 2016. Using the emissions data for the 2015 and 2016 downward adjustments, the baseline actual emissions for the Sulfuric Acid Plant No. 5 are shown in Table 4.5 as an example below.

Table 4.5: Sulfuric Acid Plant No. 5 Baseline Actual Emissions

	Emissions	
Year	**(lbs)**	**(tons)**
2015	2,519,062	1,259.53
2016	2,767,301	1,381.67
Baseline Emissions (average)		1,320.60

The baseline actual emissions for the sulfuric acid plants, as shown by the example in Table 4.5 above, have been adjusted to be in compliance with both the short-term and long-term SO2 limits of the Consent Decree Civil Action No. 14-77-BAJ-SCR in accordance with 15A NCAC 02D .0530(b)(1)(A)(iii). No further adjustments to the baseline emissions calculations are needed with this application.

Baseline Actual Emissions

The following Table is taken from the application and displays each SO2 emission source and identifies each source as either new, existing, or newly constructed and either small, significant, or major.

Emission Source	**New, Existing, or Newly Constructed**	**Small, Significant or Major**
Sulfuric Acid Plants 5-7	Existing	Major
No. 7 Sulfuric Acid Plant Emergency Engine	Existing	Small
Auxiliary Boiler	Existing	Small
Calciners 1 - 6	Existing	Small
Coal Dryer	Existing	Small
MAP/DAP Plant No. 3	Existing	Major
MAP/DAP Plant No. 2	Existing	Significant
SPA Plant No. 1	Existing	Small
SPA Plant No. 2	Existing	Small

SPA Plant No. 3	Existing	Significant
SPA Plant No. 4	Existing	Significant
SPA Plant No. 5	New	Significant
Phos Acid Train No. 1	Existing	Significant
Phos Acid Train No. 2	Existing	Significant
Phos Acid Train No. 3	Existing	Significant
Phos Acid Train No. 4	Existing	Significant
Pilot Plant	Existing	Small
Mine Pit (DPW) Diesel Generator	Existing	Small
WWTP, emergency generator	Existing	Small
diesel generator	Existing	Small
Radio Tower, emergency backup LPG generator	Existing	Small
PAP diesel-fired pump engine	Existing	Small
PAP diesel-fired pump engine	Existing	Small
Ammonia Emergency Deluge System, emergency diesel generator	Existing	Small
LPG-fired 4SRB emergency engine at radio tower	Existing	Small
AHF plant diesel-fired emergency genset (800 ekW)	New	Small
AHF plant diesel-fired firewater pump genset (300 hp)	New	Small
AHF plant diesel-fired booster pump (36 ekW)	New	Small
Outfall 007 emergency generator	Newly Constructed	Small
Outfall 009 emergency generator	Newly Constructed	Small

For all existing PAL-affected emission sources, other than newly constructed units and the sulfuric acid plants, the baseline actual emissions are the annual emission rates for calendar years 2015 and 2016 based on annual emissions inventory information. For the sulfuric acid plants, the baseline actual emissions are adjusted as previously discussed above.

For each new emissions unit, the baseline actual emissions represent the potential-to-emit (PTE) emission rate, consistent with the definition of "baseline actual emissions" given in 15A NCAC 02D .0530(b)(1)(B), "*For a new emissions unit, the baseline actual emissions for purposes of determining the emissions increase that will result from the initial construction and operation of such unit shall equal zero and thereafter, for all other purposes, shall equal the unit's potential to emit*."

For each existing PAL-affected emissions unit that is a newly constructed unit, the baseline actual emissions are the SO2 PTE emission rate for each source as provided by 40 CFR 51.166(w)(6)(ii).

It should be noted that the Superphosphoric Acid Plant No. 5 is permitted to construct and operate, but since this source has neither been constructed nor operated, no emissions are attributed to this PAL-affected source.

Furthermore, with this application, PCS is requesting to remove the Phosphate Rock Dryer **(ID No. 332-120)** and associated control device from the permit as this emissions unit has been demolished. In addition,

all emission sources identified in Section 1.7 of the current permit associated with Calcium Phosphate Production should be removed from the permit because this emissions unit will not be constructed. PCS has treated this emissions unit as not contributing to the PAL because PCS has not commenced construction as of the date of submittal of this permit application.

The following Table 4.6 is taken from the application and shows the sum of the baseline actual emissions for the applicable emissions units for development of the PAL plus one significant emission rate (SER) for SO2 of 40 tons per year:

Table 4.6: Baseline Actual Emissions, PTE for New Sources and Calculated SO2 PAL

Existing Emission Source	ES ID No.	2015 (tons/yr)	2016 (tons/yr)	Baseline Actual Emissions (tpy)
Sulfuric Acid Plant No. 5	S-5	1,259.53	1,381.67	1,320.60
Sulfuric Acid Plant No. 6	S-6	1,435.90	1,306.14	1,371.02
Sulfuric Acid Plant No. 7	S-7	1,166.17	1,425.98	1,296.08
Babcock & Wilcox Aux Boiler	BW	0.02	0.01	0.01
No. 1 Phosphate Rock Calciner	339-051	1.80	1.48	1.64
No.2 Phosphate Rock Calciner	339-052	1.78	1.85	1.81
No. 3 Phosphate Rock Calciner	339-053	1.72	1.75	1.74
No. 4 Phosphate Rock Calciner	339-054	1.73	1.79	1.76
No. 5 Phosphate Rock Calciner	339-055	1.66	1.61	1.64
No. 6 Phosphate Rock Calciner	339-056	1.13	1.64	1.39
Coal/coke pulverizer dryer	341-300	0.00	0.00	0.00
MAP/DAP 2 Plant (Dryer)	511-032	16.14	16.82	16.48
MAP/DAP 3 Plant (Dryer)	505-104	0.88	0.88	0.88
SPA Plant No. 1	451-418; 451-409	0.00	0.26	0.13
SPA Plant No. 2	451-701; 451-809	0.01	0.03	0.02
SPA Plant No. 3	451-316; 451-308	1.16	1.55	1.35
SPA Plant No. 4	415-916; 415-940	1.16	1.55	1.35
Phosphoric Acid Train No. 1	421-201; 421-000; 421-325; 421-327; 421-223; 421-232; 421-218; 421-330; 421-225A	28.16	24.51	26.34
Phosphoric Acid Train No. 2	422-201; 422-000; 422-325; 422-327; 422-223; 422-232; 422-218; 422-330	23.95	26.77	25.36
	423-201; 423-000; 423-325; 423-327; 423-223; 423-232;			

Existing Emission Source	ES ID No.	2015 (tons/yr)	2016 (tons/yr)	Baseline Actual Emissions (tpy)
Phosphoric Acid Train No. 3	423-218; 423-330	28.34	34.08	31.21
Phosphoric Acid Train No. 4	424-201; 424-000; 424-325; 424-327; 424-223; 424-232; 424-218; 424-330	27.19	33.63	30.41
Phosphoric acid pilot plant No. 2	ES316	0.00	0.00	0.00
Mine Pit DPW Diesel Generator	404-814	0.00	0.00	0.00
WWTP Emergency Diesel Generator	I-130-458	0.00	0.00	0.00
Existing Emission Source	**ES ID No.**	**2015 (tons/yr)**	**2016 (tons/yr)**	**Baseline Actual Emissions (tpy)**
Main lift station Emergency Diesel Generator	I-130-457	0.00	0.00	0.00
LPG Radio Tower Backup Generator	190-400-484	0.00	0.00	0.00
LPG Emergency engine backup power S-7	I-407-401	0.00	0.00	0.00
PAP diesel-fired pump engine	I-624-231-484	0.00	0.00	0.00
PAP diesel-fired pump engine	I-624-293-484	0.00	0.00	0.00
Ammonia Deluge Emergency Diesel Generator	I-555-218-484	0.00	0.00	0.00
New or Newly Constructed Emission Source	**ES ID No.**	[redacted]		**Potential Emissions (tpy)**
SPA Plant No. 5 - Not yet commenced operation	451-1100; 451-1200			0.00
AHF plant diesel-fired emergency genset (800 ekW) - New (Began Construction 2022)	I-AHF			0.00
AHF plant diesel-fired firewater pump genset (300 hp) - New (Began Construction 2022)	I-AHF-FP			0.00
AHF plant diesel-fired booster pump (36 ekW) - New (Began Construction 2022)	I-AHF-BP			0.00
Outfall 007 emergency generator – Newly Constructed (Began Construction 2021)	130-420			0.00
Outfall 009 emergency generator - Newly Constructed (Began Construction 2021)	130-480			0.00
	PSD Significant Emissions Rate, SER (tpy)			40.0
	PAL - Sum of BAE, PTE, SER (tpy)			**4,171**

Thus, the proposed facility-wide Actuals PAL for SO2 is 4,171 tons per rolling 12-month period.

§51.166(w)(7)(ii) -- PAL Permit Effective and Expiration Dates

The PAL permit effective date will generally be the date upon which the revised Title V permit (containing the PAL permit) for this facility is issued, but it can also be different than the issuance date of the revised Title V permit. The expiration date of the PAL permit is ten years from the effective date of the PAL permit. Refer to 51.166(w)(8).

The effective date of this PAL permit is XXXXX XX, 2025 while its expiration date is XXXXX XX, 2035.

§51.166(w)(7)(iii) -- PAL Permit Expiration v/s Submittal of Renewal of PAL Permit

If the Permittee applies to renew the PAL permit in accordance with §51.166(w)(10) before the end of the PAL effective period, then the PAL permit shall not expire at the end of the PAL effective period. It shall remain in effect until a revised PAL permit is issued by the DAQ.

§51.166(w)(7)(iv) -- Accounting of Emissions Due to Start-ups, Shutdowns, and Malfunctions

The Permittee will be required to include in emissions calculations for compliance purposes, emissions from startups, shutdowns, and malfunctions.

§51.166(w)(7)(v) -- PAL Permit Expiration v/s Non-Submittal of Renewal of PAL Permit

Any PAL permit not renewed in accordance with §51.166(w)(10) shall expire at the end of the PAL effective period. Upon PAL permit expiration, the Permittee becomes subject to the requirements in §51.166(w)(9). The DAQ shall decide whether and how the PAL allowable emissions will be distributed and issue a revised permit incorporating allowable limits for each emissions unit, as the DAQ determines is appropriate. The DAQ shall retain the ultimate discretion to decide whether and how the allowable emissions will be allocated.

§51.166(w)(7)(vi) -- Calculation Procedures for Monthly and Annual Emissions

The PAL permit must include calculation procedures to convert the monitoring system data to monthly emissions and annual emissions based on a 12-month rolling total for each month.

The Permittee has proposed to use CEMS data and emissions factors approaches to calculate SO2 emissions from various emissions units on a monthly and 12-month basis. The following Section provides details on calculation procedures.

§51.166(w)(7)(vii) -- Monitoring Methods for Emissions Units

The Permittee shall comply with monitoring requirements for each emission unit in accordance with §51.166(w)(12).

Any monitoring system authorized for use in the PAL permit must be based on sound science and meet generally acceptable scientific procedures for data quality and manipulation. Additionally, the information generated by such system must meet minimum legal requirements for admissibility in a judicial proceeding to enforce the PAL permit.

The PAL monitoring system must employ one or more of the four general monitoring approaches meeting the minimum requirements set forth in paragraphs (w)(12)(ii)(A) through (D) of §51.166 and must be approved by the reviewing authority.

The following are four acceptable monitoring approaches when conducted in accordance with the minimum requirements in §51.166(w)(12)(iii) through (ix).

a. Mass Balance Calculations

b. CEMS

c. CPMS or PEMS

d. Emission Factors

As indicated above, the Permittee has proposed to use CEMS and emission factors approaches to calculate SO2 emissions on a monthly basis for each SO2 emissions unit.

§51.166(w)(12)(iv) - CEMS

In accordance with *§51.166(w)(12)(iv)*, an owner or operator using CEMS to monitor PAL pollutant emissions shall meet the following requirements:

(A) CEMS must comply with applicable Performance Specifications found in 40 CFR Part 60 Appendix B; and
(B) CEMS must sample, analyze, and record data at least every 15 minutes while the emissions unit is operating.

PCS currently operates a CEMS for SO2 emissions from the sulfuric acid plants **(ID Nos. S-5, S-6, and S-7)**. To demonstrate compliance with the SO2 PAL, PCS will continue to monitor monthly emissions from each sulfuric acid plant using a CEMS monitor, in accordance with the applicable Performance Specifications found in 40 CFR Part 60 Appendix B. Monthly emissions will be calculated as the sum of each day of emissions for each sulfuric acid plant, which will be calculated as the sum of each hour of emissions for each plant as measured by each plant's CEMS. The emissions calculation methodology can be found in Attachment 2 of the current permit and is currently already used to calculated emissions of SO2 to demonstrate compliance with the short-term and long-term emissions limits of the Consent Decree Civil Action No. 14-707-BAJ-SCR. PCS will continue to use this calculation methodology to sum SO2 emissions from the sulfuric acid plants each month.

§51.166(w)(12)(vi) – Emission Factors

The Permittee shall meet the following requirements:

- All emission factors shall be adjusted, if appropriate, to account for the degree of uncertainty or limitations in the factors' development.

- The emissions unit shall operate within the designated range of use for the emission factor, if applicable.

- If technically practicable, the owner or operator of a significant emissions unit that relies on an emission factor to calculate PAL pollutant emissions shall conduct validation testing to determine a site-specific emission factor within 6 months of PAL permit issuance, unless the reviewing authority determines that testing is not required.

SO2 emissions from the following sources shall be calculated using emissions factors:

- Auxiliary Boiler (ID No. BW)
- Nos. 1-6 Phosphate Rock Calciners (ID Nos. 339-051 through 339-056)
- Coal/coke Pulverizer Dryer (ID No. 341-300)
- MAP/DAP Nos. 2 and 3 Dryers (ID Nos. 551-032 and 505-104)
- SPA Plant Nos. 1-5 (ID Nos. 451-418, 451-409, 451-701, 451-809, 451-316, 451-308, 451-916, 451-940, 451-1100, and 451-1200)

- Phosphoric Acid Trains Nos. 1-4 (ID Nos. 421-201, 421-000, 421-325, 421-327, 421-223, 421-232, 421-218, 421-330, 422-201, 422-000, 422-325, 422-327, 422-223, 422-232, 422-218, 422-330, 423-201, 423-000, 423-325, 423-327, 423-223, 423-232, 423-218, 423-330, 424-201, 424-000, 424-325, 424-327, 424-223, 424-232, 424-218, and 424-330)
- Phosphoric Acid Pilot Plant No. 2 (ID No. PA Pilot No. 2)
- Mine Pit DPW Emergency Diesel Generator (ID No. 404-814)
- Insignificant Emergency Diesel Generators (ID Nos. I-130-458, I-130-457, I-555-218-484, I-624-293-484, I-624-231-484, I-AHF, I-AHF-FP, I-AHF-BP, I-130-420, and I-130-480)
- Insignificant Emergency Liquid Propane Gas (LPG)-fired Generators (ID Nos. I-190-400-484 and I-407-401)

Auxiliary Boiler (ID No. BW)

The Permittee has proposed to use AP-42 Section 1.3 emissions factors for fuel oil combustion to determine monthly emissions of SO2 from the auxiliary boiler (ID No. BW). Per AP-42 Section 1.3, the SO2 emission factor (lb SO2/10^3 gallon of diesel fuel) is equal to 142 * S, where S is the fuel weight percent sulfur. Thus, for ultra-low sulfur diesel, the fuel weight percent sulfur is 0.0015%, and the emission factor for SO2 is 0.213 lb SO2/10^3 gallons of diesel fuel.

Monthly SO2 emissions from the auxiliary boiler (ID No. BW) shall be calculated each month according to the following calculation:

SO2 lb/month = (# gallons of No. 2 fuel oil/month) * (0.213 lb SO2/10^3 gallons of No. 2 fuel oil)

The Permittee shall keep records of No. 2 fuel oil used in the auxiliary boiler per each month as well as records of fuel supplier certification to demonstrate compliance.

Nos. 1-6 Phosphate Rock Calciners (ID Nos. 339-051 through 339-056)

The Permittee has proposed to use site-specific data to determine monthly emissions of SO2 from the calciners (ID Nos. 339-051 through 339-056) when firing No. 6 fuel oil or coal. Currently, PCS conducts annual stack testing on one calciner each year on a rotating basis as representative of all calciners. The stack testing is conducted while firing coal or No. 6 fuel oil. The stack testing emission factor to be used for monthly SO2 emissions calculations shall be the average of the stack testing emissions factors from the previous five calendar years, 2020 through 2024. This site-specific emission factor shall be revalidated every five years. The following data was used to determine the site-specific emission factor for the calciners:

Calciners	
Calendar Year	**SO2 emission rate lb/MMBtu**
2020	0.0008
2021	0.0093
2022	0.001
2023	0.0234
2024	0.0564
Average	**0.01818**
Median	0.0093

The Permittee shall use AP-42 Section 1.3 emissions factors when firing No. 2 fuel oil and AP-42 Section 1.4 emissions factors when firing natural gas. Per AP-42 Section 1.3, the SO2 emission factor for fuel oil combustion (lb SO2/10^3 gallon of diesel fuel) is equal to 142 * S, where S is the fuel weight percent sulfur. Thus, for ultra-low sulfur diesel, the fuel weight percent sulfur is 0.0015%, and the emission factor for SO2

is 0.213 lb SO2/10^3 gallons of diesel fuel. Per AP-42 Section 1.4, the SO2 emission factor for natural gas combustion is equal to 0.6 lb SO2/MMSCF.

