Anheuser-Busch. LLC (07551)

Date: 11/24/202

New Jersey Department of Environmental Protection
Reason for Application

Permit Being Modified

Permit Class: BOP **Number:** 160001

Description of Modifications: This Radius application is for the submittal of an alternative VOC Control Plan prepared in accordance with N.J.A.C. 7-27- 6.17(c)3 for the Anheuser-Busch, Inc. Newark Brewery.

The source operations covered by this submittal are part of Anheuser-Busch Inc.'s Title V Operating Permit with a Program Interest Number 07551. The specific point sources subject to this control plan are a part of Emission Unit 2000 (Packaging) associated with the can fillers. The attached PDF document titled "Newark Brewery Alternative VOC Control Plan (Can Fillers)" attached are part of the Radius application constitutes the VOC Control Plan for the can fillers at the Newark Brewery.

The attached VOC Control Plan identifies that Anheuser-Busch has made no physical or process modifications to the existing Can Fillers #65 and #85. Since the VOC Control Plan approval by NJDEP, Anheuser-Busch has removed the entire Can Line #55, including the filler associated with this line. Anheuser-Busch is not aware of any advances since the last VOC Control Plan approval of any process pollution prevention measures or reasonably available VOC control equipment for the Can Fillers. The analysis conducted and measures contained in the current VOC Control Plan are still applicable. In summary, alternative VOC controls beyond that current in place are not reasonable. The Newark Brewery currently employs the equivalent of LAER and BACT, through efficient process operations and the existing permit conditions sustained.

New Jersey Department of Environmental Protection
Facility Profile (General)

Facility Name (AIMS): Anheuser-Busch. LLC

Facility ID (AIMS): 07551

Street Address: 200 US HWY 1
NEWARK, NJ 07114

Mailing Address: 200 US HWY 1
NEWARK, NJ 07114

State Plane Coordinates:

X-Coordinate:	577,631
Y-Coordinate:	677,531
Units:	Feet
Datum:	NAD83
Source Org.:	DEP-GIS
Source Type:	DEP Program Database

County: Essex

Location Description: Opposite Newark Airport

Industry:

Primary SIC:	2020
Secondary SIC:	2082
NAICS:	312120

New Jersey Department of Environmental Protection
Facility Profile (General)

Contact Type: BOP - Operating Permits

Organization: Anheuser-Busch, LLC
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Title: Environmental Manager
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Fax: (973) 645-7973 x
Other: ( ) - x
Type:
Email: William.Ritz@anheuser-busch.com

Org. Type: Corporation
NJ EIN: 00051200000

Mailing Address: 200 US Highway 1
Newark, NJ 07114

Contact Type: On-Site Manager

Organization: Anheuser-Busch, LLC
Name: William Ritz
Title: Environmental Manager
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Org. Type: Corporation
NJ EIN: 00051200000

Mailing Address: 200 US Highway 1
Newark, NJ 07114

Contact Type: Responsible Official

Organization: Anheuser-Busch, LLC
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Title: General Manager
Phone: (973) 645-7995 x
Fax: (973) 645-7973 x
Other: ( ) - x
Type:
Email: mike.higgins@anheuser-busch.com

Org. Type: Corporation
NJ EIN: 00051200000

Mailing Address: 200 US Highway 1 South
Newark, NJ 07114

Anheuser-Busch. LLC (07551) Date: 11/24/2020

New Jersey Department of Environmental Protection
Facility Profile (Permitting)

1. Is this facility classified as a small business by the USEPA?	No
2. Is this facility subject to N.J.A.C. 7:27-22?	Yes
3. Are you voluntarily subjecting this facility to the requirements of Subchapter 22?	No
4. Has a copy of this application been sent to the USEPA?	No
5. If not, has the EPA waived the requirement?	No
6. Are you claiming any portion of this application to be confidential?	No
7. Is the facility an existing major facility?	Yes
8. Have you submitted a netting analysis?	No
9. Are emissions of any pollutant above the SOTA threshold?	No
10. Have you submitted a SOTA analysis?	No
11. If you answered "Yes" to Question 9 and "No" to Question 10, explain why a SOTA analysis was not required	
12. Have you provided, or are you planning to provide air contaminant modeling?	No

Anheuser-Busch, Inc.
ONE OF THE ANHEUSER-BUSCH COMPANIES

October 13, 2020

Mr. Kevin Greener
New Jersey Department of Environmental Protection
Bureau of Operating Permits
401 East State Street – 2nd Floor
P.O. Box 027
Trenton, New Jersey 08625-0027

RE: Anheuser-Busch, Inc.
Program Interest No. 07551
Alternative VOC Control Plan

Dear Mr. Greener:

Attached is an alternative VOC Control Plan prepared in accordance with N.J.A.C. 7-27- 6.17(c)3 for the Anheuser-Busch, Inc. Newark Brewery. The plan is certified pursuant to N.J.A.C. 7-27-1.39.

