



**TECHNICAL REVIEW AND EVALUATION  
OF APPLICATION FOR  
AIR QUALITY PERMIT NO. 63639**

**NatureSweet USA, LLC**

**I. INTRODUCTION**

- A.** This Title V permit is issued to NatureSweet USA, LLC, the Permittee, for the continued operation of its greenhouse facility. This is a renewal of Operating Permit No. 53618. The facility has six greenhouses; each greenhouse consists of three dual-fuel boilers and two emergency internal combustion engines. In addition, the facility has one stand-by internal combustion engine and two sulfur burners. The dual-fuel boilers can burn either natural gas or diesel. The emergency internal combustion engines burn diesel.

Herein, the dual-fuel boilers are referred to as boilers and the emergency internal combustion engines are referred to as generators.

**B.** Company Information

1. Facility Name: NatureSweet USA, LLC – Willcox Facility
2. Facility Location: North of Willcox, Arizona in Graham County  
32° 28' 2" N. Latitude / 109° 56' 55" W. Longitude
3. Mailing Address: 26050 South NatureSweet Avenue  
Willcox, AZ 85643

- C.** Attainment Classification The area is attainment for all criteria pollutants.

**II. PROCESS DESCRIPTION**

This facility produces hydroponic tomatoes and cucumbers in many varieties. The facility consist of six greenhouse sites. Each greenhouse site includes two greenhouse buildings, support buildings, three boilers, and two generators. The boilers are used to regulate temperature of the greenhouses and to provide additional carbon dioxide to optimize the growth of the crops. The generators are used to supply power in emergency situations.

In addition, the facility maintains one mobile standby diesel generator which is used for a replacement in the event that one of the generators fails.

Two sulfur burners are operated to generate SO<sub>2</sub> gas, which creates a mild sulfurous acid when introduced to water. The result is water with reduced pH and alkalinity that increases the availability of nutrients in the water and the ability of the plants to absorb those nutrients. To be

classified as organic agriculture, sulfur burners are used instead of using purchased acid.

The diesel fuel for the generators and the boilers is stored in aboveground storage tanks located at each greenhouse site. Additional storage tanks are used to store diesel, propane, and gasoline which is used to fuel vehicles and equipment.

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**III. EMISSIONS**

- A. For Title V purposes, NatureSweet USA, LLC is a major source because the potential to emit of nitrogen oxides (NO<sub>x</sub>) exceeds 100 tpy. Facility wide emissions are listed in Table 1 below.

**Table 1: Facility Wide Potential to Emit (PTE)**

<b>Pollutant</b>	<b>Emissions (tons per year)</b>
<b>PM</b>	14.49
<b>PM<sub>10</sub></b>	13.12
<b>PM<sub>2.5</sub></b>	12.09
<b>NO<sub>x</sub></b>	163.81
<b>CO</b>	25.56
<b>SO<sub>2</sub></b>	0.98
<b>VOC</b>	8.05
<b>HAPs</b>	2.07

- B. Source within a Source

Prevention of Significant Deterioration (PSD) defines a major source as a facility with the potential to emit 100 tpy for a categorical source and 250 tpy for a non-categorical source.

Boilers, which are a support activity for growing greenhouse food crops, are a listed categorical source. Therefore, the PSD limit for the boilers is 100 tpy. To stay below 100 tpy of NO<sub>x</sub>, the Permittee voluntarily accepted three permit conditions: an annual limit on the natural gas usage in the boilers; a NO<sub>x</sub> emission limit while burning natural gas; and an hourly limit that the boilers can operate while burning diesel fuel.

However, the primary activity at the Willcox facility is growing greenhouse food crops which is not a listed categorical source, thus is a non-categorical source. Therefore the PSD limit for growing greenhouse food crops is 250 tpy. To stay below the major source threshold of 250 tpy of NO<sub>x</sub>, in addition to the limits taken on the boilers mentioned above, the Permittee voluntarily accepted an annual limit on the number of hours the internal combustion engines cumulatively can operate. Consequently, the NatureSweet USA, LLC facility as a whole is not a PSD major source.