Monthly SO2 emissions from the calciners shall be calculated each month according to the following calculation:

SO2 lb/month = [(MMBtu/month, total of coal and No. 6 fuel oil) * (0.018 lb SO2/MMBtu)] + [(# gallons of No. 2 fuel oil/month) * (0.213 lb SO2/10^3 gallons of No. 2 fuel oil)] + [(MMSCF natural gas/month) * (0.6 lb SO2/MMSCF)]

The Permittee shall keep records of hours of operation on each fuel, records of No. 2 fuel oil and natural gas usage, and records of fuel supplier certification to demonstrate compliance.

Coal/coke Pulverizer Dryer (ID No. 341-300)

As per the application, a slip stream of hot exhaust from the calciners (approximately 2% of a single calciner's hot exhaust flow) is diverted to the drying system to dry the coal before grinding. Emissions from this emissions source will already be included in the emissions totals for Calciners Nos. 1 through 6, so there are no additional emissions from this source that will not be accounted for in the calciners' emissions calculations.

MAP/DAP Nos. 2 and 3 Dryers (ID Nos. 551-032 and 505-104)

The Permittee has proposed to use site-specific data to determine monthly emissions of SO2 from the MAP/DAP Nos. 2 and 3 Dryers (ID Nos. 551-032 and 505-104). Currently, PCS conducts stack testing on MAP/DAP Plant No. 2 every five years. Testing on this emission source was conducted most recently in calendar years 2013, 2018, and 2023, so the stack testing emissions factor to be used for monthly SO2 emissions calculations shall be the average of the previous three stack tests. This site-specific emission factor shall be revalidated every five years. The following data was used to determine the site-specific emission factor for MAP/DAP Plant No. 2:

DAP/MAP No. 2			
Year	**SO2 Emission Rate lb/hr**	**Process Throughput ton/hr**	**Emission Factor lb/ton**
2013	2.3	36.3	0.063360882
2018	11.5	40.2	0.286069652
2023	0.45	39.9	0.011278195
Average			**0.120236243**
Median			0.063360882

The permit currently contains no SO2 testing requirements for MAP/DAP Plant No. 3. Emissions for this emission source shall be calculated using the most recent stack testing emission factor for this plant of 0.009 lb SO2/ton of P_2O_5 input, based on stack testing conducted in 1996 on DAP Plant No. 1.

Monthly SO2 emissions from the MAP/DAP Nos. 2 and 3 Dryers shall be calculated each month according to the following calculations:

SO2 lb/month = (Plant 2 P_2O_5 input ton/month) * (0.120 lb SO2/ton P_2O_5 input) for DAP/MAP No. 2

SO2 lb/month = (Plant 3 P_2O_5 input ton/month) * (0.009 lb SO2/ton P_2O_5 input) for DAP/MAP No. 3

The Permittee shall keep records of the monthly P_2O_5 input for each plant to demonstrate compliance.

SPA Plant Nos. 1-5 (ID Nos. 451-418, 451-409, 451-701, 451-809, 451-316, 451-308, 451-916, 451-940, 451-1100, and 451-1200)

The Permittee has proposed to use site-specific data to determine monthly emissions of SO2 from the SPA Plant Nos. 1-4 (ID Nos. 451-418, 451-409, 451-701, 451-809, 451-316, 451-308, 451-916, and 451-940). Currently, PCS conducts annual stack testing on each SPA Plant. SPA Plants 3 and 4 share a stack, so stack testing is conducted on both plants simultaneously, and the emissions factor determined during testing applies to both plants.

For SPA Plant No. 1 (ID Nos. 451-418 and 451-409), the stack testing emissions factor to be used for monthly SO2 emissions calculations shall be the average of the stack testing emissions factors from the previous five calendar years, 2020 through 2024. This site-specific emission factor shall be revalidated every five years. The following data was used to determine the site-specific emission factor for SPA Plant No. 1:

SPA 1				
Year	**SO2 Emission Rate lb/hr**	**Process Throughput ton/day**	**Process Throughput ton/hr**	**Emission Factor lb/ton**
2020	0.48	475.2	19.8	0.024242424
2021	0.093	457.9	19.07916667	0.004874427
2022	0.072		23.34	0.003084833
2023	0.014		23.66	0.000591716
2024	0.053	365.3	15.22083333	0.00348207
Average				**0.007255094**
Median				0.00348207

For SPA Plant No. 2 (ID Nos. 451-701 and 451-809), the stack testing emissions factor to be used for monthly SO2 emissions calculations shall be the average of the stack testing emissions factors from the previous five calendar years where stack testing data is available, 2019 through 2023. This site-specific emission factor shall be revalidated every five years. The following data was used to determine the site-specific emission factor for SPA Plant No. 2:

SPA 2				
Year	**SO2 Emission Rate lb/hr**	**Process Throughput ton/day**	**Process Throughput ton/hr**	**Emission Factor lb/ton**
2019	0.01	317.8	13.24166667	0.000755192
2020	0.001	325.2	13.55	7.38007E-05
2021	0.001	368.4	15.35	6.51466E-05
2022	0.014		14.94	0.000937082
2023	0.004	279.9	11.6625	0.00034298
Average				**0.00043484**
Median				0.00034298

For SPA Plant Nos. 3 and 4 (ID Nos. 451-316, 451-308, 451-916, and 451-940), the stack testing emissions factor to be used for monthly SO2 emissions calculations shall be the average of the stack testing emissions factors from the previous five calendar years where stack testing data is available, 2019 through 2023. This site-specific emission factor shall be revalidated every five years. The following data was used to determine the site-specific emission factor for SPA Plant Nos. 3 and 4:

SPA 3/4

Year	SO2 Emission Rate lb/hr	Process Throughput ton/day	Process Throughput ton/hr	Emission Factor lb/ton
2019	0.4	732.9	30.5375	0.013098649
2020	0.56	910	37.91666667	0.014769231
2021	0.0502	996.6	41.525	0.00120891
2022	0.281	914.7	38.1125	0.007372909
2023	0.328	760.5	31.6875	0.010351085
Average				**0.009360157**
Median				0.010351085

For SPA Plant No. 5, this source has not yet been constructed or operated, and the permit contains no SO2 stack testing requirements for this SPA plant. This source was permitted as part of the T55 revision which corresponds to Application No. 0700071.17C. The T55 permit review notes that the SO2 emissions factor used to determine projected actual emissions from SPA Plant Nos. 3 and 4 is the same for SPA Plant No. 5. Thus, calculation of SO2 emissions from SPA Plant No. 5, if it is constructed and operated, shall be determined using the same SO2 emission factor as SPA Plant Nos. 3 and 4 as provided above.

Monthly SO2 emissions from the SPA Plants shall be calculated each month according to the following calculations:

SO2 lb/month = (Plant 1 P_2O_5 input ton/month) * (7.26E-03 lb SO2/ton P_2O_5 input) for SPA Plant No. 1

SO2 lb/month = (Plant 2 P_2O_5 input ton/month) * (4.35E-04 lb SO2/ton P_2O_5 input) for SPA Plant No. 2

SO2 lb/month = (Plant 3 and 4 combined P_2O_5 input ton/month) * (9.36E-03 lb SO2/ton P_2O_5 input) for SPA Plant Nos. 3 and 4

SO2 lb/month = (Plant 5 P_2O_5 input ton/month) * (9.36E-03 lb SO2/ton P_2O_5 input) for SPA Plant No. 5

The Permittee shall keep records of the monthly P_2O_5 input for each plant to demonstrate compliance.

Phosphoric Acid Trains Nos. 1-4 (ID Nos. 421-201, 421-000, 421-325, 421-327, 421-223, 421-232, 421-218, 421-330, 422-201, 422-000, 422-325, 422-327, 422-223, 422-232, 422-218, 422-330, 423-201, 423-000, 423-325, 423-327, 423-223, 423-232, 423-218, 423-330, 424-201, 424-000, 424-325, 424-327, 424-223, 424-232, 424-218, and 424-330)

The Permittee has proposed to use site-specific data to determine monthly emissions of SO2 from the PA Trains Nos. 1-4 (ID Nos. 421-201, 421-000, 421-325, 421-327, 421-223, 421-232, 421-218, 421-330, 422-201, 422-000, 422-325, 422-327, 422-223, 422-232, 422-218, 422-330, 423-201, 423-000, 423-325, 423-327, 423-223, 423-232, 423-218, 423-330, 424-201, 424-000, 424-325, 424-327, 424-223, 424-232, 424-218, and 424-330). Currently, PCS conducts stack testing on either Train No. 1 or 2 and Train No. 3 or 4 at least once every three calendar years.

For PA Trains No. 1 and 2 (ID Nos. 421-201, 421-000, 421-325, 421-327, 421-223, 421-232, 421-218, 421-330, 422-201, 422-000, 422-325, 422-327, 422-223, 422-232, 422-218, and 422-330), the stack testing emissions factor to be used for monthly SO2 emissions calculations shall be the average of the stack testing emissions factors from the previous five tests for which data is available, 2018 through 2023. This site-specific emission factor shall be revalidated every five years. The following data was used to determine the site-specific emission factor for PA Trains Nos. 1 and 2:

PA Trains	Train 1	Train 2	

Year	SO2 Emission Rate lb/day	Process Throughput ton/day	Process Throughput ton/hr	SO2 Emission Rate lb/day	Process Throughput ton/day	Emission Factor lb/ton
2018				102	1120	0.091071429
2019	120	1109.2				0.10818608
2020				78	1070	0.072897196
2021*						
2022				143	1011.1	0.141430126
2023	151	972	40.5			0.155349794
Average						**0.113786925**
Median						0.10818608

*Testing was conducted in calendar year 2021 for PA Train No. 1, but the test has not been reviewed by SSCB, so this data point was excluded.

For PA Trains No. 3 and 4 (ID Nos. 423-201, 423-000, 423-325, 423-327, 423-223, 423-232, 423-218, 423-330, 424-201, 424-000, 424-325, 424-327, 424-223, 424-232, 424-218, and 424-330), the stack testing emissions factor to be used for monthly SO2 emissions calculations shall be the average of the stack testing emissions factors from the previous five tests for which data is available, 2018 through 2023. This site-specific emission factor shall be revalidated every five years. The following data was used to determine the site-specific emission factor for PA Trains Nos. 3 and 4:

PA Trains	Train 3			Train 4		
Year	SO2 Emission Rate lb/day	Process Throughput ton/day	Process Throughput ton/hr	SO2 Emission Rate lb/day	Process Throughput ton/day	Emission Factor lb/ton
2018				371	1201	0.308909242
2019*						
2020				235	1186	0.198145025
2021	283	1087.5				0.260229885
2022				172	1044.1	0.164735179
2023	337	1267.2	40.5			0.265940657
Average						**0.239591998**
Median						0.260229885

*Testing was conducted in calendar year 2019 for PA Train No. 3, but the process throughput information is not available, so the emission factor in lb/ton could not be calculated.

Monthly SO2 emissions from the PA Trains shall be calculated each month according to the following calculations:

SO2 lb/month = (Trains 1 and 2 combined P_2O_5 input ton/month) * (0.114 lb SO2/ton P_2O_5 input) for PA Trains Nos. 1 and 2

SO2 lb/month = (Trains 3 and 4 combined P_2O_5 input ton/month) * (0.240 lb SO2/ton P_2O_5 input) for PA Trains Nos. 3 and 4

The Permittee shall keep records of the monthly P_2O_5 input for each plant to demonstrate compliance.

Phosphoric Acid Pilot Plant No. 2 (ID No. PA Pilot No. 2)

The Permittee has proposed to use site-specific data to determine monthly emissions of SO2 from the Phosphoric Acid Pilot Plant No. 2 (ID No. PA Pilot No. 2). Emissions from this source will be calculated each month using a methodology currently utilized in annual emissions inventory reporting, which is based on maximum hourly process throughput of the pilot plant and a PTE-based emission factor from amber acid production in PA Trains 3 and 4.

Monthly SO2 emissions from the PA Pilot Plant No. 2 shall be calculated each month according to the following calculation:

SO2 lb/month = [(36 lb P_2O_5 input/hr) / (2000 lb/ton) * (0.391 lb SO2/ton P_2O_5 input)] * hr/month operated

This calculation reduces to the following equation:

SO2 lb/month = (7.04E-03 lb SO2/hr) * (hr/month operated)

The Permittee shall keep records of the monthly hours of operation of the PA Pilot Plant No. 2 to demonstrate compliance.

Emergency Diesel Generators (ID Nos. 404-814, I-130-458, I-130-457, I-555-218-484, I-624-293-484, I-624-231-484, I-AHF, I-AHF-FP, I-AHF-BP, I-130-420, and I-130-480)

The Permittee has proposed to use AP-42 Section 1.3 emissions factors for fuel oil combustion to determine monthly emissions of SO2 from the diesel-fired generators (ID Nos. I-130-458, I-130-457, I-555-218-484, I-624-293-484, I-624-231-484, I-AHF, I-AHF-FP, I-AHF-BP, I-130-420, and I-130-480). Per AP-42 Section 1.3, the SO2 emission factor (lb SO2/10^3 gallon of diesel fuel) is equal to 142 * S, where S is the fuel weight percent sulfur. Thus, for ultra-low sulfur diesel, the fuel weight percent sulfur is 0.0015%, and the emission factor for SO2 is 0.213 lb SO2/10^3 gallons of diesel fuel.

However, since PCS requested that the permit not contain a requirement for fuel sulfur certification for the emergency diesel generators, emissions of SO2 from the emergency diesel generators shall be calculated assuming PTE at 0.5% sulfur for diesel fuel, or 71 lb SO2/10^3 gallons of diesel fuel.

Per the application, the Permittee has requested to calculate SO2 emissions from the diesel-fired generators each month assuming potential to emit (PTE) emissions. Per EPA guidance as cited above, PTE for emergency generators may be calculated at 500 hours per year. Monthly emissions from these generators will be based on a estimation of 500 hours of use per year, equally distributed over the entire year based on the number of days in the month and the rated fuel consumption of each engine. Monthly SO2 emissions from the diesel-fired generators shall be calculated each month according to the following calculation:

SO2 lb/month = [(# days in month) / (# days in year) * 500 hours] * (rated gallons/hour/10^3 gallons) * (71 lbs SO2/10^3 gallons)

No other monitoring, recordkeeping, or reporting requirements will apply for the emergency engines.

Emergency Liquid Propane Gas (LPG)-fired Generators (ID Nos. I-190-400-484 and I-130-457)

The Permittee has proposed to use AP-42 Section 3.2 emissions factors for lean-burn engines to determine monthly emissions of SO2 from the LPG-fired generators (ID Nos. I-190-400-484 and I-130-457). Per AP-42 Section 3.2, the SO2 emission factor for lean-burn engines is equal to 5.88E-04 lb/MMBtu.

Per the application, the Permittee has requested to calculate SO2 emissions from the LPG-fired generators each month assuming potential to emit (PTE) emissions. Per EPA guidance as cited above, PTE for emergency generators may be calculated at 500 hours per year. Monthly emissions from these generators will be based on a estimation of 500 hours of use per year, equally distributed over the entire year based on the number of days in the month and the rated fuel consumption of each engine. Monthly SO2 emissions from the LPG-fired generators shall be calculated each month according to the following calculation:

SO2 lb/month = [(# days in month) / (# days in year) * 500 hours] * (rated gallons/hour/10^3 gallons) * (5.88E-04 lbs SO2/10^3 gallons)

Because the Permittee has opted to use potential emissions for monthly calculations, no additional recordkeeping is required for these sources.

§51.166(w)(12)(vii) Recording of Emissions during Unavailability of Monitoring Data

The Permittee shall record and report maximum potential emissions without considering enforceable emission limitations or operational restrictions for an emissions unit during any period of time that there is no monitoring data, unless another method for determining emissions during such periods is specified in the PAL permit.

§51.166(w)(12)(ix) Revalidation

The Permittee shall revalidate the emission factors and any other data used in emissions calculation procedures above for SO2 emissions through performance testing or other scientifically valid means approved by the DAQ. The Permittee shall perform such testing once every five years after the issuance of the PAL permit in accordance with General Condition JJ.

§51.166(w)(7)(viii) Record keeping

The Permittee shall comply with all applicable record keeping requirements in §51.166(w)(13). The Permittee shall retain on site a copy of all records necessary to determine compliance with any requirement in §51.166(w) and of the PAL, including a determination of each emissions unit's 12-month rolling total emissions, for 5 years from the date of such record.

The Permittee shall retain a copy of the following records onsite, for the duration of the PAL effective period plus 5 years:

- A copy of the PAL permit application and any applications for revisions to the PAL; and
- Each annual certification of compliance pursuant to Title V and the data relied on in certifying the compliance. This requirement applies only to the data used to certify compliance with the terms of the actuals PAL permit.

The above records may be retained in electronic format.

§51.166(w)(7)(ix) Reporting

The Permittee shall comply with all applicable reporting requirements in §51.166(w)(14).

The Permittee shall submit semi-annual monitoring reports and prompt deviation reports to the reviewing authority in accordance with the applicable Title V operating permit program. The reports shall meet the requirements in paragraphs §51.166(w)(14)(i) through (iii).