If you have any questions, please call me at (973) 645-8966.

William Ritz
Environmental Manager

cc: Robin Jones
Air Compliance and Enforcement
New Jersey Department of Environmental Protection
7 Ridgedale Ave
Cedar Knolls, NJ 07927

Anheuser-Busch LLC

Newark Brewery
Alternative VOC Control Plan
(Can Fillers)

Submitted to:
New Jersey Department of Environmental Protection
Bureau of Operating Permits

October 2020

Table of Contents

1 Introduction

This alternative VOC control plan is submitted pursuant to N.J.A.C. 7:27-16.17(c). The source operations covered by this submittal are part of Anheuser-Busch Inc.'s Title V Operating Permit with a Program Interest Number 07551. The specific point sources subject to this control plan are a part of Emission Unit 2000 (Packaging) associated with the can fillers.

Since the VOC Control Plan approval by NJDEP in 2009, Anheuser-Busch has removed the entire Can Line #55, including the filler associated with this line. No physical or process modifications have been made to the existing Can Fillers #65 and #85. Additionally, Anheuser-Busch is not aware of any advances since the last VOC Control Plan approval of any process pollution prevention measures or reasonably available VOC control equipment for the Can Fillers. The analysis conducted and measures contained in the current VOC Control Plan are still applicable.

2 Source Description and Operation

The Newark Brewery brews and packages beer for distribution to wholesalers. The plant's NAICS Code is 312120- "Breweries". Major raw materials used in brewing the beer include barley malt, hops, rice, and yeast. The grains are brought to the site in railcars and unloaded directly into the grain storage building. The ingredients are cooked (brewed), fermented with yeast, and placed in the cellars for aging (lagering). Once aged, the beer is filtered and transferred to the Packaging Department. The Packaging Department operations include washing and filling containers (cans, bottles and kegs), pasteurizing, labeling bottles, and palletizing full goods. Pallets of beer are then loaded onto trailers and shipped to wholesalers.

In the Packaging Department, the process of filling cans with beer is subject to alternative VOC control requirements. VOC emissions in the form of ethanol occur during the filling process (process loss). During the filling process, the can is first filled with carbon dioxide (CO_2), which is displaced as beer flows into the container. In addition, CO_2 is blown across the tops of the filled cans, maintaining an oxygen-free headspace in the container until the container is closed. The carbon dioxide that is vented as the containers are filled contains a small amount of ethanol due to contact with beer.

The source operations to be included in the Alternative VOC control Plan are listed in the following table. Also included in the table are the maximum rated capacity of the can fillers, maximum annual throughput and potential emissions along with the actual throughput and emissions for 2019.

Anheuser-Busch Inc.
U2000 Operating Scenarios, Maximum Rated Capacity and Potential to Emit VOC

Operating Scenario		Source	Rated Capacity (bbls/hr)	Maximum Annual Throughput (bbls/yr)	PTE VOC (lb/hr)	PTE VOC (ton/yr)	2019 Actual VOC (ton/yr)	2019 Actual Throughput bbls/yr
OS651	E2011	Can Line 65	411	3,600,360	5.01	23.4		
OS851	E2001	Can Line 85	345	3,022,200	4.21	19.7		
Limits			756	6,622,560		43.1	15.6	2,075,680

1 bbl = 31 gallons

Since the VOC Control Plan approval by NJDEP in 2009, Anheuser-Busch has removed the entire Can Line 55, including the filler associated with this line.

3 Regulatory Analysis

In evaluating the possibility of VOC controls for the Newark Brewery it is helpful to understand what types of controls and regulatory analyses have been conducted and required by various regulations at our sister breweries in the United States.