**IV. APPLICABLE REGULATIONS**

Table 2 displays the potential requirements that may apply to each permitted piece of equipment along with an explanation of why the requirement is or is not applicable.

**Table 2: Verification of Applicable Regulations**

Unit	Control Device	Rule	Verification
Boilers	Low-NO <sub>x</sub> Burners	<p>New Source Performance Standards (NSPS) 40 CFR 60 Subpart Dc</p> <p>National Emission Standards for Hazardous Air Pollutants (NESHAP) 40 CFR 63 Subpart JJJJJ</p>	<p>NSPS Subpart Dc applies to each boiler with a capacity between 10 and 100 MMBtu/hr, that was manufactured after June 1989. The rated capacity of the boilers range from 35.87 to 41.74 MMBtu/hr. The boilers were manufactured in 1992, 1996, 1997, 1999, 2003, 2005, and 2006. Therefore NSPS Subpart Dc applies to these boilers.</p> <p>NESHAP Subpart JJJJJ applies to each boiler after it burns diesel for reasons other gas curtailment, gas supply emergencies, or periodic testing on liquid fuel.</p>
Sulfur Burner	None	A.A.C. R18-2-730	As an unclassified source and having the potential for odor, sulfur burners are subject to the requirements of A.A.C. R18-2-730.
Gasoline Storage Tanks and Gasoline Dispensing Facility	None	40 CFR 60 Subparts K, Ka, and Kb	NSPS Subparts K applies to storage tanks with a capacity greater than 40,000 gallons that were built between June 11, 1973, and May 19, 1978. Subpart Ka applies to storage tanks with a capacity greater than 40,000 gallons that were built between May 18, 1978, and July 23, 1984. NSPS Subpart Kb applies to storage tanks with a capacity greater than 19,875 gallons that were built after July 23, 1984. All storage tanks at this facility are less than 19,875 gallons,



Unit	Control Device	Rule	Verification
		<p>A.A.C. R18-2-710</p> <p>40 CFR 63 Subpart CCCCCC</p>	<p>and are therefore not subject to NSPS Subparts K, Ka, or Kb.</p> <p>A.A.C. R18-2-710 applies to storage tanks handling petroleum liquids, and hence, applies to the gasoline storage tank.</p> <p>NESHAP Subpart CCCCCC applies to the gasoline dispensing facility.</p>
Internal Combustion Engines	None	<p>40 CFR 63 Subpart IIII</p> <p>40 CFR 63 Subpart ZZZZ</p> <p>A.A.C. R18-2-719</p>	<p>The applicability date for NSPS Subpart IIII is April 1, 2006 for compression ignition engines. All the internal combustion engines were manufactured prior to April 1, 2006. Therefore NSPS Subpart IIII does not apply.</p> <p>Because all internal combustion engines were manufactured prior to April 1, 2006, they are subject to the requirements of 40 CFR 63, Subpart ZZZZ.</p> <p>A.A.C. R18-2-719 applies to all internal combustion engines not subject to NSPS Subpart IIII.</p>
Sulfuric Acid Tanks	None	A.A.C. R18-2-730	As an unclassified source and having the potential for odor, sulfur acid tanks are subject to the requirements of A.A.C. R18-2-730.
Fugitive Dust Sources	Water Trucks Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards applies to all fugitive dust sources at the facility.
Abrasive Blasting	Wet blasting; Dust collecting equipment;	A.A.C. R-18-2-702 A.A.C. R-18-2-726	These standards apply to any abrasive blasting operation.

Unit	Control Device	Rule	Verification
	Other approved methods		
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	This standard applies to any spray painting operation.
Demolition / Renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard applies to any asbestos related demolition or renovation operations.
Mobile Sources	None	A.A.C. R18-2-801	These apply to off-road mobile sources, which either move while emitting air pollutants or are frequently moved during the course of their utilization.

**V. Previous Permit Conditions**

Permit No. 53618 was issued on August 11, 2011, for the continued operation of this facility. Table 3 below illustrates if a section in Permit No. 53618 was revised, kept or deleted.