<u>Semiannual Report</u>

The semi-annual report shall be submitted to the Regional Air Quality Supervisor postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December, and July 30 of each calendar year for the preceding six-month period between January and June. This report shall contain the information required in paragraphs §51.166(w)(14)(i)(a) through (g) as included below:

- The identification of Permittee and the permit number.

- Total annual emissions (tons/year) based on a 12-month rolling total for each month in the reporting period recorded pursuant to paragraph §51.166 (w)(13)(i).

- All data relied upon, including, but not limited to, any Quality Assurance or Quality Control data, in calculating the monthly and annual PAL pollutant emissions.

- A list of any emissions units modified or added to the major stationary source during the preceding 6-month period.

- The number, duration, and cause of any deviations or monitoring malfunctions (other than the time associated with zero and span calibration checks), and any corrective action taken.

- A notification of a shutdown of any monitoring system, whether the shutdown was permanent or temporary, the reason for the shutdown, the anticipated date that the monitoring system will be fully operational or replaced with another monitoring system, and whether the emissions unit monitored by the monitoring system continued to operate, and the calculation of the emissions of the pollutant or the number determined by method included in the permit, as provided by paragraph (w)(12)(vii) of this section.

- A signed statement by the responsible official (as defined by the applicable Title V operating permit program) certifying the truth, accuracy, and completeness of the information provided in the report.

Deviation Report

The Permittee shall promptly submit reports of any deviations or exceedance of the PAL requirements, including periods where no monitoring is available. A report submitted pursuant to §70.6(a)(3)(iii)(B) of this chapter shall satisfy this reporting requirement. The deviation reports shall be submitted within the time limits prescribed by the applicable program implementing §70.6(a)(3)(iii)(B) of 40 CFR. The reports shall contain the following information:

- The identification of owner and operator and the permit number.

- The PAL requirement that experienced the deviation or that was exceeded.

- Emissions resulting from the deviation or the exceedance; and

- A signed statement by the responsible official (as defined by the applicable Title V operating permit program) certifying the truth, accuracy, and completeness of the information provided in the report.

Re-validation Results

The Permittee shall submit to the Regional Air Quality Supervisor the results of any revalidation within three months after completion of such revalidation.

5. NSPS, NESHAP/MACT, PSD, 112(r), and CAM Applicability

a. NSPS

The following NSPS regulation apply:

- NSPS Subpart H, Standards of Performance for Sulfuric Acid Plants
- NSPS Subpart Y, Standards of Performance for Coal Preparation and Processing Plants
- NSPS Subpart Dc, Standards of Performance for Small-Industrial-Commercial-Institutional Steam Generating Units

- NSPS Subpart IIII, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
- NSPS Subpart JJJJ, Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS Subpart H

With this permitting action, applicability of NSPS Subpart H will not change.

NSPS Subpart Y

With this permitting action, applicability of NSPS Subpart Y will not change.

NSPS Subpart Dc

With this permitting action, applicability of NSPS Subpart Dc will not change.

NSPS Subpart IIII

With this permitting action, PCS is adding the following new insignificant engines to the permit:

- AHF plant diesel-fired emergency genset **(ID No. I-AHF)** – updating engine rating to 800ekW; manufactured February 2019; constructed 2022
- AHF plant diesel-fired firewater pump genset **(ID No. I-AHF-FP)** – new engine, 300 hp; manufactured February 2019; constructed 2022
- AHF plant diesel-fired booster pump **(ID No. I-AHF-BP)** – new engine, 36 ekW; manufactured February 2019; constructed 2022
- Outfall 007 emergency generator pump **(ID No. I-130-420)** – new engine, 7 ekW; manufactured May 2017; constructed 2021
- Outfall 009 emergency generator pump **(ID No. I-130-480)** – new engine, 7 ekW; manufactured May 2017; constructed 2021

In addition to the new engines added or modified with this permitting action, the following generator at the facility is also subject to NSPS Subpart IIII:

- Diesel-fired emergency engine for ammonia emergency deluge system **(ID No. I-555-218-484)**

Emission Limits

From Table 2 to Appendix I to 40 CFR 1039, the following pollution standards apply to the emergency generators **(ID Nos. I-AHF and I-555-218-484)**:

NMHC and NOx (combined): 6.4 g/kW-hr [4.7 g/hp-hr]
CO: 3.5 g/kW-hr [2.6 g/hp-hr]
PM: 0.20 g/kW-hr [0.15 g/hp-hr]

From Table 4 to 40 CFR 60 Subpart IIII, the following pollution standards apply to the fire pump engines **(ID Nos. I-AHF-FP, I-130-420, and I-130-480)**:

NMHC and NOx (combined): 10.5 g/kW-hr [7.8 g/hp-hr]
CO: 3.5 g/kW-hr [2.6 g/hp-hr]
PM: 0.20 g/kW-hr [0.15 g/hp-hr]

From Table 2 to 40 CFR 60 Subpart IIII, the following pollution standards apply to the emergency engine **(ID Nos. I-AHF-BP)**:

NMHC and NOx (combined): 7.5 g/kW-hr [5.6 g/hp-hr]
CO: 5.5 g/kW-hr [4.1 g/hp-hr]
PM: 0.30 g/kW-hr [0.22 g/hp-hr]

Fuel Requirements

In accordance with 40 CFR 60.4207(b), the facility will be limited to using diesel fuel with a sulfur content of less than 15 ppm. Furthermore, in accordance with 40 CFR 80.510(b) and (c), the diesel fuel must meet one of the following standards: (1) minimum cetane index of 40 and (2) maximum aromatic content of 35 volume percent.

Monitoring Requirements

In accordance with 40 CFR 60.4209(a), the Permittee is required to install a non-resettable hour meter prior to startup of each emergency engine.

In accordance with 40 CFR 60.4209(b), if the emergency engines are equipped with diesel particulate filters to comply with the above emissions standards, the Permittee shall install a backpressure monitor on each diesel particulate filter that notifies the Permittee when the high backpressure limit of the engine is approached.

In accordance with 40 CFR 60.4206 and 60.4211(a), the Permittee shall operate and maintain each stationary CI ICE that achieves the emission standards in 40 CFR 60.4205 over the entire life of the engine according to the manufacturer's emission-related written instructions or procedures developed by the Permittee that are approved by the engine manufacturer. The Permittee may only change engine settings that are permitted by the manufacturer.

In accordance with 40 CFR 60.4211(c), the Permittee is required to purchase engines which are certified to the emission standards listed in Table 1 of 40 CFR 89.112.

In accordance with 40 CFR 60.4211(f), the Permittee will be allowed to operate the emergency engines for the purposes of maintenance checks and readiness testing for no more than 100 hours per year. Any operation of the emergency engines other than for emergency operation, maintenance, and readiness testing will be prohibited. If an engine is not operated according to the requirements of 40 CFR 60.4211 paragraphs (f)(1) through (3), the engine will not be considered an emergency engine under this Subpart and shall meet all requirements for non-emergency engines.

Recordkeeping Requirements

In accordance with 40 CFR 60.4214(b), if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the Permittee shall keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The Permittee shall record the time and operation of the engine and the reason the engine was in operation during that time.

In accordance with 40 CFR 60.4214(c), if the stationary CI internal combustion engine is equipped with a diesel particulate filter, the Permittee shall keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high backpressure limit of the engine is approached.

Reporting Requirements

In accordance with 40 CFR 60.4214(d), if the Permittee owns or operates an emergency stationary CI ICE with a maximum engine power more than 100 HP that operates for the purpose specified in 40 CFR

60.4211(f)(3)(i), he/she must submit an annual report according to the requirements in paragraphs (d)(1) through (3) of 40 CFR 60.4214.

In accordance with 40 CFR 60.4214(e), owners or operators of stationary CI ICE equipped with auxiliary emission control devices (AECDs) pursuant to the requirements of 40 CFR 1039.665 must report the use of AECDs as required by 40 CFR 1039.665(e).

Compliance

The facility has indicated that the new engines will be EPA certified, and the documents shall be available for viewing during compliance inspections.

Compliance with this regulation is expected and will be determined during inspections.

NSPS Subpart JJJJ

With this permitting action, applicability of NSPS Subpart JJJJ will not change.

b. NESHAP/MACT

The following NESHAP/MACT regulation apply:

- NESHAP (Part 61) Subpart R, National Emission Standards for Radon Emissions from Phosphogypsum Stacks
- MACT Subpart AA, National Emission Standards for Hazardous Air Pollutants from Phosphoric Acid Manufacturing Plants
- MACT Subpart ZZZZ, National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
- MACT Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters
- MACT Subpart BB, National Emission Standards for Hazardous Air Pollutants from Phosphate Fertilizer Production Plants

With this permitting action, applicability of NESHAP/MACT regulations will not change.

c. PSD

PCS is classified as an existing major stationary source for PSD purposes. This permitting action will not affect PSD applicability.

With this permitting action, all SO2 avoidance limits pursuant to 15A NCAC 02Q .0317 and all SO2 emission tracking limits pursuant to 15A NCAC 02D .0530(u) will be removed including the following conditions:

- Condition No. 2.1.1 A.7 – (02Q .0317);
- Condition No. 2.1.1 B.4 – (02Q .0317);
- Condition No. 2.1.3 B.8 – (02Q .0317);
- Condition No. 2.2 B.1.d – (02D .0530(u);
- Condition No. 2.2 C.1.c.iv – (02D .0530(u); and
- Condition No. 2.2 C.2.c.iv – (02D .0530(u).

Additionally, Condition No. 2.1.1 A.5, 15A NCAC 02D .0530(u), will be removed with this permitting action because the reporting requirement has been fulfilled. Emissions tracking for the Sulfuric Acid Plant Modification Project was required for five years following resumption of regulator operations after the

change was made. The first report was received on February 26,2016, and reporting continued annually until the fifth and final report was received on February 27, 2020.

d. 112(r)

PCS is subject to Section 112(r) of the Clean Air Act and complies with the applicable requirements of 15A NCAC 02D .2100, "Risk Management Program". This permitting action will not affect 112(r) applicability.

e. CAM

This permitting action will not affect CAM applicability.

6. Facility Wide Air Toxics

The facility has previously conducted modeling dispersion analyses for a number of toxic air pollutants. This permitting action does not affect applicability to air toxics permitting nor does it increase the emission rate of any toxic air pollutant.

7. Facility Emissions Review

Page 1 of this review includes actual emissions data for calendar years 2019 through 2023. No emissions changes are expected with this permitting action.

8. Compliance History/Statement

DAQ has reviewed the compliance status of this facility. The most recent full facility-wide inspection, conducted on June 4, 2024 by Robert Bright of the Washington Regional Office, appears to indicate that the facility was operating in compliance at the time of the inspection.

Moreover, the facility responsible official has certified compliance with all applicable requirements through completion of form E5, signed November 24, 2024.

The facility has not received a Notice of Violation in the last five years.

9. Public Notice/EPA and Affected State(s) Review

Pursuant to 15A NCAC 02Q .0521 and 40 CFR 51.166(w)(5) as implemented through 02D .0530, a notice of the draft Title V Operating Permit was published on the DAQ website on XXXXX XX, 2025 providing for a 30-day comment period with an opportunity for a public hearing.

On XXXXX XX, 2025, copies of the draft (proposed) permit, review and public notice were sent to EPA (for their 45-day review), and to the affected states, interested persons on the Title V mailing list, and to the Permittee.

Public comment and EPA review periods have ended on XXXXXX XX, 2025 and XXXXX XX, 2025, respectively.

10. Other Regulatory Considerations

- Professional Engineer (PE) Seal Requirement – 15A NCAC 02Q .0112, Applications Requiring Professional Engineer Seal

  A PE Seal was not required for this application since no control devices are being added or modified.

- Zoning Requirement – 15A NCAC 02Q .0507(d)

Pursuant to 15A NCAC 02Q .0507(d), a zoning consistency determination is required for a new facility or for expansion of an existing facility in accordance with G.S. 143-215.108(f).

A zoning consistency determination is not required for this application because the facility is not expanding per 02Q .0507(d).

- An application fee of $8,186 was required and received for Application No. 0700071.24C on November 30, 2024.

- The correct number of applications were received with the initial submittal on November 26, 2024.

11. Conclusions, Comments, and Recommendations

Comments on the draft permit were received from Mr. Joe Sullivan of PCS Phosphate on June 11 and 12, 2025. A revised draft was sent back to Mr. Sullivan on June 20, 2025, and several follow-up comments were made from June 23-30, 2025.

The comments and DAQ responses are summarized as follows:

Comment 1: This comment inquired why Permit Condition No. 2.1.1 A.5 for 15A NCAC 02D .0530(u) was removed.

DAQ Response: This permit condition was removed because the 5-year reporting requirement has been completed, and the condition is no longer needed.

Comment 2: This comment proposed an alternative calculation for emissions of SO2 from the Mine Pit DPW Generator.

From: SO2 lb/month = (# gallons of No. 2 fuel oil/month) * (EF lb SO2/10^3 gallons of No. 2 fuel oil)

To: SO2 lb/month = (# hours in month) * (rated gallons/hour/10^3 gallons) * (EF lbs SO2/103 gallons)

DAQ Response: Agree with comment. This change will be made to the draft permit prior to public notice.

Comment 3: This comment added clarifying language to the deviation reporting requirements of draft Section 2.6 A.mm.i.E such that the alternative monitoring provisions allowed under draft Section 2.6 A.h are not considered “malfunctions”.

DAQ Response: Agree with comment. This change will be made to the draft permit prior to public notice.

Comment 4: This comment added language specifying the timeframe for noncompliance reporting pursuant to 40 CFR 70.6(a)(3)(iii)(B) in draft Section 2.6 A.mm.ii.

DAQ Response: Agree with comment made on June 30, 2025. The permit language will be updated to include a reference to the reporting timeframes given in General Conditions I.A and I.B.

Comment 5: In summary, this comment is requesting removal of the fuel sulfur certification monitoring requirements in the proposed SO_2 PAL for the emergency engines combusting diesel fuel. These engines combust only ultra-low sulfur diesel (ULSD) which has a maximum sulfur content of 15 ppm. The applicant indicates in this comment that ULSD is the only commercially available diesel fuel, so fuel sulfur certification should not be required for these sources.

DAQ Response: DAQ agrees to remove the fuel sulfur certification monitoring requirements for the emergency engines if the SO2 emissions from these engines are calculated assuming a maximum fuel sulfur content of 0.5%. On June 30, 2025, a comment was provided by the facility indicating they agree with this approach. The draft permit will be revised to update the SO2 emission factor for all the emergency diesel engines to 71 lbs $SO2/10^3$ gallon diesel fuel (based on 0.5% fuel sulfur) and to remove the fuel sulfur certification requirement for all emergency engines. The mine pit DPW generator was also moved to be included with the other emergency engines.

This engineer recommends issuance of Air Permit No. 04176T73 after completion of the public participation and EPA review periods.

Attachment 1: Technical Review for Part I Permit Application No. 0700071.23A

NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date: January 23, 2024

Region: Washington Regional Office
County: Beaufort
NC Facility ID: 0700071
Inspector's Name: Robert Bright
Date of Last Inspection: 04/28/2023
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): PCS Phosphate Company, Inc. - Aurora

Facility Address:
PCS Phosphate Company, Inc. - Aurora
1530 NC Highway 306 South
Aurora, NC 27806

SIC: 2874 / Phosphatic Fertilizers
NAICS: 325312 / Phosphatic Fertilizer Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0507, .0516, .0521, .0530(u), 02Q .0504
NSPS: No
NESHAP: No
PSD: No
PSD Avoidance: No
NC Toxics: No
112(r): No
Other: No

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Khalid Alnahdy Env. & Tech. Services Manager (252) 322-8288 1530 NC Hwy 306 South Aurora, NC 27806	William Ponton General Manager (252) 322-8195 1530 NC Highway 306 South Aurora, NC 27806	Chris Smith Env. Engineering Supervisor (252) 322-8263 1530 NC Highway 306 South Aurora, NC 27806

Application Data

Application Number: 0700071.23A
Date Received: 09/15/2023
Application Type: Modification
Application Schedule: TV-Sign-501(b)(2) Part I

Existing Permit Data
Existing Permit Number: 04176/T69
Existing Permit Issue Date: 07/24/2023
Existing Permit Expiration Date: 11/30/2027

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2021	2631.31	532.97	83.52	403.81	812.82	190.11	82.59 [MIBK (methyl isobutyl ketone)]
2020	2240.91	550.33	123.28	410.46	854.43	229.97	122.27 [MIBK (methyl isobutyl ketone)]
2019	2307.21	457.20	160.20	390.70	818.98	268.66	159.36 [MIBK (methyl isobutyl ketone)]
2018	3439.36	431.10	277.50	424.30	803.52	386.10	276.66 [MIBK (methyl isobutyl ketone)]
2017	3139.72	407.90	155.90	527.70	900.13	251.19	154.84 [MIBK (methyl isobutyl ketone)]

Review Engineer: Emily Supple

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 04176/T70
Permit Issue Date: January 23, 2024
Permit Expiration Date: November 30, 2027

1. Purpose of Application

PCS Phosphate Company, Inc. -Aurora (PCS) currently holds Air Quality Title V Permit No. 04176T69, issued July 24, 2023 with an expiration date of November 30, 2027. The facility, located in Aurora, Beaufort County, North Carolina, conducts phosphoric rock mining and phosphoric acid manufacturing.