3.1 LAER

Major modifications in non-attainment areas must, amongst other things, employ the Lowest Achievable Emission Rate (LAER). LAER is the most stringent emission limitation derived from either the most stringent emission limitation contained in the implementation plan of any State for such class or category of source or the most stringent emission limitation achieved in practice. In other words, LAER is the most stringent control required by any rule without regard to Anheuser-Busch's Houston Brewery is located in m1 ozone non-attainment area. In 2000, the brewery conducted a major modification triggering Non-Attainment New Source Review (NNSR) for VOC. As part of the permitting process, the brewery conducted the required LAER analysis. The analysis included the same processes as those at the Newark Brewery. The Texas Commission on Environmental Quality (TCEQ) and USEPA determined LAER for VOC emissions at the brewery to be: efficient process operation; continuous process improvements; CO_2 blanketing of appropriate processes; and, application of technologies that minimize ethanol in brewery wastewater.

The Newark Brewery currently employs all of the same LAER controls to minimize VOC emissions. A current search of the RACT/BACT/LAER Clearinghouse search for Process Type 70.110 (Alcoholic Beverage Production) does not show any control technologies for beer filling operations.

3.2 RACT

When an area is designated as non-attainment, the State must put together a plan (State Implementation Plan or SIP) that outlines what measures the State is going to take to bring the area into attainment. The SIP must show that the State has adopted all reasonably available control measures – including Reasonably Available Control Technology (RACT). RACT is that "technology that will achieve the maximum degree of emission control that a particular source is capable of meeting and that is reasonably available considering technological and economic feasibility". RACT is less stringent than both LAER and BACT.

In a RACT analysis one is determining if air pollution controls are reasonable. In doing so, one must determine if controls are technically feasible and economically reasonable. Economically reasonable is based upon an annualized cost per ton of pollutant removed ($/ton) and is less than the cost of controls employed to meet LAER.

4 VOC Control Technologies

Four basic categories of control technologies were identified for handling the VOC emissions from the can filling process:

1. Adsorption (carbon beds);
2. Absorption (wet scrubbing);
3. Thermal oxidation (regenerative thermal oxidizers, catalytic oxidizers, recuperative oxidizers)
4. Biological oxidation (biofiltration)

Specific alternatives within each of these four categories are discussed below.

4.1 Carbon Adsorber

Utilizing activated carbon, the VOC-laden air stream is passed through a carbon bed where the VOCs are adsorbed. The carbon adsorption technology typically utilizes two carbon beds in the system, so that as one bed is collecting VOCs, the second is in regeneration mode. During regeneration, the VOCs arc removed from the carbon, so that the carbon can be used again to collect VOCs. The carbon bed is regenerated utilizing steam or hot air to desorb the VOCs for eventual recovery or by a vacuum to pull the VOCs out of the carbon into a liquid absorbent medium.

4.2 Wet Scrubber

A wet scrubber is a device designed to adsorb the pollutants which are in gas phase in the air stream, into the liquid scrubbing medium, by creating an advantageous environment for the mass transfer of the target gas into the liquid. The advantageous environment includes a higher concentration of the pollutant in the gas than the liquid, adequate contact time, turbulence, and adequate contact area.

4.3 Thermal Oxidation

4.3.1 Regenerative Thermal Oxidizer (RTO)

Regenerative thermal oxidation utilizes a multi-chamber combustion device that uses retained energy from combustion in one chamber to preheat the incoming VOC laden air in another chamber. As a result, only a small amount of supplemental fuel may be required to maintain adequate destruction temperatures in certain applications. The chambers are generally filled with ceramic heat-absorbing media. VOC laden air is passed through the media to preheat the air prior to flowing to a combustion chamber for oxidation. Regenerative thermal oxidizers (RTOs) are typically applied in processes with high flow rates and VOC concentrations of 1-9% of the LEL, and are not intended for processes in which the inlet VOC concentration exceeds 15% of the LEL.

4.3.2 Catalytic Oxidizer (CAT-OX)

A catalytic oxidizer is designed such that the solvent laden air passes over a catalyst at an incineration temperature that is usually much less than the combustion temperature of an RTO. The catalyst enables destruction of VOCs at low temperatures which translates into lower fuel usage. Total operating costs may not be lower when the catalyst replacement costs are included in the analysis.