**Table 3: Permit No. 53618**

Section No.	Determination			Comments
	Revised	Keep	Delete	
Att. A.	X			General Provisions - Revised to represent most recent template language.
Att. B, Condition I	X			Facility Wide Requirements – Revised to include Alternative Method 082 (ALT-082) for Method 9 observations.
Att. B, Condition II	X			Boilers – Revised to increase the hours of operation while burning diesel fuel from 1,800 hours per year to 9,000 hours per year. Also, incorporated the requirements of 40 CFR 63 Subpart JJJJJ.
Att. B, Condition III		X		Internal Combustion Engines (ICEs) – Kept but moved to Section V.
Att. B, Condition IV		X		Gasoline Dispensing Facilities



Section No.	Determination			Comments
	Revised	Keep	Delete	
Att. B, Condition V		X		Fugitive Dust Requirements – Kept but moved to Section VI.
Att. B, Condition VI		X		Mobile Sources Requirements – Kept but moved to Section VII.
Att. B, Condition VII		X		Other Periodic Activities – Kept but moved to Section VIII.
Att. B, Condition VIII		X		Sulfur Burner – Kept but moved to Section III.

## VI. MONITORING REQUIREMENTS

### A. Boilers

1. The Permittee must operate gas flow meters, one on each boiler, to continuously record the amount of natural gas that is combusted each day. The Permittee must maintain daily records of the natural gas combusted in each boiler and a 12-month rolling total of natural gas combusted in all boilers to show compliance with the voluntarily accepted 12-month limit on natural gas use in the dual-fuel boilers.
2. The Permittee must maintain daily records of the hours each boiler operated on diesel fuel and a 12-month rolling total of hours of operation of all boilers on diesel fuel to show compliance with the voluntarily accepted 12-month hourly limit of boiler operation while burning diesel fuel.
3. The Permittee must maintain a certification from the diesel fuel supplier, which contains the following information:
  - a. Name of the oil supplier;
  - b. A statement from the oil supplier that the oil complies with the specifications under the definition of distillate oil; and
  - c. The sulfur content or maximum sulfur content of the oil.

In addition, the Permittee must certify that the fuel supplier certifications submitted represent all of the fuel combusted during the reporting period.
4. The Permittee must maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of the boilers and actions taken to minimize emissions including corrective actions to restore the malfunctioning boiler or monitoring equipment to its normal and usual manner of operation.
5. The Permittee must maintain records of the date and details of any low NOx burner tuning that is conducted.

6. After the first occurrence of a voluntary fuel switch from natural gas to diesel, the Permittee must maintain records of the energy assessment, the initial tune-up, and the biennial tune-ups.

**B. Sulfur Burners**

The Permittee must conduct a monthly survey of visible emissions emanating from the stack of each sulfur burner at the facility. If the opacity of the emissions observed appears to exceed the opacity limit, the observer must conduct a certified EPA Reference Method 9 observation. The Permittee is required to keep records of the initial survey and any EPA Reference Method 9 observations performed. If the observation results in an exceedance of the opacity limit, the Permittee is required to take corrective action and log all such actions. Any exceedance must be reported to ADEQ as an excess emission.

**C. Gasoline Dispensing Facility**

1. The Permittee must maintain a monthly record of the gasoline throughput of the gasoline dispensing facility.
2. The Permittee must maintain a file of the typical Reid vapor pressure of gasoline stored and dates of storage.