On September 15, 2023, the North Carolina Department of Environmental Quality (NCDEQ), Division of Air Quality (DAQ) received permit application No. 0700071.23A via email. The ePay acknowledgement letter was sent and the payment received via ePay the same day.

This permitting action will be considered a Title V significant modification under 15A NCAC 02Q .0516. The proposed project will be processed following procedures set out in 15A NCAC 02Q .0501(b). This application is the first step of a two-step significant modification under 15A NCAC 02Q .0501(b)(2). PCS will submit a second step permit application within 12-months of construction and operation of the modified sources.

With this application, PCS is proposing to replace a fertilizer drying vessel (ID No. 505-104) and two tailgas wet scrubbers (ID Nos. 505-147 and 505-148). The applicant is also requesting a correction to an error in the identification numbers associated with the two tailgas scrubbers, requesting that the expiration date be revised from November 30, 2027 to December 31, 2027, and requesting the addition of a new insignificant activity. These permit changes are discussed in further detail in Section 3 below.

2. Application History

September 15, 2023	Permit Application No. 0700071.23A was received via email. The acknowledgement letter was sent, and the payment was received the same day.
October 17, 2023	A request for additional information was sent to PCS Phosphate for construction cost information.
October 31, 2023	A request for additional information was sent to PCS Phosphate for clarity of permitting procedures and project aggregation information.
November 8, 2023	A response to the October 17, 2023 additional information request was received.
November 9, 2023	An updated Form D4 was received to add an insignificant activity to the permit.
November 13, 2023	A response to the October 31, 2023 additional information request was received.
December 5, 2023	A request for additional information was sent to PCS Phosphate for documentation of construction cost information and updated emissions calculations.
December 7, 2023	Documentation of construction cost information was received.
December 14, 2023	The updated emissions calculations were received.
January 11, 2024	Draft permit and review forwarded to the applicant, the regional office, and SSCB for comments.
January 16, 2024	Comments received from Joe Sullivan of PCS Phosphate. Comments are addressed in Section 11 below.

January 23, 2024 Permit No. 04176T70 issued.

3. Permit Modifications/Changes

Replacement of Dryer (ID No. 505-104) and Tailgas Scrubbers (ID Nos. 505-147 and 505-148)

With this application, PCS is proposing to replace the fertilizer drying vessel (ID No. 505-104) and two tailgas wet scrubbers (ID Nos. 505-147 and 505-148) at the Diammonium/Monoammonium Phosphate (DAP/MAP) No. 2 Plant.

As per the application, the drying vessel, although functioning reliably, could require replacement in the coming years, and PCS plans to replace the unit before reliability is impacted. The drying vessel will be replaced with a functionally equivalent unit with no increase in the production capacity of the MAP/DAP No. 2 Plant.

The two tailgas scrubbers are being replaced due to worker safety concerns during routine maintenance activities requiring that a worker enter the packed bed scrubber between the packing and mist elimination sections. The scrubbers are functioning well with no unforced downtime issues to perform maintenance or repairs. In addition, the scrubbers are effectively controlling air emissions, evidenced by results from annual fluorides and particulate matter emissions testing which indicate that actual emissions are far below permitted limits. The packed bed scrubbers may be replaced with packed bed wet scrubbers, as proposed in the attached permit application forms; however, it is possible that a different type of wet scrubber may be selected. Should a different scrubber design be selected during DAQ's permit review, PCS will provide updated permit application forms to reflect the actual design and operating parameters.

No increase in production or increase in emissions is expected with the equipment replacements. Regulatory applicability is discussed in Sections 4 and 5 below.

Correction of Tailgas Scrubbers' Permit Identification Numbers

With this application, PCS is also requesting correction of errors in the identification numbers of the two abovementioned tailgas scrubbers. Currently, the Dryer Tailgas Scrubber is permitted with the identification number 505-148 and the Reactor/Granulator/Cooler Tailgas Scrubber is also permitted with the identification number 505-148. Prior to issuance of Permit No. 04176T68, the Dryer Tailgas Scrubber was permitted correctly with the identification number 505-147.

The identification numbers for the two scrubbers should be updated such that the Dryer Tailgas Scrubber identification number is 505-147 and the Reactor/Granulator/Cooler Tailgas Scrubber is 505-148, as seen in Table 3.1.

Table 3.1: Tailgas Scrubbers' Identification Numbers

Equipment	Current ID No.	New ID No.
Dryer Tailgas Scrubber	505-148	505-147
Reactor/Granulator/Cooler Tailgas Scrubber	505-148	505-148

The permit ID Nos. for the abovementioned equipment will be corrected with this permitting action.

Correction to Permit Expiration Date

With this application, PCS is also requesting a correction to the current expiration date of the air permit from November 30, 2027 to December 31, 2027.

The most recent permit renewal (04176T68) was issued on December 22, 2022 with an effective date of January 1, 2023.

According to North Carolina General Statutes (NCGS) 143-215.108(d1):

> *"No Title V permit issued pursuant to this section shall be issued or renewed for a term exceeding five years. All other permits issued pursuant to this section shall be issued for a term of eight years."*

Additionally, according to 15A NCAC 02Q .0508(e):

"The expiration date of a permit shall be… for a term of no more than five years from the date of issuance…"

Thus, the expiration date of a newly renewed Title V permit should be no greater than five years from the issue date (rather than the effective date).

Title V permit expiration dates are typically set as the last day of the month prior to the issue month, five years from permit issuance. In this case, since the permit was issued in December of 2022, the expiration date should be set as the 30th of November, 2027, so the expiration date determined during the T68 permit renewal is correct and does not require revision.

Addition of Reactor Descaling Operation

On November 9, 2023, PCS requested that a reactor descaling operation be added to the permit with this revision. A revised Form D4 was sent with the request. The calculation sheet included with the request is shown below in Attachment 1.

Ammonium polyphosphate (APP) is created at PCS by combining phosphoric acid and ammonia in a pipe reactor. Every 12 days, the pipe reactor has a buildup of scale in the pipe that requires cleaning with high pressure hydro blasting. This process is expensive and inefficient, so to make the cleaning process more efficient, the pipe may be heat treated to help loosen the scale. Thus, PCS is proposing to install a process to combust charcoal to provide heat treatment to the pipe.

The pipe reactor will be heated on a bed of charcoal coals which have been lit with propane fuel. The process will be housed with a stack. Approximately 2,800 pounds of charcoal will be combusted at each cleaning, and cleaning will occur 31 times per year. Per AP-42 Section 10.7, Emission Factor Documentation[3], charcoal has a heating value of about 12,000 Btu per pound, so each cleaning event generates 33.6 million Btu from charcoal combustion. Emissions factors for PM10, CO, NOx, and VOC were taken from AP-42 Section 1.6 for dry wood. Table 3.2 shows the expected emissions from charcoal combustion.

Table 3.2: Expected Charcoal Combustion Emissions

Pollutant	Emission Factor (lb/MMBtu)	Emissions (lb/cleaning)	Emissions (tpy)
PM10	0.36	12.1	0.19
CO	0.60	20.2	0.31
NOx	0.49	16.5	0.26
VOC	0.017	0.6	0.01

[3] *Emission Factor Documentation for AP-42 Section 10.7; For U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards, Emission Factor and Inventory Group; Page 2-1*

Since APP contains nitrogen (chemical formula NH_4PO_3), the potential for formation of NOx from combustion of APP scale was also considered. The following information is taken from the request sent on November 9, 2023:

Available nitrogen molecular weight per APP (NH_4PO_3) molecule:	14
Total molecular weight of NH_4PO_3:	97
% Available nitrogen:	14.4%
Pipe volume = pi * (D^2/4) * L = [3.14 * (1 ft^2/4) * 16.5 ft] ft^3 =	13.0 ft^3/cleaning
Density of APP = (1.75 s.g.) * (62.4 lb/ft^3) =	109.2 lb/ft^3
% of pipe volume with scale =	10%
Total available nitrogen = volume * density * % nitrogen * % scale =	20.4 lbs/cleaning
Potential NO formation = (NO MW) / (N MW) * lb N/cleaning =	43.7 lbs/cleaning
Emissions from APP nitrogen conversion = NO/cleaning * # cleanings/yr =	0.68 tpy
Total NOx (charcoal combustion + nitrogen conversion) =	0.93 tpy

It can be seen from the above calculations that no more than 0.68 tons per year of NOx is expected from the combustion of APP scale. Thus, the total NOx expected from this operation is 0.93 tons per year.

Using the emissions factors from AP-42 Section 1.6 for dry wood, Table 3.3 below shows the potential HAP emissions from the reactor descaling operation. It was assumed that each cleaning generates 33.6 million Btu, and 31 cleanings take place per year, for a total of 1,041.6 million Btu per year. It is important to note that charcoal is the solid carbon residue created from the pyrolysis of carbonaceous raw materials such as hardwoods and softwoods. During pyrolysis, the wood is heated to high temperatures which generally drives off the water and VOC content within the wood[4]. Thus, it is not expected that a high amount of VOC content remains in the charcoal. Since most of the compounds shown in Table 3.3 below are considered to be VOC, the emissions shown below represent a conservative overestimation of actual emissions from the combustion of charcoal.

Table 3.3: Expected Charcoal Combustion HAP Emissions

Pollutant	Emission Factor (lb/MMBtu)	Emissions (lb/year)
Acetaldehyde	9.1E-07	9.48E-04
Acrolein	4.0E-03	4.17
Acetophenone	3.2E-09	3.33E-06
Benzene	4.2E-03	4.37
Bis(2-ethylhexyl)phthalate	4.7E-08	4.90E-05
Carbon Tetrachloride	5.4E-06	4.69E-04
Chlorine	7.9E-04	8.23E-01
Chloroform	2.8E-05	2.92E-02
Chlorobenzene	3.3E-05	3.44E-02
2,4-Dinitrophenol	1.8E-07	1.87E-04
Ethylbenzene	3.1E-05	3.23E-02
Formaldehyde	4.4E-03	4.58

[4] *AP-42 Section 10.7, Wood Products Industry – Charcoal, Page 10.7-1*

Hydrogen Chloride	1.9E-02	19.79
MEK	5.4E-06	5.62E-03
Naphthalene	9.7E-05	1.01E-01
4-Nitrophenol	1.1E-07	1.15E-04
Pentachlorophenol	5.1E-08	5.31E-05
Phenol	5.1E-05	5.31E-02
Propionaldehyde	6.1E-05	6.35E-02
Styrene	1.9E-03	1.98
2,3,7,8-Tetrachlorodibenzo-p-dioxin	8.6E-12	8.96E-09
Toluene	9.2E-04	9.58E-01
2,4,6-Trichlorophenol	2.2E-08	2.29E-05
Vinyl Chloride	1.8E-05	1.87E-02
o-Xylene	2.5E-05	2.60E-02
Total		37.04

It can be seen from Tables 3.2 and 3.3 above that emissions from the reactor descaling operation meet the definition of "insignificant activities because of size or production rate" given in 15A NCAC 02Q .0503(8) which means "any activity whose emissions would not violate any applicable emissions standard and whose potential emission of particulate, sulfur dioxide, nitrogen oxides, volatile organic compounds, and carbon monoxide before air pollution control devices, are each no more than five tons per year and whose potential emissions of hazardous air pollutants before air pollution control devices, are each below 1000 pounds per year". Therefore, this activity will be added to the permit as an insignificant activity with the ID No. I-DESCALE.

Table of Changes

Page No.	Section	Description of Changes
Cover and throughout	--	• Updated all dates and permit revision numbers.
Throughout	--	• Replace control device (ID No. 505-148) with control device (ID No. 505-147) where appropriate
7,9	Section 1	• Update descriptions of control devices (ID Nos. 505-147 and 505-148). • Designate sources affected by this significant modification.
70	2.1.3 A.3.c	• Add requirement to establish "normal" visible emissions for new sources
70	2.1.3 A.4.d	• Add performance testing requirement for replacement tailgas scrubbers (ID Nos. 505-147 and 505-148)
74	2.1.3 A.7.h.ii.(A) – (I)	• Add performance testing requirements for replacement tailgas scrubbers (ID Nos. 505-147 and 505-148)
75	2.1.3 A.7.n.vi	• Include requirement for determination of operating ranges for the replacement tailgas scrubbers
178-179	2.2 C.2	• Add projected emissions tracking condition per 15A NCAC 02D .0530(u)
179	2.2 C.3	• Add permit application requirement per 15A NCAC 02Q .0504
188	Section 3	• Add I-DESCALE to list of insignificant activities
189-196	General Conditions	• Updated to the latest version of DAQ shell version 7.0 08/21/2023

Title V Equipment Editor

Changes were made to TVEE with this permitting action. TVEE was reviewed and approved by Connie Horne of DAQ on January 16, 2024.

4. Regulatory Review

This permit modification potentially impacts the following States regulations applicable to the fertilizer drying vessel (ID No. 505-104) and tailgas scrubbers (ID Nos. 505-147 and 505-148):

- 15A NCAC 02D .0507, Particulates from Chemical Fertilizer Manufacturing Plants
- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0521, Control of Visible Emissions
- 15A NCAC 02D .0530, Prevention of Significant Deterioration
- 15A NCAC 02D .0614, Compliance Assurance Monitoring
- 15A NCAC 02D .1100, Toxic Air Pollutant Emissions
- 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart BB)
- 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation Permit

a. <u>15A NCAC 02D .0507, Particulates from Chemical Fertilizer Manufacturing Plants</u>

This rule applies to the DAP/MAP No. 2 Plant (ep 303; ID Nos. 505-104, 505-107, 505-114, 505-110, 505-143, 505-111, 505-103, and 505-121) and states in part that the allowable emissions for particulate matter resulting from the manufacture, mixing, handling, or other operations in the production of chemical fertilizer materials shall not exceed the level calculated with the following equation:

$E_{al} = 9.377(P)^{0.3067}$

Where: E_{al} = the maximum allowable emission rate for particulate matter in pounds per hour
P = the process rate as the sum of the production rate and the recycle rate in tons per hour

As given by the application, the production rate of the DAP/MAP No. 2 Plant is approximately 305,000 tons per year of P_2O_5, and the plant operates for 8,760 hours per year. The allowable emission rate can be calculated as follows:

$E_{al} = 9.377(305{,}000/8{,}760)^{0.3067}$
E = 27.9 pounds per hour

The actual particulate emission rate (E_{ac}) from the DAP/MAP No. 2 Plant, post-modification, can be estimated as follows:

E_{ac} = (emission factor lb/ton P_2O_5) x (production rate of DAP/MAP No. 2 Plant ton/hr)
E_{ac} = (0.122 lb/ton P_2O_5*) x (305,000/8,760 ton/hr)
E_{ac} = 4.25 lb/hr
*The emission factor used is the highest emission factor obtained during stack testing occurring within the five-year lookback period.

Since the expected actual emission rate is less than the allowable emission rate (4.25 lb/hr < 27.9 lb/hr), the facility is expected to be in compliance with this regulation.

No change to this regulation is required as part of this permitting action.

b. <u>15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources</u>

This rule applies to the residual oil/No. 2 fuel oil/natural gas-fired drying vessel at the DAP/MAP No. 2 Plant (ID No. 505-104) and states in part that emissions of sulfur dioxide from any source of combustion shall not exceed 2.3 pounds of sulfur dioxide per million Btu heat input.

As per Permit Condition No. 2.1.3 A.2, PCS complies with this regulation by ensuring that the maximum fuel sulfur content of any fuel burned in the dryer shall not exceed 2.1 percent by weight. PCS monitors

the sulfur content of the residual oil received and burned in the dryer by using fuel supplier certification. No monitoring or recordkeeping is required for sulfur dioxide emissions from the firing of natural gas or No. 2 fuel oil.

With this application, PCS is replacing the drying vessel at the DAP/MAP No. 2 Plant, but as stated in the application, the existing combustion chamber supplying heat to the process will not be modified. Thus, no change is expected to the heat input rate of the dryer. Furthermore, PCS is not adding any additional fuels to the list of permitted fuels for the dryer.

PCS will continue to monitor the sulfur content of fuels received and burned in the drying vessel. No change to this regulation is required as part of this permitting action. Continued compliance with this regulation is expected.

c. 15A NCAC 02D .0521, Control of Visible Emissions

This rule applies to the DAP/MAP No. 2 Plant (ep 303) and states in part that visible emissions from this source shall be less than 20 percent opacity.

PCS complies with this regulation by conducting monthly visible emission observations on ep 303 and following the recordkeeping/reporting requirements given in Permit Condition No. 2.1.3 A.3.c, d, and e.

With this application for replacement of several pieces of equipment, no changes are expected to visible emissions. Continued compliance is expected.

d. 15A NCAC 02D .0530, Prevention of Significant Deterioration (PSD)

PSD applicability and requirements for the proposed project are discussed in Section 5 below.

e. 15A NCAC 02D .0614, Compliance Assurance Monitoring

CAM applicability and requirements for the proposed project are discussed in Section 5 below.

f. 15A NCAC 02D .1100, Toxic Air Pollutant Emissions

Air toxics applicability for the proposed project is discussed in Section 6 below.

g. 15A NCAC 02D .1111, Maximum Achievable Control Technology (MACT) (40 CFR 63 Subpart BB)

MACT applicability and requirements for the proposed project are discussed in Section 5 below.

h. 15A NCAC 02Q .0504, Option for Obtaining Construction and Operation Permit

With this application, PCS is requesting a construction and operation permit following the procedures pursuant to 15A NCAC 02Q .0501(b)(2) as set forth in 15A NCAC 02Q .0504. This application serves as part one of the two-part process.