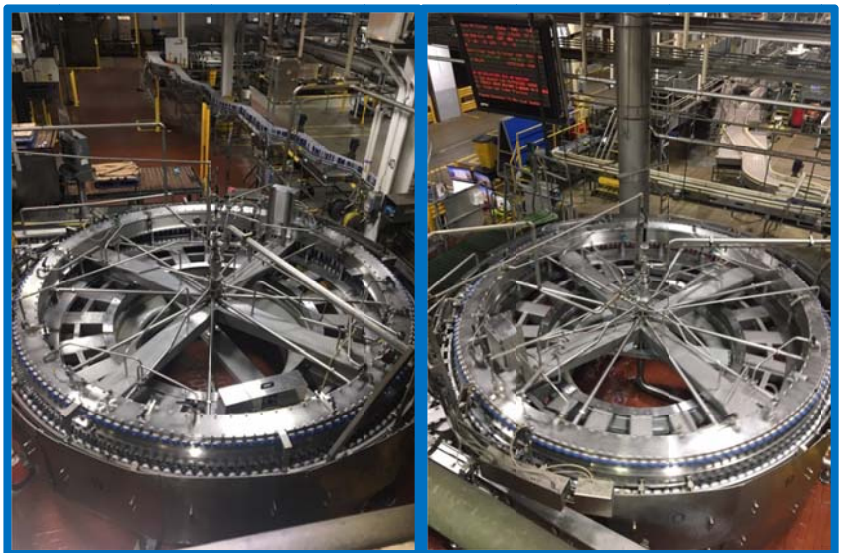
4.4 Biofiltration

Biofiltration (or bio-oxidation) is a general term applied to the conversion of gas-phase chemical compounds to the common biological degradation products of carbon dioxide, water and inorganic salts. Typically biofiltration systems for the removal of pollutants from industrial air streams include a humidification preconditioner for the polluted gas stream prior to the main vessel. The main vessel contains a filter bed of media, such as soil, composted organic material, and inert material similar to wet scrubber packing. The media provides a surface for the microorganism attachment and growth. Once adsorbed in the biofilm layer or dissolved in the water layer surrounding the biofilm, the contaminants are available to the microorganisms as a food source to support microbial life and growth. The cleaned air that has passed through the media is then exhausted from the biofilter. Degradable filter media typically requires replacement every three to five years. Operating costs for bio filters tend to be low because there is no fuel consumption and the differential pressure through the system is low. However, the media replacement costs must be included in any true analysis of operating costs.

5 Feasibility Analysis of VOC Control Technologies

Anheuser-Busch is not aware of any VOC control technology being applied to any beer filling operation in the world today. The can lines cover thousands of square feet of floor space in which the fillers are separated by large distances. The building is ventilated by natural air flow (i.e. windows and doors), ceiling fans and mechanical air handling units. The following pictures are of the actual point sources subject to alternative VOC control requirements at the Newark brewery since they have the potential to emit VOCs greater than 3.5 lbs/hr.

Can Line 65 Filler | Can Line 85 Filler



Capture of emissions during the filling of beer cans would have to be accomplished through the use of enclosures and be designed for 100% capture efficiency. Whether this is technically feasible is questionable. There is much evidence to suggest otherwise. The fillers themselves, which have can conveyors entering and exiting the filler area, require ready access by forklifts and small cranes for maintenance and repair purposes. An enclosure around the filler would be an impediment to the efficient operation of the can line. Additionally, a well-designed enclosure should draw ambient air at a minimum of 200 feet per minute through any natural draft openings (such as the conveyor penetrations through the enclosure wall). Pulling ambient air through the openings will bring in biological contamination into the filler area (which will be more difficult to clean because of the enclosure). Enclosure engineering does not normally attempt to resolve potential biological problems and prevent areas of stagnant air within the enclosure.

There are also potential safety issues that would be caused by installing enclosures around the fillers. The CO_2 gas that is integral to the filling operation may become elevated in the enclosure and present a safety hazard to workers. The enclosures may have to be classified as a confined space which will inherently delay any troubleshooting, sample collection, maintenance and service to equipment housed within the enclosures.

Overall control efficiencies are the product of the capture efficiency and the destruction efficiency of the control system. A brief technological analysis of each control technology follows.