**D. Internal Combustion Engines**

1. The Permittee must maintain a monthly log of the hours of operation for each generator. At the end of each month, the Permittee must calculate and record a rolling 12-month total of the hp-hrs operated for all generators to show compliance with the voluntarily accepted limit.
2. The Permittee must keep records of diesel fuel supplier certifications. The certification must contain the name of the fuel supplier, the sulfur content of the diesel, and the heating value of the diesel.
3. The Permittee must report to the Director any daily period during which the sulfur content of the fuel being fired in the generator exceeds 0.8 percent.
4. The Permittee must conduct a monthly survey of visible emissions emanating from the stack of each generator at the facility when operating. If the opacity of the emissions observed appears to exceed the opacity limit, the observer must conduct a certified EPA Reference Method 9 observation. The Permittee is required to keep records of the initial survey and any EPA Reference Method 9 observations performed. If the observation results in an exceedance of the opacity limit, the Permittee is required to take corrective action and log all such actions. Any exceedance must be reported to ADEQ as an excess emission.
5. The Permittee must operate and maintain the generators in accordance with manufacturer's emission-related written instructions or develop a maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions.
6. The Permittee must change the oil and filter every 500 hours of operation, inspect the air cleaner every 1,000 hours of operation, and inspect all hoses and belts every

500 hours of operation.

**E. Fugitive Dust**

1. The Permittee is required to keep record of the dates and types of dust control measures employed.
2. The Permittee is required to show compliance with the opacity standards by having a Method 9 certified observer perform monthly survey of visible emission from fugitive dust sources. The observer is required to conduct a 6-minute Method 9 observation if the results of the initial survey appear on an instantaneous basis to exceed the applicable standard.
3. The Permittee is required to keep records of the name of the observer, the time, date, and location of the observation and the results of all surveys and observations.
4. The Permittee is required to keep records of any corrective action taken to lower the opacity of any emission point and any excess emission reports.

**F. Periodic Activities**

1. The Permittee is required to record the date, duration and pollution control measures of any abrasive blasting project.
2. The Permittee is required to record the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.
3. The Permittee is required to maintain records of all asbestos related demolition or renovation projects. The required records include the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents.

**G. Mobile Sources**

The Permittee is required to keep records of all emission related maintenance performed on the mobile sources.

**VII. TESTING REQUIREMENTS**

**A. Boilers**

1. Nitrogen Oxide (NO<sub>x</sub>)
  - a. The Permittee must conduct a performance test for the emission of NO<sub>x</sub> from the stack of one boiler from each greenhouse site in accordance with Table 4 below.

**Table 4: Boiler Testing Schedule**

Greenhouse Site	Boilers to be tested in 2016	Boilers to be tested in 2017	Boilers to be tested in 2018	Boilers to be tested in 2019	Boilers to be tested in 2020
1	1	2	3	1	2
2	3	1	2	3	1
3	2	3	1	2	3
4	2	3	1	2	3
5	1	2	3	1	2
6	2	3	1	2	3

2. Opacity

A monthly performance test of visible emissions from the stack of each boiler when burning diesel must be conducted by a certified EPA Reference Method 9 observer using the procedures in EPA reference Method 9.

**VIII. COMPLIANCE HISTORY**

A Notice of Violation, Case No. 147968, was issued to the Permittee for failure to meet the carbon monoxide (CO) emission limit imposed on thirteen non-emergency generators in Permit No. 53618.

Per Attachment B, Section III.D.2.a. of Permit No. 53618, the Permittee was required to limit the concentration of CO in the exhaust of each non-emergency generator to 23 ppmvd at 15 percent oxygen (O<sub>2</sub>) as required by 40 CFR 63 Subpart ZZZZ (40 CFR 63.6603(a), Table 2d -Item 3).

CO emission testing was conducted October 14, 2013, through October 17, 2013, on all thirteen diesel fired generators. The test report which was received by ADEQ on November 20, 2013, indicated that all thirteen generators significantly exceeded the 23 ppmvd at 15% O<sub>2</sub> for the CO emission limit.

NatureSweet USA, LLC agreed to operate the generators as emergency generators. In doing so, the emergency generators would no longer be subject to the testing requirement of 40 CFR 63 Subpart ZZZZ. The reclassification was accomplished through Minor Permit Revision No. 59415 which was issued on March 31, 2014.

The Notice of Violation was closed on April 3, 2014.

**IX. MINOR NSR APPLICABILITY**

As part of this renewal application, the Permittee proposed to increase the hours in which the boilers can cumulatively operate on diesel fuel from 1,800 hours per year to 9,000 hours per year. Table 5 below illustrates the potential to emit from the boilers when operating 1,800 hours per year on diesel, the potential to emit from the boilers when operating 9,000 hours per year on diesel, the change in potential to emit, and the permitting exemption thresholds associated with each pollutant.

**Table 5: Boiler Potential to Emit (PTE)**

<b>Pollutant</b>	<b>PTE of Boilers Based on 1,800 hours While Burning Diesel (tons per year)</b>	<b>PTE of Boilers Based on 9,000 hours While Burning Diesel (tons per year)</b>	<b>Change in PTE (tons per year)</b>	<b>Permitting Exemption Thresholds (tons per year)</b>
<b>PM</b>	0.9	4.52	3.62	---
<b>PM<sub>10</sub></b>	0.63	3.15	2.52	7.5
<b>PM<sub>2.5</sub></b>	0.43	2.12	1.7	5
<b>NO<sub>x</sub></b>	5.48	27.42	21.93	20
<b>CO</b>	1.37	6.85	5.48	50
<b>SO<sub>2</sub></b>	0.06	0.29	0.23	20
<b>VOC</b>	0.05	0.27	0.22	20
<b>HAPs</b>	0.02	0.1	0.08	---

Table 5 illustrates that increasing the hours of boiler operation while firing diesel from 1,800 hours per year to 9,000 hours per year results in a potential to emit for NO<sub>x</sub> greater than the permitting exemption threshold. Therefore, increasing the hours that the boilers can operate on diesel fuel from 1,800 hours per year to 9,000 hours per year triggers R18-2-334, Minor New Source Review.

Once subject to Minor New Source Review, the Permittee has two options: install Reasonably Available Control Technology (RACT) or perform air dispersion modeling to show no interference with the National Ambient Air Quality Standards (NAAQS). NatureSweet USA, LLC performed air dispersion modeling. The modeling results in Table 6 below illustrate that operation of the boilers while burning diesel fuel 9,000 hours per year will not interfere with the NAAQS. A complete analysis is contained in the permit application.

**Table 6: Air Dispersion Modeling Results**

<b>Pollutant</b>	<b>Averaging Period</b>	<b>Concentrations (µg/m<sup>3</sup>)</b>			<b>NAAQS (µg/m<sup>3</sup>)</b>
		<b>Modeled Concentration</b>	<b>Background</b>	<b>Total</b>	
PM <sub>10</sub>	24-hour	18.78	54.00	72.78	150
PM <sub>2.5</sub>	24-hour	18.41	9.42	27.83	35



Pollutant	Averaging Period	Concentrations (µg/m <sup>3</sup> )			NAAQS (µg/m <sup>3</sup> )
		Modeled Concentration	Background	Total	
	Annual	0.65	3.40	4.05	12
SO <sub>2</sub>	1-hour	5.22	5.21	10.44	196
	3-hour	3.43	43.00	46.43	1,300
NO <sub>2</sub>	1-hour	145.10	28.40	173.50	188
	Annual	4.37	4.66	9.03	100
CO	1-hour	813.96	582.00	1395.96	40,000
	8-hour	380.41	582.00	962.41	10,000

**X. LIST OF ABBREVIATIONS**

- A.A.C. .... Arizona Administrative Code
- ADEQ ..... Arizona Department of Environmental Quality
- CO ..... Carbon Monoxide
- HAP ..... Hazardous Air Pollutant
- hp ..... Horsepower
- hr ..... Hour
- lb ..... Pound
- m ..... Meter
- MMBtu ..... Million British Thermal Units
- µg/m<sup>3</sup> ..... Microgram per Cubic Meter
- NAAQS ..... National Ambient Air Quality Standard
- NO<sub>x</sub> ..... Nitrogen Oxide
- PM ..... Particulate Matter
- PM<sub>10</sub> ..... Particulate Matter Nominally less than 10 Micrometers
- PTE ..... Potential-to-Emit
- SO<sub>2</sub> ..... Sulfur Dioxide
- tpy ..... Tons per Year
- VOC ..... Volatile Organic Compound
- yr ..... Year