PCS will submit an application incorporating the construction and operation permit into the Title V operating pursuant to 15A NCAC 02Q .0501(b)(2).

This condition will be added under Section 2.2 C of the revised permit.

5. NSPS, NESHAP, PSD, CAM, and 112(r) Applicability

NSPS

PCS is subject to the following New Source Performance Standards (NSPS) under 40 CFR Part 60:

- 40 CFR Part 60 Subpart H for Sulfuric Acid Plants
- 40 CFR Part 60 Subpart Dc for Small Industrial-Commercial-Institutional Steam Generating Units
- 40 CFR Part 60 Subpart Y for Coal Preparation and Processing Plants

No NSPS regulations will be added or affected by this permitting action.

NESHAP

PCS is subject to the following National Emission Standards for Hazardous Air Pollutants (NESHAP) or Maximum Achievable Control Technology (MACT) standards under 40 CFR Part 63:

- 40 CFR Part 63 Subpart DDDDD for Industrial, Commercial, and Institutional Boilers and Process Heaters
- 40 CFR Part 63 Subpart AA for Phosphoric Acid Manufacturing Plants
- 40 CFR Part 63 Subpart BB for Phosphoric Fertilizer Production Plants
- 40 CFR Part 63 Subpart ZZZZ for Stationary Reciprocating Internal Combustion Engines

On February 4, 2022, 1-bromopropane was added to EPA's list of hazardous air pollutants (HAPs). This facility does not use or emit 1-bromopropane.
The DAP/MAP No. 2 Plant is currently subject only to MACT Subpart BB. The facility will not become subject to any new MACT regulations with this application.

MACT Subpart BB

MACT Subpart BB regulates HAP emissions from phosphate fertilizer production plants at major sources of HAP emissions. The DAP/MAP No. 2 Plant is an existing phosphate fertilizer production plant and is subject to MACT Subpart BB.

As given in 40 CFR 63.2, a reconstruction is defined as "the replacement of components of an affected or a previously nonaffected source to such an extent that: (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and (2) it is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source".

Information was provided via email on November 8, 2023 that the estimated capital cost of the installation of the new dryer for the DAP/MAP No. 2 Plant project is about $4.6 million whereas the cost to construct a new plant (excluding the cost of control devices) would be over $30 million, according to a cost study conducted by Duff & Phelps in 2015. Therefore, the proposed changes will not exceed 50 percent of the fixed capital cost to construct a comparable new source and are not considered to be a reconstruction per 40 CFR 63.2.

With this application, PCS will be installing replacement scrubbers on the DAP/MAP No. 2 Plant. In order to determine compliance with the emission limits given in MACT Subpart BB, PCS must conduct performance testing on the new scrubbers within 180 days of startup post-modification. The operating limits for the new scrubbers shall be established during initial performance testing and will be incorporated into the permit with an administrative amendment or as part of the second step significant modification. Until performance testing is completed and the results approved by DAQ, PCS shall operate the tailgas scrubbers at the operating ranges specified by the manufacturer. Once performance testing is completed and the results approved by DAQ, PCS shall submit a permit application for administrative amendment to DAQ to revise the operating ranges of the scrubber listed under MACT Subpart BB (2.1.3 A.7.n.i through vi).

PCS shall use the new operating ranges immediately after DAQ approves the results of the performance test.

No changes to the requirements or applicability of MACT Subpart BB will otherwise occur with this application.

PSD

PCS is classified as an existing major stationary source for PSD purposes. The DAP/MAP No. 2 Plant is subject to BACT as specified in Table 5.1 below. PCS currently demonstrates compliance with BACT by conducting performance testing on the DAP/MAP No. 2 Plant annually for filterable particulate matter and fluorides and once every permit term for nitrogen oxides and sulfur dioxide. PCS must also monitor and record the mass flow rate of phosphorous-bearing material to the process, the pressure drop across each wet scrubber, and the flow rate of scrubbing liquid to each scrubber.

PCS will be required to conduct performance testing within 180 days of startup of the DAP/MAP No. 2 Plant following the changes made with this application to determine compliance with BACT and to determine the operating limits of the replacement scrubbers. The facility will continue to conduct testing to demonstrate compliance with BACT after completion of the proposed project. No changes to BACT will be made with this application.

The application indicates that no increase to production capacity will occur with this application, and the control efficiencies of the replacement scrubbers are assumed to be equal to or greater than the control efficiencies of the existing scrubbers. Therefore, the facility is expected to continue to comply with the BACT as shown in Table 5.1 below.

Table 5.1: BACT Compliance

Emission Source	Pollutant	Control Method	BACT	Emission Rates/Factors Used to Determine BAE*	Emission Rates/Factors Used to Determine PAE**	In Compliance with BACT?
DAP/MAP Plant No. 2	Nitrogen oxides	Conventional combustion	14.7 pounds per hour	0.78 pounds per hour	2.44 pounds per hour	Yes
DAP/MAP Plant No. 2	VOC	Good engineering practices	N/A	0.005 pounds per hour	0.02 pounds per hour	Yes
DAP/MAP Plant No. 2	Sulfur dioxide	Scrubbing with process ammonia	15 pounds per hour	4.06 pounds per hour	9.96 pounds per hour	Yes
DAP/MAP Plant No. 2	Total fluorides	Venturi and packed bed scrubbers	0.058 pounds per ton of equivalent P_2O_5 feed	0.0125 pounds per ton of equivalent P_2O_5 feed	0.0122 pounds per ton of equivalent P_2O_5 feed	Yes
DAP/MAP Plant No. 2	TSP/PM_{10}	Venturi and packed bed scrubbers	64.1 pounds per hour	8.02 pounds per hour	10.83 pounds per hour	Yes

Emission Source	Pollutant	Control Method	BACT	Emission Rates/Factors Used to Determine BAE*	Emission Rates/Factors Used to Determine PAE**	In Compliance with BACT?
*Emission rates/factors calculated as the average emission rate for the combined DAP and MAP production from the 2019 and 2020 emission inventory calculations shown in Attachments 2 and 3 below. It was assumed that the DAP/MAP Plant No. 2 operated for 8,760 hours per year. No emission rate exceeded BACT during the baseline period for any regulated NSR pollutant. **Emission rates/factors used to determine PAE were identified as the maximum emission factor during the baseline period. A maximum projected production rate of 305,000 tons per year of P_2O_5 input was selected to ensure that the potential future product demand could be met.						

PSD Applicability

The PSD regulations are applicable to construction of any new major stationary source or an existing major stationary source undergoing a major modification. PCS is classified as an existing major stationary source for PSD purposes. Preconstruction review requires an evaluation to determine if the proposed project results in a net emissions increase of any regulated pollutant above its associated significant emission rate (SER) listed in 40 CFR 51.166(b)(23). Projects determined to exceed these thresholds must undergo a detailed review of control technology, ambient impacts analysis, and additional analysis to obtain a PSD permit prior to the start of construction.

Replacing the equipment in the DAP/MAP No. 2 Plant represents a physical change or change in the method of operation. As such, the emissions resulting from the modification were reviewed to determine if the project would be considered a major modification under the PSD rules. PCS used the "actual-to-projected-actual applicability test for projects that only involve existing emissions units" as specified in 40 CFR 51.166(a)(7)(iv)(c). No increase in production is expected to occur with the changes from this application nor will the changes result in "debottlenecking" in any other areas of the plant.

Baseline Actual Emissions

As specified in 15A NCAC 02D .0530, BAE are calculated as the average rate, in tons per year (tpy), at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the five-year period immediately preceding the date that a complete permit application is received.

For the BAE, PCS conducted a five-year look-back period using emissions from DAP Plant No. 2 (EP 303) as reported in DAQ's emission inventory. PCS selected January 2019 through December 2020 as the 24-month baseline period for each NSR pollutant, so BAE emissions are calculated using average annual emissions inventory values for CY2019 and 2020. The emission inventory calculations were updated to remove the condensable portion of PM, which is not required for this PSD analysis, but which was required to be included in the original emission inventory. The emission inventories were also updated for corrected particulate matter emissions factors. Attachments 2 and 3 below show the detailed emissions inventories for CY2019 and 2020 for DAP/MAP No. 2 Plant. Table 5.2 below contains the BAE for each regulated pollutant.

Table 5.2: Baseline Actual Emissions

Pollutant	Average Emission Rate (tpy)
	2019-2020
SO2	17.8
NOx	3.4

Pollutant	Average Emission Rate (tpy)
	2019-2020
CO	0.42
PM	35.1
PM10	35.1
PM2.5	35.1
VOC	0.02
Fluorides (excluding HF)	5.13
Lead	8.90E-04

Projected Actual Emissions

PAE is defined in 40 CFR 51.166(b)(40) as the maximum annual rate, in tpy, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years (12-month period) following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that regulated NSR pollutant. This project will not affect the design capacity or potential to emit of DAP/MAP No. 2 Plant.

Emissions of particulate matter (PM), PM10, PM2.5, and fluorides are tested annually, while nitrogen oxides (NOx) and sulfur dioxide (SO_2) are tested once permit cycle. The emission factors for these pollutants were determined via source testing. Because MAP and DAP can both be produced in DAP/MAP No. 2 Plant, PAE for these pollutants were based on the highest emission factor for either MAP or DAP production used during the baseline look-back period (2019-2020). The selected emission factor for each pollutant was then multiplied by the highest anticipated input rate of 305,000 ton of phosphoric acid (P_2O_5) per year.

Fluoride emissions also included fugitive emissions from the fertilizer plants (EP 391 and EP 392) and storage of product in the fertilizer warehouse (EP 390). Lead emissions were determined based on the PM emissions and previously measured concentrations.

Emissions of VOC, CO, and CO2e result only from combustion of fuel oil in the residual oil-fired dryer (ID No. 505-104). Emissions of these pollutants were calculated using US EPA AP-42 emission factors for No. 6 fuel oil (i.e., residual oil). The projected fuel usage in the residual oil-fired dryer was determined by calculating a maximum ratio of fuel usage to P_2O_5 input using historical data and then scaling up to the maximum expected production rate of 305,000 tons per year.

Table 5.3 below provides the selected emission factors, and the PAE for this project.

Table 5.3: Projected Actual Emissions

Pollutant	Emission Factor	Emission Inventory Year	MAP or DAP	PAE (tpy)
SO_2	0.286 lb/ ton P_2O_5 input	2019 and 220	DAP	43.6
NOx	0.07 lb/ ton P_2O_5 input	2019 and 2020	DAP	10.7
CO	5 lb/10^3 gallons	N/A (US EPA AP-42 emission factor used)		1.37
PM	0.311 lb/ ton P_2O_5 input	2019 and 2020	MAP	47.4
PM10	0.311 lb/ ton P_2O_5 input	2019 and 2020	MAP	47.4
PM2.5	0.311 lb/ ton P_2O_5 input	2019 and 2020	MAP	47.4
VOC	0.28 lb/10^3 gallons	N/A (US EPA AP-42 emission factor used)		0.08

Pollutant	Emission Factor	Emission Inventory Year	MAP or DAP	PAE (tpy)
Fluorides (excluding HF) DAP/MAP process Process fugitive Warehouses	 0.0122 lb/ ton P_2O_5 input 0.670 lb/hr 0.335 lb/hr	 2019 Based on air sampling data 1989	 DAP -- --	6.26
Lead	87.5 ppm of TSP	Average of 1994 and 1996 laboratory analyses		1.63E-03
GHSs as CO2e CO2 Methane Nitrous Oxide	 24.4 lb/gal 0.001 lb/gal 0.00011 lb/gal	N/A (US EPA AP-42 emission factors used)		6,684

Comparison of BAE to PAE

The comparison of the BAE and PAE is provided in Table 5.4 below. PCS is a major source under the PSD rules. For this modification to be considered a significant modification under PSD, the emissions increase must exceed the PSD significant emission rates (SER). As is shown in Table 5.4, the expected emissions increase of PM2.5 is above the applicable SER. Thus, additional analysis is required to determine if a major modification will occur.

Table 5.4: Baseline-Actual-to-Projected-Actual Applicability Test

Pollutant	BAE (tpy)	PAE (tpy)	Emission Increase (tpy)	PSD SER (tpy)	Below PSD SER?
SO_2	17.8	43.6	25.8	40	YES
NOx	3.4	10.7	7.2	40	YES
CO	0.4	1.4	0.9	100	YES
PM	35.1	47.4	12.3	25	YES
PM10	35.1	47.4	12.3	15	YES
PM2.5	35.1	47.4	12.3	10	NO
VOC	0.021	0.08	0.05	40	YES
Fluorides (excluding HF)	5.4	6.3	0.9	3	YES
Lead	8.90E-04	4.15E-03	3.26E-03	0.6	YES

Could-Have-Accommodated Emissions

If any projected emissions increases are above the SER for a given NSR regulated pollutant, the next step of the applicability test may be utilized by excluding any emissions that the unit "could have accommodated" (CHA) during the baseline period and that are unrelated to the project. It is clear from the BAE and PAE shown above that the emissions of PM2.5 have projected emissions increases above the applicable SERs. Therefore, PCS further analyzed the applicability by excluding CHA emissions from the PAE.

When considering if emissions increases can be excludable as "could have accommodated" or CHA, the excludable portion of the increases from a particular project must meet *both criteria:* (1) the unit could have accommodated during the baseline period; and (2) are unrelated to the project.

PCS has excluded emissions from the PAE using actual emissions from DAP/MAP No. 2 Plant calculated from production data for the highest month of production that occurred during the baseline period. For all pollutants, CHA emissions are calculated using annualized data from the month of June 2019. Since the selected baseline period in the application was from January 2019 through December 2020, the CHA

emissions were appropriately calculated from production data that occurred within the baseline period, and the first condition in determining excludable emissions increases has been met.

The second condition in determining excludable emissions increases is to determine if the emissions increases are unrelated to the project. For example, increases are likely to be related to the project when the project:

- Allows or results in the use of a higher emitting fuel;
- Increases capacity;
- Regains lost capacity;
- Increases reliability;
- Increases demand for a product; or
- Increases the ability to use an existing fuel.

No new fuels are being permitted for use in the DAP/MAP No. 2 Plant with this application. No increase in production capacity is expected with this application. No mention of new products being introduced at the mill are included with this application. No increase in the use of any fuel is expected.

However, this project is occurring, in part, due to the need to replace the drying vessel. The application notes that the drying vessel is still functioning reliably, but several unplanned maintenance events occurred during the selected baseline period. Approximately 85 hours of unplanned maintenance events occurred in 2019 which could potentially be considered to be related to this project. Thus, the CHA emissions evaluation accounted for these impacts by subtracting 85 hours of production from the "raw CHA" emissions to derive a "net CHA" of 305,012 tons of P_2O_5 input per year. CHA emissions are shown in Table 5.5 below and were based on 305,000 tons of P_2O_5 input per year, reduced from 305,012 tons of P_2O_5 input per year since CHA cannot be greater than PAE for PSD applicability purposes.

Table 5.5: Could-have-Accommodated Emissions

Pollutant	Emission Factor	Emission Inventory Year	MAP or DAP	CHA (tpy)
SO_2	0.286 lb/ ton P_2O_5 input	2019 and 220	DAP	43.6
NOx	0.07 lb/ ton P_2O_5 input	2019 and 2020	DAP	10.7
CO	5 lb/10^3 gallons	N/A (US EPA AP-42 emission factor used)		1.37
PM	0.311 lb/ ton P_2O_5 input	2019 and 2020	MAP	47.4
PM10	0.311 lb/ ton P_2O_5 input	2019 and 2020	MAP	47.4
PM2.5	0.311 lb/ ton P_2O_5 input	2019 and 2020	MAP	47.4
VOC	0.28 lb/10^3 gallons	N/A (US EPA AP-42 emission factor used)		0.08
Fluorides (excluding HF) DAP/MAP process Process fugitive Warehouses	 0.0122 lb/ ton P_2O_5 input 0.670 lb/hr 0.335 lb/hr	 2019 Based on air sampling data 1989	 DAP -- --	6.26
Lead	87.5 ppm of TSP	Average of 1994 and 1996 laboratory analyses		4.15E-03
GHGs as CO2e CO2 Methane Nitrous Oxide	 24.4 lb/gal 0.001 lb/gal 0.00011 lb/gal	N/A (US EPA AP-42 emission factors used)		6,684

Projected Emissions Increases

To calculate the net project emissions increases, baseline actual emissions (BAE) are subtracted from could have accommodated (CHA) emissions to determine the excludable portion of the projected emissions increases, or the demand growth exclusion. The following general formula was used to calculate the net project emissions increases (PEI):

PEI = PAE – BAE – (CHA – BAE)

Table 5.6 shows a summary of the net projected emissions increase for each regulated NSR pollutant.

Table 5.6: Net Emissions Increases

	Project Emissions Increase*, ton/yr								
	SO_2	**PM**	**PM_{10}**	**$PM_{2.5}$**	**NO_x**	**CO**	**F**	**Pb**	**VOC**
Projected Actual Project Emissions	43.6	47.4	47.4	47.4	10.7	1.4	6.3	4.15E-03	0.077
Baseline Actual Emissions	17.8	35.1	35.1	35.1	3.4	0.4	5.4	8.90E-04	0.024
PAE – BAE Emissions Increase	25.8	12.3	12.3	12.3	7.2	0.9	0.9	3.26E-03	0.053
PSD Trigger	40.0	25.0	15.0	10.0	40.0	100.0	3.0	6.00E-01	40.000
% of PSD Trigger	65%	49.2%	82%	123%	18%	1%	29%	0.05%	0%
Require Monitoring, Recordkeeping, Reporting?	Yes	No	Yes	Yes	No	No	No	No	No
Use of Could Have Accommodated to Estimate 15A NCAC 2D .0535(u) Tracking Values									
Projected Actual Project Emissions	43.6	47.4	47.4	47.4	10.7	1.4	6.3	4.15E-03	0.077
Could Have Accommodated	43.6	47.4	47.4	47.4	10.7	1.4	6.3	4.15E-03	0.077
Total Emissions Increase	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.00E+00	0.0

*GHG emissions increases were not calculated since there is no emissions increase of any other regulated NSR pollutant, so GHG emissions are not relevant per 40 CFR 51.166(b)(48)(iv)(*b*).

As shown in Table 5.5, no NSR regulated pollutant is expected to be emitted at a net increase with the proposed project above the applicable SER. Therefore, PSD review is not triggered for this modification.

Pursuant to 15A NCAC 02D .0530(u), because the applicant relied on the demand growth exclusion using CHA emissions to demonstrate that the project does not result in significant net emissions increases, the Permittee is required to conduct monitoring and recordkeeping of annual emissions of SO2, PM10, and PM2.5, related to the project, in tons per year, for 5 years following resumption of regular operations after the project. This rule further requires the Permittee to submit annual reports, due within 60 days after the end of each year during which these records must be generated.

Table 5.7 below shows the emissions values contained in the 02D .0530(u) tracking condition for this project which are equivalent to the projected actual emissions.

Table 5.7: .0530(u) Projected Actual Emissions

Pollutant	**Projected Actual Emissions*(tpy)**
SO_2	43.6
PM_{10}	47.4
$PM_{2.5}$	47.4

* The projected actual emissions are not enforceable limitations. If the reported actual emissions exceed the projected actual emissions, the

Pollutant	Projected Actual Emissions*(tpy)

Permittee shall include in its annual report an explanation as to why actual emissions exceeded the projected actual emissions.

Increment Tracking

PCS is located in Beaufort County. This county is currently classified as either unclassifiable or in attainment for all criteria pollutants. Beaufort County has triggered increment tracking under PSD (i.e., the minor source baseline date) for the following regulated pollutants:

Regulated Pollutant	Date PSD Minor Source Baseline Triggered
Beaufort	
PM_{10}	07/14/78
SO_2	07/14/78
NOx	11/10/06

Using the project emissions increases, given in Table 5.5 above, the project will result in the following changes in emissions:

Pollutant	PM_{10}	SO_2	NOx
tpy	0	0	0
lb/hr @ 8760 hours	0	0	0

Since no triggered pollutant is expected to have an increase in emissions, increment tracking is not required for this modification.

CAM

The requirements given in 15A NCAC 02D .0614 are applicable to any pollutant-specific emission unit, if the following three conditions are met:

- the unit is subject to an emission limitation or standard for the applicable regulated air pollutant, or a surrogate thereof, other than an emission limitation or standard that is exempt pursuant to Subparagraph (b)(1) of the Rule;
- the unit uses any control device to achieve compliance with any such emission limitation or standard;
- the unit's potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. For purposes of the Rule, "potential pre-control device emissions" means the same as "potential to emit" as defined in 40 CFR 64.1, except that emission reductions achieved by the applicable control device shall not be taken into account.

The existing tail gas scrubbers are subject to CAM. For these scrubbers, CAM is achieved through continuous monitoring of the pressure drop and water flow rate. Indicator ranges are set at 5% of the allowable ranges. If the indicator ranges are exceeded, PCS Permittee must conduct an inspection of the associated device. Each monitoring system must be operated in accordance with a quality assurance program developed and implemented according to the provisions of 15A NCAC 2D .0613. No change to the monitoring system or the monitored parameters is expected with this application. No change to the permit is required, and continued compliance is anticipated. Adequacy of the replacement scrubbers will be determined during the second step significant modification process.

112(r)

With this permit application, the facility is not proposing to add or store any additional chemicals that may be subject to 112(r). 112(r) applicability will not change with this application.

6. Facility-Wide Air Toxics

DAP Plant No. 2 Project

DAP Plant No. 2 is subject to MACT Subpart BB and is exempt from NC Air Toxics in accordance with 15A NCAC 02Q .0702(a)(27). However, the DAQ must evaluate TAP emissions to ensure this project will not present "an unacceptable risk to human health," in accordance with G.S. 143-215.107(b).

Emissions for all TAPS associated with this project were compared with their TAP Permitting Emission Rate (TPER), as shown in Table 6.1 below. TAP emissions less than their TPERs do not pose an unacceptable risk to human health, and no further analysis is required. However, emissions of ammonia, arsenic, beryllium, cadmium, fluorides (excluding HF), hydrogen fluoride, and nickel all exceed their TPER, and further analysis is required.

Table 6.1: TAP Emissions Compared to Applicable TPER Limit

TAP	Post-Project Emission Rates			TPER		
	lb/hr	lb/day	lb/yr	lb/hr	lb/day	lb/yr
Ammonia	16.3	392	143,086	0.68	-	-
Arsenic	4.33E-05	1.04E-03	0.38	-	-	0.053
Benzene	1.34E-05	3.21E-04	0.117	-	-	8.1
Beryllium	4.34E-05	1.04E-03	0.38	-	-	0.28
Cadmium	4.89E-04	1.17E-02	4.28	-	-	0.37
Chromium VI	1.55E-05	3.73E-04	0.136		0.013	-
Fluorides (except hydrogen fluoride)	1.43	34.3	12,527	0.064	0.34	-
Formaldehyde	2.65E-03	6.36E-02	23.2	0.04	-	-
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin	3.42E-11	8.22E-10	3.00E-07	-	-	0.0051
Hexachlorodibenzo-p-dioxin	1.09E-10	2.61E-09	9.52E-07	-	-	0.0051
Hydrogen Fluoride	1.03	24.8	9,051	0.064	0.63	-
Manganese	4.17E-04	1.00E-02	3.65	-	0.63	-
Mercury	8.49E-06	2.04E-04	7.44E-02	-	0.013	-
Methyl Chloroform	1.47E-05	3.53E-04	0.129	-	250	-
Nickel	1.04E-02	0.25	91.2	-	0.13	-
Toluene	3.87E-04	9.29E-03	3.39	14.4	98	-

PCS has previously conducted facility-wide air dispersion modeling for numerous TAPs to demonstrate compliance with 02D .1100. The TAPs noted above were among the TAPs PCS previously modeled. Emissions associated with this project were compared with the most recently modeled emissions for DAP Plant No. 2 (EP 303), as shown in Table 6.2 below.

Table 6.2: TAP Emissions Compared with Dispersion Modeling Analysis

TAP	AAL (µg/m3)	% of AAL	Date of Modeling Review Memo	Emission Rate for EP 303 Used in Previous Modeling	Emission Rate for EP 303 for the Replacement Project
Ammonia	2700	82.50%	12/07/17	49.1 lb/hr	16.3 lb/hr
Arsenic	2.10E-03	98%	5/05/20	24.1 lb/yr	0.38 lb/yr
Beryllium	4.10E-03	98%	5/05/20	114 lb/yr	0.38 lb/yr

TAP	AAL (µg/m3)	% of AAL	Date of Modeling Review Memo	Emission Rate for EP 303 Used in Previous Modeling	Emission Rate for EP 303 for the Replacement Project
Cadmium	5.50E-03	98%	5/05/20	266.3 lb/yr	4.28 lb/yr
Fluoride (except HF)	16	20%	3/26/2021	3.48 lb/hr	1.43 lb/hr
	250	81%		83.4 lb/day	34.3 lb/day
Hydrogen Fluoride	30	58.2%	12/06/21	2.40 lb/hr	1.03 lb/hr
	250	98.5%		57.5 lb/day	24.8 lb/day
Nickel	6	98%	5/05/20	174.5 lb/day	0.25 lb/day

As shown in the table above, the modeled emissions are greater than the PAE for DAP Plant No. 2 (EP 303). Therefore, this project does not pose an unacceptable risk to human health.

Reactor Descaling Operation

Using the emissions factors from AP-42 Section 1.6 for dry wood, Table 6.3 below shows the potential TAP emissions from the reactor descaling operation, added to the facility-wide total from the CY2022 emission inventory, and compared with the appliable TPER limit. It was assumed that each cleaning generates 33.6 million Btu, each cleaning lasts approximately 24 hours (1 day), and 31 cleanings take place per year. Thus, emissions from the reactor descaling operation were calculated assuming the following maximum heat input rates:

mmBtu/yr = (33.6 mmBtu/cleaning x 31 cleanings/year) = 1,041.6 million Btu per year

mmBtu/day = (33.6 mmBtu/cleaning x 1 cleaning/day) = a max. of 33.6 mmBtu/day

mmBtu/hr = (33.6 mmBtu/cleaning x 1 cleaning/day x 1 day/24 hours) = 1.4 mmBtu/hour

Table 6.3: TAP Emissions Compared with Applicable TPER Limit

Pollutant	Reactor Descaling Operation Emission Rate*	CY2022 Facility-Wide Emission Rate***	Total Emission Rate	TPER**	Above TPER?
Acetaldehyde	1.16E-03 lb/hr	2.28E-03 lb/hr	3.44E-03 lb/hr	6.8 lb/hr	No
Acrolein	5.60E-03 lb/hr	1.16E-03 lb/hr	6.76E-03 lb/hr	0.2 lb/hr	No
Benzene	4.37 lb/yr	44.67 lb/yr	49.04 lb/yr	8.1 lb/yr	Yes
Benzo(a)pyrene	2.71E-03 lb/yr	1.32E-03 lb/yr	4.03E-03 lb/yr	2.2 lb/yr	No
Carbon Tetrachloride	4.69E-02 lb/yr	N/A	4.69E-02 lb/yr	460 lb/yr	No
Chlorine (24-hour)	2.65E-02 lb/day	N/A	2.65E-02 lb/day	0.79 lb/day	No
Chlorine (1-hour)	1.11E-03 lb/hr	N/A	1.11E-03 lb/hr	0.23 lb/hr	No
Chlorobenzene	1.11E-03 lb/day	2.08E-03 lb/day	3.19E-03 lb/day	46 lb/day	No
Chloroform	2.92E-02 lb/yr	2.04 lb/yr	2.07 lb/yr	290 lb/yr	No
Formaldehyde	6.16E-03 lb/hr	1.90E-02 lb/hr	2.52E-02 lb/hr	0.04 lb/hr	No

Hydrogen Chloride	2.66E-02 lb/hr	4.72 lb/hr	4.74 lb/hr	0.18 lb/hr	Yes
MEK (24-hour)	1.81E-04 lb/day	3.68E-02 lb/day	3.70E-02 lb/day	78 lb/day	No
MEK (1-hour)	7.56E-06 lb/hr	1.53E-03 lb/hr	1.54E-03 lb/hr	22.4 lb/hr	No
Methyl Chloroform (24-hour)	1.04E-03 lb/day	3.59E-03 lb/day	4.63E-03 lb/day	250 lb/day	No
Methyl Chloroform (1-hour)	4.34E-05 lb/hr	1.50E-04 lb/hr	1.93E-04 lb/hr	64 lb/hr	No
Pentachlorophenol (24-hour)	1.71E-06 lb/day	N/A	1.71E-06 lb/day	0.063 lb/day	No
Pentachlorophenol (1-hour)	7.14E-08 lb/hr	N/A	7.14E-08 lb/hr	0.0064 lb/hr	No
Phenol	7.21E-05 lb/hr	6.29E-05 lb/hr	1.35E-04 lb/hr	0.24 lb/hr	No
Styrene	2.66E-03 lb/hr	9.83E-05 lb/hr	2.76E-03 lb/hr	2.7 lb/hr	No
Tetrachlorodibenzo-p-dioxins	4.90E-07 lb/yr	N/A	4.90E-07 lb/yr	0.0002 lb/yr	No
Toluene (24-hour)	3.09E-02 lb/day	6.18E-02 lb/day	9.27E-02 lb/day	98 lb/day	No
Toluene (1-hour)	1.29E-03 lb/hr	2.58E-03 lb/hr	3.87E-03 lb/hr	14.4 lb/hr	No
Trichlorofluoromethane	5.74E-05 lb/hr	N/A	5.74E-05 lb/hr	140 lb/hr	No
Vinyl Chloride	1.87E-02 lb/yr	N/A	1.87E-02 lb/yr	26 lb/yr	No
Xylene (24-hour)	8.40E-04 lb/day	3.75E-03 lb/day	4.59E-03 lb/day	57 lb/day	No
Xylene (1-hour)	3.50E-05 lb/hr	1.56E-04 lb/hr	1.91E-04 lb/hr	16.4 lb/hr	No

*As was discussed under Section 3 above, it is not expected that a high amount of VOC content remains in the charcoal. Since most of the compounds shown in Table 6.3 above are considered to be VOC, the emissions shown above generally represent a conservative overestimation of actual emissions from the combustion of charcoal.
**TPER limits from 15A NCAC 02Q .0711(a) were used.
***Assumed 8,760 hours and 365 days of operation per year.

Table 6.3 shows that, except for benzene and hydrogen chloride, all TAPs associated with the reactor descaling operation are emitted at facility-wide levels well below the applicable TPER. For benzene and hydrogen chloride, further analysis is required.

A dispersion modeling analysis was conducted and reviewed by AQAB on January 19, 2016 which included benzene. The facility-wide modeled emission rate of benzene was 194.43 pounds per year, which was found to have a maximum impact of approximately 2.4% of the AAL. If an additional 4.37 pounds per year of benzene are added to the facility total with the addition of the reactor descaling operation, then the expected facility-wide emission rate would be 198.8 pounds per year, equivalent to 2.5% of the AAL. Therefore, emissions of benzene from the reactor descaling operation do not pose an unacceptable risk to human health.

A dispersion modeling analysis was conducted and reviewed by AQAB on October 31, 2019 which included hydrogen chloride. The facility-wide modeled emission rate of hydrogen chloride was 8,137.6 pounds per hour, which was found to have a maximum impact of approximately 35% of the AAL. If an additional 2.66E-02 pounds per hour of hydrogen chloride are added to the facility total with the addition of the reactor descaling operation, then the expected facility-wide emission rate would be 8,137.63 pounds per

hour, equivalent to 35% of the AAL. Therefore, emissions of hydrogen chloride from the reactor descaling operation do not pose an unacceptable risk to human health.

7. Facility Emissions Review

Facility-wide potential emissions after this modification are provided in the table below. Actual emissions from PCS from 2017 to 2021 are reported in the header of this permit review.

Pollutant	Expected Actual Emissions (tpy)	TV Potential Emissions (tpy)
PM (TSP)	2,402	3,466
PM10	803	2,067
PM2.5	228	1,442
CO	425	1,263
NO_x	431	10,079
SO_2	3,440	8,745
VOC	278	289
GHGs as CO2e	332,955 short tons	837,376 short tons
Notes: Emissions contained in Form D1 of Permit Application No. 0700071.23A.		

8. Facility Compliance Status

Robert Bright of the WaRO completed the most recent full compliance evaluation (FCE) for PCS on April 28, 2023. The facility appeared to operate in compliance during the inspection.

The five-year compliance history for PCS is provided below:

- A Notice of Violation/Notice of Recommendation for Enforcement (NOV/NRE) was issued on June 24, 2019. On April 4, 5, and 15, 2019, PCS conducted emissions testing on calciner 4 to demonstrate compliance with the fluoride emission limitations in MACT Subpart AA. The results of the tests indicated PCS exceeded the emission limitation of 0.0009 pounds of fluoride / ton P_2O_5 wet feed. A civil penalty of $4,218 was issued on October 9, 2019. Payment was received on October 15, 2019. This violation has been resolved.

9. Public Notice/EPA and Affected State(s) Review

No public notice is required for a "Part 1" application of a two-step significant modification pursuant to 15A NCAC 02Q .0501(b)(2).

When DAQ receives and processes the "Part 2" application of the two-step significant modification, the draft permit will go to public notice with a concurrent 45-day EPA review period.

10. Other Regulatory Considerations

- Professional Engineer (PE) Seal Requirement – 15A NCAC 02Q .0112, Applications Requiring Professional Engineer Seal

  This regulation requires that a professional engineer (PE) licensed to practice in NC is required to seal the technical portions of air permit application for new and modified sources that involve design, determination of applicability and appropriateness, or determination and interpretation of performance of air pollution capture and control systems.

A PE Seal is required for this application. Mr. Joe Sullivan has fulfilled the requirement of this rule by providing a PE seal on Form D5 (ref. Joe W. Sullivan, P.E. Seal # 023037, 9-14-2023). Per the NCBELS (North Carolina Board of Examiners for Engineers and Surveyors) website, Mr. Sullivan's PE license appears to be current.

- Zoning Requirement – 15A NCAC 02Q .0305(a)(1)(B) and .0304(b)(1)

  The PCS Phosphate facility is located in an area without zoning so is subject to 15A NCAC 02Q .0113. This Rule requires that public notice is provided prior to submitting the permit application. Additionally, PCS is required to publish a legal notice in a newspaper of general circulation in the area where the source is located at least two weeks prior to submitting the permit application.

  Per the application, a notice was published on August 30, 2023 in the Washington Daily News and included the name of the facility, the name and address of the applicant, and a summary of the changes in operation. Proof of this publication was provided in Attachment 4 of the application.

  The applicant is also required to, at least ten days prior to the submittal of the permit application, post a sign that is at least six square feet in size, less than ten feet from the highway right-of-way, at least six feet from the ground, that contains lettering a person with 20/20 vision can view from the center of the road and is placed parallel to the highway. Proof is provided in Attachment 5 of the application that this sign was posted by the facility. The application indicates that the sign was posted on September 1, 2023 and contains the name of the facility, the name and address of the applicant, and a summary of the changes in operation. Compliance with this condition is indicated.

- Affirmative Defense Provisions - Removal

  EPA has promulgated a rule (88 FR 47029, July 21, 2023), with an effective date of August 21, 2023, removing the emergency affirmative defense provisions in operating permits programs, codified in both 40 CFR 70.6(g) and 71.6(g). EPA has concluded that these provisions are inconsistent with the EPA's current interpretation of the enforcement structure of the CAA, in light of prior court decisions. Moreover, per EPA, the removal of these provisions is also consistent with other recent EPA actions involving affirmative defenses and will harmonize the EPA's treatment of affirmative defenses across different CAA programs.
  As a consequence of this EPA action to remove these provisions from 40 CFR 70.6(g), it will be necessary for states and local agencies that have adopted similar affirmative defense provisions in their Part 70 operating permit programs to revise their Part 70 programs (regulations) to remove these provisions. In addition, individual operating permits that contain Title V affirmative defenses based on 40 CFR 70.6(g) or similar state regulations will need to be revised.

  Regarding NCDAQ, it has not adopted these discretionary affirmative defense provisions in its Title V regulations (15A NCAC 02Q .0500). Instead, DAQ has chosen to include them directly in individual Title V permits as General Condition (GC) J.

  Per EPA, DAQ is required to promptly remove such impermissible provisions, as stated above, from individual Title V permits, after August 21, 2023, through normal course of permit issuance.

  General Condition J will be removed with this permitting action.

- An application fee of $7,764 was required and received for this application on September 15, 2023.

- An appropriate number of applications were received with this submittal.

11. Conclusions, Comments, and Recommendations

Comment 1: One comment was received on January 16, 2024 from Joe Sullivan of PCS Phosphate to verify if the 02D .0530(u) emissions tracking condition is required for all NSR pollutants or if the pollutants for which PAE – BAE, without consideration of CHA emissions, is less than 50% of the applicable SER do not require the tracking condition.

DAQ Response: For any pollutant which PAE – BAE, without consideration of CHA emissions, is less than 50% of the applicable SER, the emissions tracking condition per 02D .0530(u) is not required. The pollutants PM, NOx, CO, VOC, Fluorides, and Lead will be removed from the list of pollutants required under 02D .0530(u).

This engineer recommends the issuance of Permit No. 04176T70.

Attachment 1

Estimation of Potential Emissions From Charcoal Pipe Descaling

Description: Ammonium polyphosphate scale on pipe reactor is loosened by thermal treatment using commercial charcoal used for grilling. Charcoal is the solid carbon residue following wood pyrolysis and removal of all water and volatile organic matter (AP-42, Section 10.7 and Wikipedia). Criteria pollutant emissions are estimated using EPA dry wood emission factors.

Given:

# bags/cleaning	140	(covering projected bed surface area to 13" bed depth)
lb/bag	20	
Btu/lb charcoal	12000	Btu/lb (https://www3.epa.gov/ttnchie1/ap42/ch10/bgdocs/b10s07.pdf)
MMBtu/cleaning	33.6	
Maximum # of cleanings	31.0	(assuming one cleaning/12 days)

Pollutant	Emission Factor lb/MMBtu	Emission Factor lb/cleaning	Emissions tpy
PM-10	0.36	12.1	0.19
CO	0.6	20.2	0.31
NOx	0.49	16.5	0.26
VOC	0.017	0.6	0.01

APP available nitrogen molecular weight per NH4PO3 molecule =		14	
Total molecular weight of NH4PO3 =		97	
% available nitrogen =		14.4%	
Pipe volume = pi * (D^2/4) * L =	3.14 * (1 ft2 / 4) * 16.5 ft =	13.0	ft^3 / cleaning
Density of APP (solid) =	(1.75 s.g.) * 62.4 lb/gal =	109.2	lb/ft^3
% of pipe volume with scale =		10%	
Total available nitrogen = volume * density * % nitrogen * % scale =		20.4	lbs/cleaning
NO formation = (NO MW/N MW) * lb N/cleaning =		43.7	lb/cleaning
Emissions from APP nitrogen conversion = NO/cleaning * # cleanings/yr =		0.68	tpy
Total NOx (charcoal + nitrogen conversion =		0.93	tpy

Attachment 2

DAP Plant No. 2 (Source ID 303)
DAP Production
2019 Air Emissions Inventory - 1/1/2019 thru 12/31/2019

DAP Plant No. 2 (303) DAP P_2O_5 Input =	110,881	tons/yr
DAP Plant No. 2 (303) DAP No. 6 Fuel Oil Combustion =	158,900	gallons/yr

Pollutant	DAP Production								Total Annual Emissions	
	Process Emissions				No. 6 Fuel Oil Combustion Emissions					
	Emission Factors		Annual Emissions		Emission Factors[8]		Annual Emissions			
Carbon Monoxide					5	lb/10^3 gal	0.397	tons/yr	0.4	ton/yr
Nitrogen Oxides	0.07	lb/ton P_2O_5 input[1]	3.86	ton/yr					3.9	ton/yr
Particulate Matter (<10 microns)	0.259	lb/ton P_2O_5 input[2]	14.35	ton/yr					14.4	ton/yr
Particulate Matter (<2.5 microns)	0.259	lb/ton P_2O_5 input[2]	14.35	ton/yr					14.4	ton/yr
Sulfur Dioxide	0.286	lb/ton P_2O_5 input[1]	15.86	ton/yr					15.9	ton/yr
Total Suspended Particulates	0.259	lb/ton P_2O_5 input[2]	14.35	ton/yr					14.4	ton/yr
Volatile Organic Compounds					0.28	lb/10^3 gal	2.22E-02	tons/yr	0.0	ton/yr
Sulfuric Acid Mist	Note 3								0.00000	lb/yr
Ammonia	0.46	lb/ton P_2O_5 input[4]	5.10E+04	lb/yr					51,005	lb/yr
1,1,1-Trichloroethane					2.36E-04	lb/10^3 gal	3.75E-02	lb/yr	0.03750	lb/yr
Antimony	222.0	ppm of TSP[5]	6.37E+00	lb/yr					6.37	lb/yr
Arsenic	10.3	ppm of TSP[6]	2.96E-01	lb/yr					0.30	lb/yr

Benzene					2.14E-04	lb/10^3 gal	3.40E-02	lb/yr	0.034	lb/yr
Beryllium	10.1	ppm of TSP[6]	2.90E-01	lb/yr					0.29	lb/yr
Cadmium	115.0	ppm of TSP[6]	3.30E+00	lb/yr					3.3	lb/yr
Chromium	28.0	ppm of TSP[5]	8.04E-01	lb/yr					0.80	lb/yr
Chromium VI					2.48E-04	lb/10^3 gal	3.94E-02	lb/yr	0.039	lb/yr
Cobalt	51.0	ppm of TSP[6]	1.46E+00	lb/yr					1.46	lb/yr
Ethyl benzene					6.36E-05	lb/10^3 gal	1.01E-02	lb/yr	0.01011	lb/yr
Total Fluoride	0.0122	lb/ton P_2O_5 input[2]	1.35E+03	lb/yr					1,352.7	lb/yr
Fluorides (except hydrogen fluoride)	0.0072	lb/ton P_2O_5 input[2,7]	8.01E+02	lb/yr					801	lb/yr
Formaldehyde					4.25E-02	lb/10^3 gal	6.75E+00	lb/yr	6.75	lb/yr
Hydrogen Fluoride	0.0050	lb/ton P_2O_5 input[2,7]	5.52E+02	lb/yr					551.9	lb/yr
Lead	87.5	ppm of TSP[6]	2.51E+00	lb/yr					2.5	lb/yr
Manganese	98.0	ppm of TSP[6]	2.81E+00	lb/yr					2.81	lb/yr
Mercury	2.0	ppm of TSP[6]	5.74E-02	lb/yr					0.057	lb/yr
Naphthalene					1.13E-03	lb/10^3 gal	1.80E-01	lb/yr	0.18	lb/yr
Nickel	2,450	ppm of TSP[6]	7.03E+01	lb/yr					70	lb/yr
o-Xylene					1.09E-04	lb/10^3 gal	1.73E-02	lb/yr	0.01732	lb/yr
Phosphorous					9.46E-03	lb/10^3 gal	1.50E+00	lb/yr	1.50	lb/yr
Polycyclic Organic Matter					1.20E-03	lb/10^3 gal	1.91E-01	lb/yr	0.19	lb/yr
Selenium	7.4	ppm of TSP[6]	2.12E-01	lb/yr					0.212	lb/yr
Toluene					6.20E-03	lb/10^3 gal	9.85E-01	lb/yr	0.9852	lb/yr

Notes:
1. Stack test conducted on 8/9/2018.

2. Stack test conducted on 11/7/2017 (condensables and filterable) while running DAP).

3. Stack test conducted on 8/9/2018. Because SO_2 emissions are so low during DAP production due to its reaction with process ammonia, it is assumed that sulfuric acid mist emissions during DAP production are negligible.

4. Stack test conducted on 7/30/1998.

5. Lab analysis of 7/18/1996 stack sample.

6. Average of 1994 and 1996 laboratory analyses .

7. 59.2% of total fluorides are non-HF and 40.8% of total fluorides are HF.

8. AP-42, Section 1.3, Fifth Edition, September 1998 & May 2010.

DAP Plant No. 2 (Source ID 303)
MAP Production
2019 Air Emissions Inventory - 1/1/2019 thru 12/31/2019

DAP Plant No. 2 (303) MAP P_2O_5 Input =		147,215	tons/yr
DAP Plant No. 2 (303) MAP No. 6 Fuel Oil Combustion =		19,041	gallons/yr

Pollutant	MAP Production								Total Annual Emissions	
	Process Emissions				No. 6 Fuel Oil Combustion Emissions					
	Emission Factors		Emissions		Emission Factors[8]		Emissions			
Carbon Monoxide					5	lb/10^3 gal	0.048	ton/yr	0.0	ton/yr
Nitrogen Oxides	0.003	lb/ton P_2O_5 input[1]	0.24	ton/yr					0.2	ton/yr
Particulate Matter (<10 microns)	0.311	lb/ton P_2O_5 input[2]	22.92	ton/yr					22.9	ton/yr
Particulate Matter (<2.5 microns)	0.311	lb/ton P_2O_5 input[2]	22.92	ton/yr					22.9	ton/yr
Sulfur Dioxide	0.063	lb/ton P_2O_5 input[1]	4.66	ton/yr					4.7	ton/yr
Total Suspended Particulates	0.311	lb/ton P_2O_5 input[2]	22.92	ton/yr					22.9	ton/yr
Volatile Organic Compounds					0.28	lb/10^3 gal	0.003	ton/yr	0.0	ton/yr
Carbon Dioxide					24.4	lb/gal[10]	2.32E+02	tons/yr	2,170.88	ton/yr
Methane					0.001	lb/gal[10]	9.52E-03	tons/yr	0.09	ton/yr
Nitrous Oxide					0.00011	lb/gal[10]	1.05E-03	tons/yr	0.01	ton/yr
Sulfuric Acid Mist	Note 4								0.00000	lb/yr
Ammonia	0.46	lb/ton P_2O_5 input[3]	6.77E+04	lb/yr					67,719	lb/yr
1,1,1-Trichloroethane					2.36E-04	lb/10^3 gal	0.004	lb/yr	0.004494	lb/yr

2-Chloroacetophenone									0.00	lb/yr
2,4-Dinitrotoluene									0.00	lb/yr
Acenaphthene					2.11E-05	lb/10^3 gal	0.000	lb/yr	0.00040	lb/yr
Acenaphthylene					2.53E-07	lb/10^3 gal	0.000	lb/yr	0.00000	lb/yr
Acetaldehyde									#VALUE!	lb/yr
Acetophenone									#VALUE!	lb/yr
Acrolein									#VALUE!	lb/yr
Anthracene					1.22E-06	lb/10^3 gal	0.000	lb/yr	0.00002	lb/yr
Antimony	222.0	ppm of TSP[5]	1.02E+01	lb/yr					10.18	lb/yr
Arsenic	10.3	ppm of TSP[6]	4.72E-01	lb/yr					0.47	lb/yr
Benzene					2.14E-04	lb/10^3 gal	0.004	lb/yr	0.0041	lb/yr
Benz(a)anthracene					4.01E-06	lb/10^3 gal	0.000	lb/yr	0.00008	lb/yr
Benzo(a)pyrene									#VALUE!	lb/yr
Benzo(b,k)fluoranthene					1.48E-06	lb/10^3 gal	0.000	lb/yr	0.00003	lb/yr
Benzo(g,h,i)perylene					2.26E-06	lb/10^3 gal	0.000	lb/yr	0.00004	lb/yr
Benzyl chloride									0.00	lb/yr
Beryllium	10.1	ppm of TSP[6]	4.63E-01	lb/yr					0.46	lb/yr
Bis(2-ethylhexyl)phthalate		ppm of TSP[6]							0.00	lb/yr
Bromoform		ppm of TSP[6]							0.00	lb/yr
Cadmium	115.0	ppm of TSP[6]	5.27E+00	lb/yr					5.3	lb/yr
Carbon disulfide									0.00	lb/yr
Chlorobenzene									0.00	lb/yr
Chloroform									0.00	lb/yr

Chromium	28.0	ppm of TSP[5]	1.28E+00	lb/yr					1.28	lb/yr
Chromium VI					2.48E-04	lb/10^3 gal	0.005	lb/yr	0.005	lb/yr
Chrysene					2.38E-06	lb/10^3 gal	0.000	lb/yr	0.00005	lb/yr
Cobalt	51.0	ppm of TSP[6]	2.34E+00	lb/yr					2.34	lb/yr
Cumene									0.00	lb/yr
Cyanide									0.00	lb/yr
Dibenzo(a,h,)anthracene					1.67E-06	lb/10^3 gal	0.000	lb/yr	0.00003	lb/yr
Dimethyl sulfate									0.00	lb/yr
Ethyl chloride									0.00	lb/yr
Ethyl benzene					6.36E-05	lb/10^3 gal	0.001	lb/yr	0.00121	lb/yr
Ethylene dibromide									0.00	lb/yr
Ethylene dichloride									0.00	lb/yr
Fluoranthene					4.84E-06	lb/10^3 gal	0.000	lb/yr	0.00009	lb/yr
Fluorene					4.47E-06	lb/10^3 gal	0.000	lb/yr	0.00009	lb/yr
Total Fluoride	0.0017	lb/ton P_2O_5 input[2]	2.50E+02	lb/yr					250.3	lb/yr
Fluorides (except hydrogen fluoride)	0.0010	lb/ton P_2O_5 input[2,7]	1.48E+02	lb/yr					148.2	lb/yr
Formaldehyde					4.25E-02	lb/10^3 gal	0.809	lb/yr	0.81	lb/yr
Hexachlorodibenzo-p-dioxin					1.74E-09	lb/10^3 gal	0.000	lb/yr	0.00000	lb/yr
Hexane									0.00	lb/yr
Hydrogen Chloride									0.00	lb/yr
Hydrogen Fluoride	0.0007	lb/ton P_2O_5 input[2,7]	1.02E+02	lb/yr					102.11	lb/yr
Indo(1,2,3-cd)pyrene					2.14E-06	lb/10^3 gal	0.000	lb/yr	0.00004	lb/yr
Isophorone									0.00	lb/yr

Lead	87.5	ppm of TSP[6]	4.01E+00	lb/yr					4.0	lb/yr
Manganese	98.0	ppm of TSP[6]	4.49E+00	lb/yr					4.49	lb/yr
Mercury	2.0	ppm of TSP[6]	9.17E-02	lb/yr					0.092	lb/yr
Methyl bromide									0.00	lb/yr
Methyl chloride									0.00	lb/yr
Methyl ethyl ketone									0.00	lb/yr
Methyl hydrazine									0.00	lb/yr
Methyl methacrylate									0.00	lb/yr
Methyl tert butyl ether									0.00	lb/yr
Methylene chloride									0.00	lb/yr
Naphthalene					1.13E-03	lb/10^3 gal	0.022	lb/yr	0.022	lb/yr
Nickel	2,450	ppm of TSP[6]	1.12E+02	lb/yr					112	lb/yr
o-Xylene					1.09E-04	lb/10^3 gal	0.002	lb/yr	0.00208	lb/yr
Phenanthrene					1.05E-05	lb/10^3 gal	0.000	lb/yr	0.00020	lb/yr
Phenol									0.00	lb/yr
Phosphorous					9.46E-03	lb/10^3 gal	0.180	lb/yr	0.18	lb/yr
Polycyclic Organic Matter					1.20E-03	lb/10^3 gal	0.023	lb/yr	0.023	lb/yr
Propionaldehyde									0.00	lb/yr
Pyrene					4.25E-06	lb/10^3 gal	0.000	lb/yr	0.00008	lb/yr
Selenium	7.4	ppm of TSP[6]	3.39E-01	lb/yr					0.339	lb/yr
Styrene									0.00	lb/yr
Tetrachloroethylene									0.00	lb/yr
Toluene					6.20E-03	lb/10^3 gal	0.118	lb/yr	0.1181	lb/yr

Vanadium					3.18E-02	lb/10^3 gal	0.606	lb/yr	0.61	lb/yr
Vinyl acetate										
Xylene										
2,3,7,8-Tetrachlorodibenzo-p-dioxin					0.00E+00	lb/10^3 gal[9]	0.000	lb/yr	0.00000	lb/yr
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin					5.49E-10	lb/10^3 gal[9]	0.000	lb/yr	0.00000	lb/yr

Notes:

1. Stack test conducted on 11/15/2013.
2. Stack test conducted on 3/6/2019 (F) and 3/7/2019 (filterable PM) (while running MAP) and 12/7/2016 (condensable PM).
3. Stack test conducted on 7/30/1998.
4. Because SO_2 emissions are so low due to its reaction with process ammonia, it is assumed that sulfuric acid mist emissions are negligible.
5. Lab analysis of 7/18/1996 stack sample.
6. Average of 1994 and 1996 laboratory analyses .
7. 59.2% of total fluorides are non-HF and 40.8% of total fluorides are HF.
8. AP-42, Section 1.3, Fifth Edition, September 1998 & May 2010.
9. Emission factors from tables 4.8 and 4.9 in the Emergency Planning and Right-to-Know Act-Section 313: Guidance for reporting Toxic Chemicals within the Dioxin and Dioxin-like Category Compounds (EPA-745-B-00-021 December 2000).

Attachment 3

DAP Plant No. 2 (Source ID 303)
DAP Production
2020 Air Emissions Inventory

DAP Plant No. 2 (303) DAP P_2O_5 Input =		71,748	tons/yr
DAP Plant No. 2 (303) DAP No. 6 Fuel Oil Combustion =		128,567	gallons/yr

Pollutant	DAP Production								Total Annual Emissions	
	Process Emissions				No. 6 Fuel Oil Combustion Emissions					
	Emission Factors		Annual Emissions		Emission Factors[8]		Annual Emissions			
Carbon Monoxide					5	lb/10^3 gal	0.321	tons/yr	0.3	ton/yr
Nitrogen Oxides	0.07	lb/ton P_2O_5 input[1]	2.50	ton/yr					2.5	ton/yr
Particulate Matter (<10 microns)	0.259	lb/ton P_2O_5 input[2]	9.29	ton/yr					9.3	ton/yr
Particulate Matter (<2.5 microns)	0.259	lb/ton P_2O_5 input[2]	9.29	ton/yr					9.3	ton/yr
Sulfur Dioxide	0.286	lb/ton P_2O_5 input[1]	10.26	ton/yr					10.3	ton/yr
Total Suspended Particulates	0.259	lb/ton P_2O_5 input[2]	9.29	ton/yr					9.3	ton/yr
Volatile Organic Compounds					0.28	lb/10^3 gal	1.80E-02	tons/yr	0.0	ton/yr
Sulfuric Acid Mist	Note 3								0.00000	lb/yr
Ammonia	0.46	lb/ton P_2O_5 input[4]	3.30E+04	lb/yr					33,004	lb/yr
1,1,1-Trichloroethane					2.36E-04	lb/10^3 gal	3.03E-02	lb/yr	0.03034	lb/yr
Antimony	222.0	ppm of TSP[5]	4.12E+00	lb/yr					4.12	lb/yr
Arsenic	10.3	ppm of TSP[6]	1.91E-01	lb/yr					0.19	lb/yr

Benzene					2.14E-04	lb/10^3 gal	2.75E-02	lb/yr	0.028	lb/yr
Beryllium	10.1	ppm of TSP[6]	1.88E-01	lb/yr					0.19	lb/yr
Cadmium	115.0	ppm of TSP[6]	2.14E+00	lb/yr					2.1	lb/yr
Chromium	28.0	ppm of TSP[5]	5.20E-01	lb/yr					0.52	lb/yr
Chromium VI					2.48E-04	lb/10^3 gal	3.19E-02	lb/yr	0.032	lb/yr
Cobalt	51.0	ppm of TSP[6]	9.47E-01	lb/yr					0.95	lb/yr
Ethyl benzene					6.36E-05	lb/10^3 gal	8.18E-03	lb/yr	0.00818	lb/yr
Total Fluoride	0.0122	lb/ton P_2O_5 input[2]	8.75E+02	lb/yr					875.3	lb/yr
Fluorides (except hydrogen fluoride)	0.0072	lb/ton P_2O_5 input[2,7]	5.18E+02	lb/yr					518	lb/yr
Formaldehyde					4.25E-02	lb/10^3 gal	5.46E+00	lb/yr	5.46	lb/yr
Hydrogen Fluoride	0.0050	lb/ton P_2O_5 input[2,7]	3.57E+02	lb/yr					357.1	lb/yr
Lead	87.5	ppm of TSP[6]	1.62E+00	lb/yr					1.6	lb/yr
Manganese	98.0	ppm of TSP[6]	1.82E+00	lb/yr					1.82	lb/yr
Mercury	2.0	ppm of TSP[6]	3.71E-02	lb/yr					0.037	lb/yr
Naphthalene					1.13E-03	lb/10^3 gal	1.45E-01	lb/yr	0.15	lb/yr
Nickel	2,450	ppm of TSP[6]	4.55E+01	lb/yr					45	lb/yr
o-Xylene					1.09E-04	lb/10^3 gal	1.40E-02	lb/yr	0.01401	lb/yr
Phosphorous					9.46E-03	lb/10^3 gal	1.22E+00	lb/yr	1.22	lb/yr
Polycyclic Organic Matter					1.20E-03	lb/10^3 gal	1.54E-01	lb/yr	0.15	lb/yr
Selenium	7.4	ppm of TSP[6]	1.37E-01	lb/yr					0.137	lb/yr
Toluene					6.20E-03	lb/10^3 gal	7.97E-01	lb/yr	0.7971	lb/yr

Notes:
1. Stack test conducted on 8/9/2018.

2. Stack test conducted on 11/7/2017 (condensables and filterable) while running DAP).
3. Because SO_2 emissions are so low during DAP production due to its reaction with process ammonia, it is assumed that sulfuric acid mist emissions during DAP production are negligible.
4. Stack test conducted on 7/30/1998.
5. Lab analysis of 7/18/1996 stack sample.
6. Average of 1994 and 1996 laboratory analyses .
7. 59.2% of total fluorides are non-HF and 40.8% of total fluorides are HF.
8. AP-42, Section 1.3, Fifth Edition, September 1998 & May 2010.

DAP Plant No. 2 (Source ID 303)
MAP Production
2020 Air Emissions Inventory

DAP Plant No. 2 (303) MAP P_2O_5 Input =	152,374	tons/yr
DAP Plant No. 2 (303) MAP No. 6 Fuel Oil Combustion =	32,825	gallons/yr

152,374

Pollutant	MAP Production								Total Annual Emissions	
	Process Emissions				No. 6 Fuel Oil Combustion Emissions					
	Emission Factors		Emissions		Emission Factors[8]		Emissions			
Carbon Monoxide					5	lb/10^3 gal	0.082	ton/yr	0.1	ton/yr
Nitrogen Oxides	0.003	lb/ton P_2O_5 input[1]	0.25	ton/yr					0.3	ton/yr
Particulate Matter (<10 microns)	0.311	lb/ton P_2O_5 input[2]	23.72	ton/yr					23.7	ton/yr
Particulate Matter (<2.5 microns)	0.311	lb/ton P_2O_5 input[2]	23.72	ton/yr					23.7	ton/yr
Sulfur Dioxide	0.063	lb/ton P_2O_5 input[1]	4.80	ton/yr					4.8	ton/yr
Total Suspended Particulates	0.311	lb/ton P_2O_5 input[2, 10]	23.72	ton/yr					23.7	ton/yr
Volatile Organic Compounds					0.28	lb/10^3 gal	0.005	ton/yr	0.0	ton/yr
Carbon Dioxide					24.4	lb/gal[10]	4.00E+02	tons/yr	1,968.98	ton/yr
Methane					0.001	lb/gal[10]	1.64E-02	tons/yr	0.08	ton/yr
Nitrous Oxide					0.00011	lb/gal[10]	1.81E-03	tons/yr	0.01	ton/yr
Sulfuric Acid Mist	Note 4								0.00000	lb/yr

Ammonia	0.46	lb/ton P_2O_5 input[3]	7.01E+04	lb/yr					70,092	lb/yr
1,1,1-Trichloroethane					2.36E-04	lb/10^3 gal	0.008	lb/yr	0.007747	lb/yr
2-Chloroacetophenone									0.00	lb/yr
2,4-Dinitrotoluene									0.00	lb/yr
Acenaphthene					2.11E-05	lb/10^3 gal	0.001	lb/yr	0.00069	lb/yr
Acenaphthylene					2.53E-07	lb/10^3 gal	0.000	lb/yr	0.00001	lb/yr
Acetaldehyde									#VALUE!	lb/yr
Acetophenone									#VALUE!	lb/yr
Acrolein									#VALUE!	lb/yr
Anthracene					1.22E-06	lb/10^3 gal	0.000	lb/yr	0.00004	lb/yr
Antimony	222.0	ppm of TSP[5]	1.05E+01	lb/yr					10.53	lb/yr
Arsenic	10.3	ppm of TSP[6]	4.89E-01	lb/yr					0.49	lb/yr
Benzene					2.14E-04	lb/10^3 gal	0.007	lb/yr	0.0070	lb/yr
Benz(a)anthracene					4.01E-06	lb/10^3 gal	0.000	lb/yr	0.00013	lb/yr
Benzo(a)pyrene									#VALUE!	lb/yr
Benzo(b,k)fluoranthene					1.48E-06	lb/10^3 gal	0.000	lb/yr	0.00005	lb/yr
Benzo(g,h,i)perylene					2.26E-06	lb/10^3 gal	0.000	lb/yr	0.00007	lb/yr
Benzyl chloride									0.00	lb/yr
Beryllium	10.1	ppm of TSP[6]	4.79E-01	lb/yr					0.48	lb/yr
Bis(2-ethylhexyl)phthalate		ppm of TSP[6]							0.00	lb/yr
Bromoform		ppm of TSP[6]							0.00	lb/yr

Cadmium	115.0	ppm of TSP[6]	5.46E+00	lb/yr					5.5	lb/yr
Carbon disulfide									0.00	lb/yr
Chlorobenzene									0.00	lb/yr
Chloroform									0.00	lb/yr
Chromium	28.0	ppm of TSP[5]	1.33E+00	lb/yr					1.33	lb/yr
Chromium VI					2.48E-04	lb/10^3 gal	0.008	lb/yr	0.008	lb/yr
Chrysene					2.38E-06	lb/10^3 gal	0.000	lb/yr	0.00008	lb/yr
Cobalt	51.0	ppm of TSP[6]	2.42E+00	lb/yr					2.42	lb/yr
Cumene									0.00	lb/yr
Cyanide									0.00	lb/yr
Dibenzo(a,h,)anthracene					1.67E-06	lb/10^3 gal	0.000	lb/yr	0.00005	lb/yr
Dimethyl sulfate									0.00	lb/yr
Ethyl chloride									0.00	lb/yr
Ethyl benzene					6.36E-05	lb/10^3 gal	0.002	lb/yr	0.00209	lb/yr
Ethylene dibromide									0.00	lb/yr
Ethylene dichloride									0.00	lb/yr
Fluoranthene					4.84E-06	lb/10^3 gal	0.000	lb/yr	0.00016	lb/yr
Fluorene					4.47E-06	lb/10^3 gal	0.000	lb/yr	0.00015	lb/yr
Total Fluoride	0.0160	lb/ton P_2O_5 input[2]	2.44E+03	lb/yr					2,438.0	lb/yr
Fluorides (except hydrogen fluoride)	0.0095	lb/ton P_2O_5 input[2,7]	1.44E+03	lb/yr					1,443.3	lb/yr
Formaldehyde					4.25E-02	lb/10^3 gal	1.395	lb/yr	1.40	lb/yr
Hexachlorodibenzo-p-dioxin					1.74E-09	lb/10^3 gal	0.000	lb/yr	0.00000	lb/yr
Hexane									0.00	lb/yr
Hydrogen Chloride									0.00	lb/yr

Hydrogen Fluoride	0.0065	lb/ton P_2O_5 input[2,7]	9.95E+02	lb/yr					994.70	lb/yr
Indo(1,2,3-cd)pyrene					2.14E-06	lb/10^3 gal	0.000	lb/yr	0.00007	lb/yr
Isophorone									0.00	lb/yr
Lead	87.5	ppm of TSP[6]	4.15E+00	lb/yr					4.2	lb/yr
Manganese	98.0	ppm of TSP[6]	4.65E+00	lb/yr					4.65	lb/yr
Mercury	2.0	ppm of TSP[6]	9.49E-02	lb/yr					0.095	lb/yr
Methyl bromide									0.00	lb/yr
Methyl chloride									0.00	lb/yr
Methyl ethyl ketone									0.00	lb/yr
Methyl hydrazine									0.00	lb/yr
Methyl methacrylate									0.00	lb/yr
Methyl tert butyl ether									0.00	lb/yr
Methylene chloride									0.00	lb/yr
Naphthalene					1.13E-03	lb/10^3 gal	0.037	lb/yr	0.037	lb/yr
Nickel	2,450	ppm of TSP[6]	1.16E+02	lb/yr					116	lb/yr
o-Xylene					1.09E-04	lb/10^3 gal	0.004	lb/yr	0.00358	lb/yr
Phenanthrene					1.05E-05	lb/10^3 gal	0.000	lb/yr	0.00034	lb/yr
Phenol									0.00	lb/yr
Phosphorous					9.46E-03	lb/10^3 gal	0.311	lb/yr	0.31	lb/yr
Polycyclic Organic Matter					1.20E-03	lb/10^3 gal	0.039	lb/yr	0.039	lb/yr
Propionaldehyde									0.00	lb/yr
Pyrene					4.25E-06	lb/10^3 gal	0.000	lb/yr	0.00014	lb/yr
Selenium	7.4	ppm of TSP[6]	3.51E-01	lb/yr					0.351	lb/yr
Styrene									0.00	lb/yr

Tetrachloroethylene									0.00	lb/yr
Toluene					6.20E-03	lb/10^3 gal	0.204	lb/yr	0.2035	lb/yr
Vanadium					3.18E-02	lb/10^3 gal	1.044	lb/yr	1.04	lb/yr
Vinyl acetate										
Xylene										
2,3,7,8-Tetrachlorodibenzo-p-dioxin					0.00E+00	lb/10^3 gal[9]	0.000	lb/yr	0.00000	lb/yr
1,2,3,6,7,8-Hexachlorodibenzo-p-dioxin					5.49E-10	lb/10^3 gal[9]	0.000	lb/yr	0.00000	lb/yr

Notes:

1. Stack test conducted on 11/15/2013.
2. Stack test conducted on 9/24/2020 (filterable), 12/7/2016 (condensables), and 9/24/2020 (F) (while running MAP).
3. Stack test conducted on 7/30/1998.
4. Because SO_2 emissions are so low due to its reaction with process ammonia, it is assumed that sulfuric acid mist emissions are negligible.
5. Lab analysis of 7/18/1996 stack sample.
6. Average of 1994 and 1996 laboratory analyses .
7. 59.2% of total fluorides are non-HF and 40.8% of total fluorides are HF.
8. AP-42, Section 1.3, Fifth Edition, September 1998 & May 2010.
9. Emission factors from tables 4.8 and 4.9 in the Emergency Planning and Right-to-Know Act-Section 313: Guidance for reporting Toxic Chemicals within the Dioxin and Dioxin-like Category Compounds (EPA-745-B-00-021 December 2000).

Affidavit of Publication

STATE OF NORTH CAROLINA
BEAUFORT & HYDE COUNTIES

Ashley Vansant, being duly sworn, says:
That he is Publisher of the Washington Daily News, a daily newspaper of general circulation, printed and published in Washington, Beaufort & Hyde Counties, North Carolina; that the publication, a copy of which is attached hereto, was published in the said newspaper on the following dates:

08/30/23

That said newspaper was regularly issued and circulated on those dates.

The sum charged by the Newspaper for said publication does not exceed the lowest rate paid by commercial customers for an advertisement of similar size and frequency in the same newspaper in which the public notice appeared.

There are no agreements between the Washington Daily News and the officer or attorney charged with the duty of placing the attached legal advertising notices whereby any advantage, gain or profit accrued to said officer or attorney.

SIGNED:

Ashley Vansant, Publisher

Subscribed and sworn to before me this
30th Day of August, 2023

Mary Jo Eskridge, Notary Public
State of Alabama at Large
My commission expires 03-02-2026

Account # 232807
Ad # 1698718

PCS PHOSPHATE COMPANY INC
1530 NC HWY 306 SOUTH
AURORA NC 27806

PUBLIC NOTICE

PCS Phosphate Company, Inc.
1530 NC HWY 306 South
Aurora, NC 27806

PCS Phosphate Company, Inc. is submitting a minor air quality permit application to the North Carolina Division of Air Quality to replace an existing fertilizer dryer and existing wet scrubbers.

Washington Daily News:
Aug. 30, 2023
APPLICATION

Attachment 5