Figure 1- Can Line 65 Filler

5.1 Carbon Adsorption

Carbon adsorption was determined to be technically infeasible primarily clue to the low adsorption rate of ethanol. The literature documents that ethanol is poorly adsorbed by carbon relative to other common VOCs (Air Pollution Engineering Manual, 1992). Ethanol is poorly adsorbed by carbon and has an approximate adsorption rate of 1% (100 pounds of carbon would adsorb up to l pound of gaseous ethanol). Carbon adsorption vendors confirmed that most incineration devices would clearly out-perform carbon systems for ethanol control. Furthermore, spent carbon would most likely be taken off-site for regeneration and incineration of the pollutants removed in the regeneration process, creating an emissions stream at an off-site location.

5.2 Wet Scrubbing

Although wet scrubbing using water is a feasible method of removing most of the ethanol from an air stream, the ethanol does not reliably remain in the water for long, and must be oxidized. or otherwise destroyed by other means. While this is technically feasible, the application to capturing VOC emissions from a can filling operation has never been attempted. For this reason, no estimate of the cost of installing wet scrubbing technology and subsequent water treatment has been made.

5.3 Thermal Oxidation

While both the Regenerative Thermal Oxidizer and Catalytic Oxidizer are proven VOC control technologies, they create several undesirable environmental impacts. Both the RTO and CatOx require electricity for instruments and motors and natural gas for combustion. The production of both natural gas and electricity require the use of natural resources and result in an increase in air pollution. The combustion of natural gas in both units results in the emission of criteria pollutants such as NO_x, CO, and particulate matter less than 10 microns in diameter (PM_{10}). In essence, the use of either the RTO or CatOx to control VOCs results in an exchange of increased emissions of NO_x and other pollutants for a reduction of VOC emissions. Therefore, the use of this technology is not a cost effective alternative due to its negative impact on the environment.

5.4 Bio filtration

The possibility of controlling ethanol emissions in the gas phase using biofiltration is not a proven technology. Also, the brewery already utilizes an anaerobic wastewater pretreatment system (Bio-Energy Recovery System or BERS) to treat ethanol in the water phase. A biofilter is used at BERS to treat off-gases from the process in the vapor phase. Therefore, Anheuser- Busch did not seriously consider biofiltration in this analysis, even though it is technically feasible.

6 Alternative Processes and Pollution Prevention Measures

There are no known feasible alternative processes to filling cans with beer. Anheuser-Busch uses state of the art technology and equipment on its packaging lines.

Anheuser-Busch has an active and ongoing pollution prevention program. This program has been very successful in minimizing and reducing process loss through packaging line upgrades and continuous process improvement initiatives. The link between product loss minimization and pollution prevention is clear and direct. Beer contains ethanol, a VOC, which volatilizes upon spillage or other loss of the product; improving the packaging operations to minimize losses directly reduces VOC emissions. Packaging beer process loss has been reduced by 30% over the past years. Specific pollution prevention measures include:

- New state of the art filling equipment
- In-line instrumentation resulting in improved process control
- More efficient beer brand and package size conversions
- Reduction of CO_2 usage at the filler
- various proprietary operational changes

Additionally, the brewery has installed a new carbon dioxide capture system called "CO_2 Advanced Purification System" or CAPS. The CAPS system recovers CO_2 that is generated in the fermenting process for re-use in the brewery. The benefit of the CAPS system over the previous CO_2 capture system is that the CO_2 can be captured earlier in the fermentation process. This results in less CO_2 and VOC laden air being directly vented to the atmosphere. While Anheuser-Busch has not quantified the VOC reduction impacts associated with CAPS, actual VOC emissions from the fermenters have been reduced.

7 Remaining Useful Life of Existing Source Operations

Can fillers have an expected useful operating life of 30 years or more if properly maintained. Can Line 65 and 85 fillers were installed in 1989, and 1991, respectively. Since the VOC Control Plan approval, Anheuser-Busch has removed the entire Can Line 55, including the filler associated with this line.

8 Summary/Conclusion

Anheuser-Busch has made no physical or process modifications to the existing Can Fillers #65 and #85. Since the VOC Control Plan approval by NJDEP, Anheuser-Busch has removed the entire Can Line #55, including the filler associated with this line. Anheuser-Busch is not aware of any advances since the last VOC Control Plan approval of any process pollution prevention measures or reasonably available VOC control equipment for the Can Fillers. The analysis conducted and measures contained in the current VOC Control Plan are still applicable. In summary, alternative VOC controls beyond that current in place are not reasonable. The Newark Brewery currently employs the equivalent of LAER and BACT, through efficient process operations and the existing permit conditions sustained.

Alternative Emission Limit Control Plan
Certification

Responsible Official Signature Statement

The signature below must be made by a responsible official, as defined at N.J.A.C. 7:27-1.4
Pursuant to N.J.A.C. 7:27-1.39(a)2: "I certify, under penalty of law, that I have personally examined and am familiar with the information submitted in this document and all attached documents and, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true , accurate and complete. I am aware that there are significant civil criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information."

Signature of Responsible Official			Date
Michael G. Higgins			***973-645-7995***
Type or Print Name of Responsible Official			Phone
General Manager			***973-645-7973***
Title of Responsible Official			Fax
200 US Highway 1 South	***Newark***	***NJ***	***07114***
Address of Responsible Official	City	State	Zip Code

1st Direct Knowledge Official Signature Statement

The signature below must be made by the individual or individuals (may include consultants) with direct knowledge of and responsibility for the information contained within this document.
Pursuant to N.J.A.C. 7:27-1.39(a)1: "I certify, under penalty of law, that I believe the information provided in this document is true, accurate and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information."

Signature of Direct Knowledge Official			Date
William Ritz			***973-645-8966***
Type or Print Name of Direct Knowledge Official			Phone
Environmental Manager			***973-645-7973***
Title of Direct Knowledge Official			Fax
200 US Highway 1 South	***Newark***	***NJ***	***07114***
Address of Direct Knowledge Official	City	State	Zip Code

RADIUS File Submission

Note: Following is a summary of the information contained in your application. If you have completed the submittal, the service will appear in the "My Services - Submitted" section of your My Workspace page. Please check the "Status" column to confirm whether it was successfully transmitted or not. If the status of the service is "Submission Failed - Please Contact NJDEP," please send an e-mail message to njdeponlinesupport@dep.nj.gov for assistance, including the Service ID number of the failed submittal in the message. If you have not yet completed the submittal, the service will appear in the "My Services - In Progress" section of the My Workspace page instead, and the "Status" column will indicate the stage of the submittal.

Selected Facility Name: ANHEUSER-BUSCH INC

Selected Facility ID: 07551

Submittal Type: Operating Permit Application - Initial - (Modification)

Click here to access the pdf version of the information submitted in the RADIUS file.

Uploaded Attachments

Attachment Type	Attachment Description	File Name
RADIUS Attachment	AEL VOC Control Plan 2020 Application	AB- AEL Application_October 2020.pdf

Certification

Certifier: Manuel Vizcaya
Certifier ID: VIZCAYAM
Challenge/Response Question: What is your favorite sport?
Challenge/Response Answer: ******
Certification PIN: ******
Date/Time of Certification: 11/24/2020 16:16

For Air Permits:
"I certify under penalty of law that I believe the information provided in this document is true, accurate, and complete. I am aware that there are significant civil and criminal penalties, including the possibility of fine or imprisonment or both, for submitting false, inaccurate or incomplete information."

For Emission Statements:
"I certify under penalty of law that I believe the information provided in this document is true, accurate, and complete. For those portions of the document that are based on estimates, those estimates are the result of good faith application of sound professional judgment, using techniques, factors, or standards approved by the Department or EPA, or generally accepted in the trade. I am aware that there are significant civil and criminal penalties, including fines or imprisonment or both, for submitting false, inaccurate or incomplete information."

Manuel Vizcaya — 11/24/2020
Individual With Direct Knowledge — **Date**

Certifier: Michael Higgins
Certifier ID: 00189298
Challenge/Response Question: What is your favorite movie?
Challenge/Response Answer: ******
Certification PIN: ******
Date/Time of Certification: 12/09/2020 09:56

For Air Permits:
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment."

For Emission Statements:
"I certify under penalty of law that I have personally examined and am familiar with the information submitted in the attached document and, based on my inquiry of those officials immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete. I certify that, based on my inquiry of those officials immediately responsible for obtaining the information, I believe that any estimates are the result of good faith application of sound professional judgment, using techniques, factors, or standards approved by the Department or EPA, or generally accepted in the trade. I am aware that there are significant civil and criminal penalties, including fines or imprisonment or both, for submitting false, inaccurate or incomplete information."

Michael Higgins — 12/09/2020
Responsible Official — **Date**

Payment Information

Total Payment Amount: $.00

Payment Date:

Payment Method: