

DEC 05 2014

Julia Bonardi
Gallo Glass Company
PO Box 1230
Modesto, CA 95353

RE: Notice of Final Action - Authority to Construct
Facility Number: N-1662
Project Number: N-1141107

Dear Ms. Bonardi:

The Air Pollution Control Officer has issued the Authority to Construct permit to Gallo Glass Company for the modification of a glass furnace to rebuild and expand the furnace, at 605 S Santa Cruz Ave, Modesto, CA. Enclosed are the Authority to Construct permit and a copy of the notice of final action to be published approximately three days from the date of this letter.

Notice of the District's preliminary decision to issue the Authority to Construct permit was published on June 12, 2014. The District's analysis of the proposal was also sent to CARB and US EPA Region IX on June 9, 2014. All comments received following the District's preliminary decision on this project were considered.

Comments received by the District during the public notice period resulted in revisions to the BACT Analysis, the offset analysis, and other minor revisions to the permit. These changes were minor and did not trigger additional public notification requirements, nor did they have any impact upon the Best Available Control Technology determination or on the amount of offsets required for project approval.

Also enclosed is an invoice for the engineering evaluation fees pursuant to District Rule 3010. Please remit the amount owed, along with a copy of the attached invoice, within 60 days.

Seyed Sadredin
Executive Director/Air Pollution Control Officer

Northern Region
4800 Enterprise Way
Modesto, CA 95356-8718
Tel: (209) 557-6400 FAX: (209) 557-6475

Central Region (Main Office)
1990 E. Gettysburg Avenue
Fresno, CA 93726-0244
Tel: (559) 230-6000 FAX: (559) 230-6061

Southern Region
34946 Flyover Court
Bakersfield, CA 93308-9725
Tel: 661-392-5500 FAX: 661-392-5585

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Thank you for your cooperation in this matter. If you have any questions, please contact Mr. Nick Peirce at (209) 557-6400.

Sincerely,



Arnaud Marjollet
Director of Permit Services

AM:JH/ya

Enclosures

cc: Mike Tollstrup, CARB (w/enclosure) via email
cc: Gerardo C. Rios, EPA (w/enclosure) via email

**San Joaquin Valley Air Pollution Control District
 Authority to Construct
 Final Application Review
 Rebuild and Expansion of Glass Furnace #2**

Facility Name: Gallo Glass Company
 Mailing Address: PO Box 1230
 Modesto, CA 95353

Date: October 20, 2014
 Engineer: James Harader
 Lead Engineer: Nick Peirce

Contact Person: Julia Bonardi
 Telephone: (209) 341-4298
 Application #'s: N-1662-2-17
 Project #: N-1141107

Deemed Complete: April 17, 2014

I. Proposal

This Authority to Construct project is for the modification of an existing glass furnace to rebrick the furnace, and to expand the furnace to allow a higher glass production rate. The following table compares the equipment specifications between the existing glass furnace and the proposed modified glass furnace.

Parameter	Existing Furnace #2	Modified Furnace #2
Dimensions		
- Length	38 feet	56 feet
- Width	22 feet	25 feet
- Glass Depth	73 inches	80 inches
Footprint	836 ft ²	1,425 ft ²
Number of Burners	12	10
Burner Manufacturer/Model	Praxair Wideflame (10) Air Products Cleanfire Gen 1 (2)	Praxair Wideflame (10)
Maximum Heat Input Rating	10 @ 7.5 MMBtu/hr each 2 @ 2.5 MMBtu/hr each 80 MMBtu/hr total	10 @ 7.5 MMBtu/hr each 75 MMBtu/hr total
Electrodes	18 3-inch diameter	26 2.5-inch diameter
Electric Boost Capacity	3,489 kVa	2,700 kW
Production Capacity	352.1 tons per day	430 tons per day
Operating Temperature	2,850 °F	2,875 °F
Emission Controls	Gas-Oxygen Combustion Shared Electrostatic Precipitator Shared Ceramic Dust Collector Batch Charger Dust Collectors	

Title V

Gallo Glass Company has been issued a Title V permit. This modification can be classified as a Title V significant modification pursuant to Rule 2520, and can be processed with a Certificate of Conformity (COC). Since the facility has specifically requested that this project be processed in that manner, a 30-day public notice and a 45-day EPA comment period will be satisfied prior to the issuance of the Authority to Construct. Gallo Glass Company must apply to administratively amend their Title V permit.

II. Applicable Rules

Rule 1080	Stack Monitoring (12/17/92)
Rule 1081	Source Sampling (12/16/93)
Rule 2201	New and Modified Stationary Source Review Rule (4/21/11)
Rule 2410	Prevention of Significant Deterioration (6/16/11)
Rule 2520	Federally Mandated Operating Permits (6/21/01)
Rule 4001	New Source Performance Standards (4/14/99)
Rule 4002	National Emissions Standards for Hazardous Air Pollutants (5/20/04)
Rule 4101	Visible Emissions (2/17/05)
Rule 4102	Nuisance (12/17/92)
Rule 4201	Particulate Matter Concentration (12/17/92)
Rule 4202	Particulate Matter Emission rate (12/17/92)
Rule 4301	Fuel Burning Equipment (12/17/92)
Rule 4354	Glass Melting Furnaces (5/19/11)
Rule 4801	Sulfur Compounds (12/17/92)
CH&SC 41700	Health Risk Assessment
CH&SC 42301.6	School Notice
40 CFR Part 64	Compliance Assurance Monitoring
Public Resources Code 21000-21177:	California Environmental Quality Act (CEQA)
California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000-15387:	CEQA Guidelines

III. Project Location

This equipment is located at 605 S Santa Cruz Ave in Modesto, CA and the District has confirmed that this equipment is not located within 1,000 feet of a K-12 School.

IV. Process Description

Gas Furnace #2 is a gas-oxygen fired furnace. The furnace is lined with refractory brick and contains molten glass. Mixed batch (sand, limestone, soda ash) and cullet (recycled glass) are fed from the batch plant and deposited upon the molten glass within the furnace, which has a typical glass bath depth of 73 inches. At the operating temperature of the furnace (2850 °F), soda ash and calcium carbonate decompose and release carbon dioxide (CO₂), which comprises about 15% by weight of the batch added to the furnace. The sodium sulfate in the blended batch acts as a refining agent. Sodium sulfate (Na₂SO₄) also decomposes and releases sulfur trioxide (SO₃). SO₃ is soluble in glass and tends to agglomerate small glass bubbles as it rises in the melt, thus removing gas bubbles that are considered an impurity in the glass. As the batch and cullet melt, the melt moves gravimetrically towards the front of the

melter and eventually flows through a throat leading to the glass refiner. Recovered dust from the electrostatic precipitator (ESP) or ceramic dust collector system may be used in conjunction with salt cake as a fining agent, as ESP dust is a functional representative for salt cake.

Currently, twelve natural gas-fired burners, ten rated at 7.5 MMBtu/hr each and two rated at 2.5 MMBtu/hr each, provide the furnace with up to 80 MMBtu/hr of radiant heat input capacity to maintain the furnace operating temperature. A gas-oxygen furnace uses oxygen, rather than ambient air, as the oxidizer, which reduces thermal NOx formation and results in more complete combustion thus also minimizing CO and VOC emissions. Eighteen 3-inch diameter boost electrodes powered by three 1,166 kVa single phase transformers (3,498 kVa of electric boost) provide heat to the lower regions of the glass bath that are not directly heated by the gas-oxygen burners. The furnace is equipped with one side exhaust port. Exhaust from the furnace is discharged into a common header shared by three other gas-oxygen furnaces. The combined exhaust passes through an electrostatic precipitator equipped with a lime scrubber, which removes SO₃ and filterable PM. The main stack is also equipped with a parallel ceramic dust filter dust collector that treats a slip stream of the exhaust gas while the ESP treats the majority of the main exhaust gas. The main stack discharges the combined furnace exhaust to the atmosphere.

The four walls of Glass Furnace #2 will be widened and the furnace walls will be rebricked. These modifications will increase the footprint of glass furnace #2 from 836 ft² to 1,425 ft². The glass bath depth will also be increased to 80 inches. The two 2.5 MMBtu/hr burners will be removed from service while the ten existing 7.5 MMBtu/hr burners will be retained. The eighteen 3-inch diameter electric boost electrodes will be replaced with eighteen 2.5-inch diameter boost electrodes and eight additional barrier boost electrodes powered by a new transformer. The modified glass furnace #2 will provide 2,700 kW of electric boost to further heat the submerged melt. The operating temperature will be increased to 2,875 °F. The alterations are being implemented to increase the glass production capacity, extend furnace life, and improve energy efficiency. The glass production will increase from 352.1 tons per day to 430 tons per day.

Glass Furnace Process Rates:

Glass Melting Furnace Process Rate Information		
Parameter	Existing	Modified
Maximum Daily Glass Pull Rate (tons/day)	352.1	430
Maximum 12-Month Glass Pull rate (tons/year)	128,517	156,950

Operating Schedule:

This furnace is expected to operate 24 hours/day, 365 days/year.

V. Equipment Listing

Pre-Project Equipment Description:

N-1662-2-16: GLASS FURNACE #2 WITH 10 MAXON GAS/OXYGEN BURNERS AND 2 AIR PRODUCTS CLEANFIRE GEN1 GAS/OXYGEN BURNERS AND ASSOCIATED FORMING EQUIPMENT (80 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR¹

Post-Project Equipment Description:

N-1662-2-17: GLASS FURNACE #2 WITH 10 MAXON GAS/OXYGEN BURNERS (OR EQUIVALENT) AND ASSOCIATED FORMING EQUIPMENT (75 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR, AND A FURNACE CHARGING AREA SERVED BY TWO DUST COLLECTORS

VI. Emission Control Technology Evaluation

The furnace is equipped with emission control technology for NO_x, SO_x and PM₁₀. NO_x is controlled utilizing oxy-fuel firing, SO_x is controlled utilizing a shared scrubber and PM₁₀ is controlled utilizing a shared electrostatic precipitator (ESP) and/or a shared ceramic filter type dust collector. The shared control devices are shared with Glass Furnaces #1, #3, and #4.

Oxy-Fuel Firing:

Oxy-fuel firing is utilized to control NO_x emissions. In oxy-fuel firing, oxygen is generated and replaces air in the combustion process. The absence of nitrogen containing combustion air inhibits the formation of thermal NO_x.

Shared SO_x Scrubber:

Gallo Glass utilizes a scrubber for SO_x control followed by an Electrostatic Precipitator (ESP) for SO_x/particulate matter control.

From the furnace, the SO_x contaminated airstream travels through a scrubber. Inside of the scrubber, SO_x is absorbed by a reagent (lime, trona, etc.), which exits the scrubber in the form of particulate matter. The contaminated airstream (sulfur contaminated scrubber reagent and the particulate matter generated in the furnace) then enters the ESP. The ESP causes the influent particulate matter to be charged and captured on oppositely charged plates.

¹ The pre-project equipment description has been corrected here to include the existing 2.5 MMBtu/hr gas/oxygen burners.

Shared Electrostatic Precipitator:

An electrostatic precipitator (ESP) is utilized to control the particulate matter emissions generated in the glass melting process and from the SOx scrubber. The contaminated air stream is passed through positively or negatively charged electrodes that place a charge on the particulate matter. The contaminated air stream, including the charged particles, is then passed through oppositely charged electrodes that attract and collect the particulate matter.

Shared Ceramic Filter Type Dust Collector:

The dust collector operates like a traditional fabric filter type baghouse but utilizes ceramic filters that will provide a reliably high filtering efficiency at high temperatures. The unit utilizes reverse pulse air type cartridge cleaning.

Batch Charging Dust Collectors:

PM₁₀ emissions from the batch charging equipment will be controlled using dust collectors. A PM₁₀ filter efficiency of 99% is typical for dust collection systems.

VII. General Calculations

A. Assumptions

- The glass furnace operates 24 hours/day, 365 days/year.
- PM10 emissions from the batch charging equipment served by the dust collectors is negligible.²
- All other assumptions will be stated as they are made.

B. Emission Factors

1. Pre-Project Emission Factors

The following table lists the pre-project emission factors for the glass furnace:

ollutant	Pre-Project Emission Factors (EF1) and/or Emission Rates	Source
NO _x	1.4 lb/ton of glass produced (rolling 30-day average)	PTO N-1662-2-16
SO _x	<u>When producing glass that is equal to or greater than 25% mixed color cullet by weight</u>	PTO N-1662-2-16
	0.99 lb/ton of glass produced (rolling 30-day average)	
	<u>When producing glass that is less than 25% mixed color cullet by weight</u>	
PM ₁₀	0.81 lb/ton of glass produced (rolling 30-day average)	PTO N-1662-2-16
	Normal Operation: 0.45 lb/ton of glass produced Emission Bypass Periods: 0.71 lb/ton of glass produced	
CO	0.9 lb/ton of glass produced	PTO N-1662-2-16
VOC	0.23 lb/ton of glass produced	PTO N-1662-2-16

² Per AP-42 table 11.15-1, batch emissions from within the furnace are negligible when served by a control device.

2. Post-Project Emission Factors

The following table lists the post-project emission factors for the glass furnace. Emission factors that have changed are in bold italic font.

Pollutant	Post-Project Emission Factors (EF2) and/or Emission Rates	Source
<i>NO_x</i>	<i>1.3 lb/ton of glass produced (rolling 30-day average)</i>	<i>Applicant</i>
SO _x	<u>When producing glass that is equal to or greater than 25% mixed color cullet by weight</u> 0.99 lb/ton of glass produced (rolling 30-day average)	PTO N-1662-2-16
	<u>When producing glass that is less than 25% mixed color cullet by weight</u> 0.81 lb/ton of glass produced (rolling 30-day average)	
PM ₁₀	Normal Operation: 0.45 lb/ton of glass produced	<i>Applicant</i>
	Emission Bypass Periods during Routine Maintenance: 0.71 lb/ton of glass produced	
CO	<i>0.20 lb/ton of glass produced</i>	<i>Applicant</i>
VOC	<i>0.02 lb/ton of glass produced</i>	<i>Applicant</i>

C. Calculations

1. Pre-Project Potential to Emit (PE1)

The following summary of the pre-project emissions for the glass furnace was obtained from the application review for District Project N-1122842.

Pollutant	Daily Emissions (lb/day)	Annual Emissions (lb/year)
NO _x	492.9	179,923
SO _x	348.6	127,231
PM ₁₀	250.0	58,382
CO	316.9	115,665
VOC	81.0	29,559

2. Post Project Potential to Emit (PE2)

NO_x Emissions

Daily post-project NO_x emissions are based on the quantity of glass pulled (430 tons/day) and the post-project emission factor for NO_x (1.3 lb-NO_x/ton).

$$PE2 \text{ NO}_x = 430 \text{ tons/day} \times 1.3 \text{ lb-NO}_x/\text{ton} = 559.0 \text{ lb-NO}_x/\text{day}$$

Annual post-project NO_x emissions are based on the quantity of glass pulled (156,950 tons/year) and the post-project emission factor for NO_x (1.3 lb-NO_x/ton).

$$PE2 \text{ NO}_x = 156,950 \text{ tons/year} \times 1.3 \text{ lb-NO}_x/\text{ton} = 204,035 \text{ lb-NO}_x/\text{year}$$

SOx Emissions

Daily worst-case post-project SOx emissions are based on the quantity of glass pulled (430 tons/day) and the highest post-project emission factor for SOx (0.99 lb-SOx/ton).

$$\text{PE2 SOx} = 430 \text{ tons/day} \times 0.99 \text{ lb-SOx/ton} = 425.7 \text{ lb-SOx/day}$$

Annual post-project SOx emissions are based on the quantity of glass pulled (156,950 tons/year) and the highest post-project emission factor for SOx (0.99 lb-SOx/ton).

$$\text{PE2 SOx} = 156,950 \text{ tons/year} \times 0.99 \text{ lb-SOx/ton} = 155,381 \text{ lb-SOx/year}$$

PM₁₀ Emissions

Daily worst-case post-project PM₁₀ emissions occur when operating in bypass mode. Thus, daily PM₁₀ emissions are based on the quantity of glass pulled (430 tons/day) and the bypass mode post-project emission factor for PM₁₀ (0.71 lb-PM₁₀/ton).

$$\text{PE2 PM}_{10} = 430 \text{ tons/day} \times 0.71 \text{ lb-PM}_{10}/\text{ton} = 305.3 \text{ lb-PM}_{10}/\text{day}$$

Annually, the unit may operate 6 full days in bypass mode. Thus, annual post-project PM₁₀ emissions are based on the quantity of glass pulled (430 tons/day) with 6 days of operation at the bypass mode post-project emission rate for PM₁₀ (0.71 lb-PM₁₀/ton), and 359 days of normal operation at the normal post-project emission rate for PM₁₀ (0.45 lb/ton)

$$\begin{aligned} \text{PE PM}_{10} &= 430 \text{ tons/day} \times 6 \text{ days/year} \times 0.71 \text{ lb-PM}_{10}/\text{ton} \\ &\quad + 430 \text{ tons/day} \times 359 \text{ days/year} \times 0.45 \text{ lb-PM}_{10}/\text{ton} \end{aligned}$$

$$\text{PE PM}_{10} = 71,298 \text{ lb/year}$$

PM_{2.5} Emissions

PM_{2.5} emissions comprise 71% of the controlled PM₁₀ emissions, and 96% of the uncontrolled PM₁₀ emissions, based on the glass furnace particle size distribution data from AP-42 Table 11.15-3 (1/95). Thus,

Worst-case daily PM_{2.5} emissions occur when the unit is in bypass mode. Thus,

$$\text{PE PM}_{2.5} = 305.3 \text{ lb-PM}_{10}/\text{day} \times 0.96 \text{ lb-PM}_{2.5}/\text{lb-PM}_{10} = 293.1 \text{ lb-PM}_{2.5}/\text{day}$$

Worst-case annual PM_{2.5} emissions are based on the PM₁₀ emission calculations and the above PM_{2.5} percentages for controlled and uncontrolled operations.

$$\begin{aligned} \text{PE PM}_{2.5} &= 430 \text{ tons/day} \times 6 \text{ days/year} \times 0.71 \text{ lb-PM}_{10}/\text{ton} \times 0.96 \text{ lb-PM}_{2.5}/\text{lb-PM}_{10} \\ &\quad + 430 \text{ tons/day} \times 359 \text{ days/year} \times 0.45 \text{ lb-PM}_{10}/\text{ton} \times 0.71 \text{ lb-PM}_{2.5}/\text{lb-PM}_{10} \end{aligned}$$

$$\text{PE PM}_{2.5} = 51,080 \text{ lb-PM}_{2.5}/\text{year}$$

CO Emissions

Daily post-project CO emissions are based on the quantity of glass pulled (430 tons/day) and the post-project emission factor for CO (0.2 lb-CO/ton).

$$\text{PE2 CO} = 430 \text{ tons/day} \times 0.2 \text{ lb-CO/ton} = 86.0 \text{ lb-CO/day}$$

Annual post-project CO emissions are based on the quantity of glass pulled (156,950 tons/year) and the post-project emission factor for CO (0.2 lb-CO/ton).

$$\text{PE2 CO} = 156,950 \text{ tons/year} \times 0.2 \text{ lb-CO/ton} = 31,390 \text{ lb-CO/year}$$

VOC Emissions

Daily post-project VOC emissions are based on the quantity of glass pulled (430 tons/day) and the post-project emission factor for VOC (0.01 lb-VOC/ton).

$$\text{PE2 VOC} = 430 \text{ tons/day} \times 0.02 \text{ lb-VOC/ton} = 8.6 \text{ lb-VOC/day}$$

Annual post-project VOC emissions are based on the quantity of glass pulled (156,950 tons/year) and the post-project emission factor for VOC (0.02 lb-VOC/ton).

$$\text{PE2 VOC} = 156,950 \text{ tons/year} \times 0.02 \text{ lb-VOC/ton} = 3,139 \text{ lb-VOC/year}$$

Post-Project Emissions Summary

Pollutant	Daily Emissions (lb/day)	Annual Emissions (lb/year)
NOx	559.0	204,035
SOx	425.7	155,381
PM ₁₀	305.3	71,298
PM _{2.5}	293.1	51,080
CO	86.0	31,390
VOC	8.6	3,139

3. Pre-Project Stationary Source Potential to Emit (SSPE1)

Pursuant to Section 4.9 of District Rule 2201, the Pre-Project Stationary Source Potential to Emit (SSPE1) is the Potential to Emit (PE) from all units with valid ATCs or PTOs at the Stationary Source and the quantity of Emission Reduction Credits (ERCs) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site. Unless otherwise noted, the SSPE data in the following table was obtained from the application review for District Project N-1141138.

Pre-Project Stationary Source Potential to Emit (lb/year)						
Permit Unit	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC
N-1662-1-15	265,771	189,938	86,238	61,229	7,593	43,662
N-1662-2-16	179,923	127,231	58,382	41,451	115,665	29,559
N-1662-3-16	179,923	127,231	58,382	41,451	1,285	29,559
N-1662-4-17	302,684	230,505	105,770	105,770	46,567	53,552
N-1662-6-6	0	0	27,156	7,604	0	0
N-1662-7-3	0	0	114	32	0	0
N-1662-8-7	1,199	1,552	11,570	8,215	1,890	78
N-1662-10-3	5,994	2	171	171	1,297	488
N-1662-11-3	5,994	2	171	171	1,297	488
N-1662-12-3	5,994	2	171	171	1,297	488
ATC N-1662-14-5	0	0	49,618	9,712	0	0
N-1662-15-3	324	26	108	108	1,350	27
ATC N-1662-16-0	0	0	5	1	0	0
ERC N-3-2	379,472	0	0	N/A	0	0
ERC N-54-2	85,737	0	0	N/A	0	0
ERC N-56-2	305,681	0	0	N/A	0	0
ERC N-107-2	326,978	0	0	N/A	0	0
ERC N-3-3	0	0	0	N/A	3,427	0
ERC N-56-3	0	0	0	N/A	2,044	0
ERC N-161-4	0	0	92,898	N/A	0	0
SSPE1 (w/o ERCs)	947,806	676,489	397,856	276,086	178,241	157,901
SSPE1 (w/ERC's)	2,045,674	676,489	490,754	276,086	183,712	157,901

4. Post Project Stationary Source Potential to Emit (SSPE2)

Pursuant to Section 4.10 of District Rule 2201, the Post Project Stationary Source Potential to Emit (SSPE2) is the Potential to Emit (PE) from all units with valid Authorities to Construct (ATC) or Permits to Operate (PTO) at the Stationary Source and the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site.

Post-Project Stationary Source Potential to Emit (lb/year)						
Permit Unit	NO _x	SO _x	PM ₁₀	PM _{2.5}	CO	VOC
N-1662-1-15	265,771	189,938	86,238	61,229	7,593	43,662
N-1662-2-17	204,035	155,381	71,298	51,080	31,390	3,139
N-1662-3-16	179,923	127,231	58,382	41,451	1,285	29,559
N-1662-4-17	302,684	230,505	105,770	105,770	46,567	53,552
N-1662-6-6	0	0	27,156	7,604	0	0
N-1662-7-3	0	0	114	32	0	0
N-1662-8-7	1,199	1,552	11,570	8,215	1,890	78
N-1662-10-3	5,994	2	171	171	1,297	488
N-1662-11-3	5,994	2	171	171	1,297	488
N-1662-12-3	5,994	2	171	171	1,297	488
ATC N-1662-14-5	0	0	49,618	9,712	0	0
N-1662-15-3	324	26	108	108	1,350	27
ATC N-1662-16-0	0	0	5	1	0	0
ERC N-3-2	379,472	0	0	N/A	0	0
ERC N-54-2	85,737	0	0	N/A	0	0
ERC N-56-2	305,681	0	0	N/A	0	0
ERC N-107-2	326,978	0	0	N/A	0	0
ERC N-3-3	0	0	0	N/A	3,427	0
ERC N-56-3	0	0	0	N/A	2,044	0
ERC N-161-4	0	0	92,898	N/A	0	0
SSPE2 (w/o ERCs)	971,918	704,639	410,772	285,715	93,966	131,481
SSPE2 (w/ERC's)	2,069,786	704,639	503,670	285,715	99,437	131,481

5. Major Source Determination

District Rule 2201 Major Source Determination

Pursuant to Section 3.24 of District Rule 2201, a Major Source is a stationary source with post-project emissions or a Post Project Stationary Source Potential to Emit (SSPE2), equal to or exceeding one or more of the following threshold values. However, Section 3.24.2 states, "for the purposes of determining major source status, the SSPE2 shall not include the quantity of emission reduction credits (ERC) which have been banked since September 19, 1991 for Actual Emissions Reductions that have occurred at the source, and which have not been used on-site."

Major Source Thresholds			
Pollutant	SSPE2 W/O ERC lb/year	Major Source Thresholds lb/year	Major Source?
NO _x	971,918	20,000	Yes
SO _x	704,639	140,000	Yes
PM ₁₀	410,772	140,000	Yes
PM _{2.5}	285,715	200,000	Yes
CO	93,966	200,000	No
VOC	131,481	20,000	Yes

As shown in the previous table, this facility is a Major Source for NO_x, SO_x, PM₁₀, PM_{2.5}, and VOC emissions.

District Rule 2410 Major Source Determination:

The facility or the equipment evaluated under this project is not listed as one of the categories specified in 40 CFR 52.21 (b)(1)(i). Therefore the following PSD Major Source thresholds are applicable.

PSD Major Source Determination (tons/year)	
	NO₂
Facility PE before Project	473.9
PSD Major Source Thresholds	250
PSD Major Source ? (Y/N)	Yes

As shown above, the facility is an existing Major Source for PSD since NO₂ emissions are greater than the PSD Major Source Threshold.

6. District Baseline Emissions (BE)

BE = Pre-project Potential to Emit for:

- Any unit located at a non-Major Source,
- Any Highly-Utilized Emissions Unit, located at a Major Source,
- Any Fully-Offset Emissions Unit, located at a Major Source, or
- Any Clean Emissions Unit, located at a Major Source.

The facility is a non-major source for CO emissions. Therefore, BE for CO emissions are equal to the pre-project potential to emit.

Clean Unit Determination

Pursuant to District Rule 2201, Section 3.13.1, an emission unit is a clean emission unit for a given pollutant if that emission unit meets one of the following criteria:

1. The unit is equipped with an emissions control technology with a minimum control efficiency of at least 95% (or at least 85% for lean-burn, internal combustion engines);
or
2. The unit is equipped with an emission control technology that meets the requirements for achieved-in-practice BACT as accepted by the APCO during the five years immediately prior to the submission of the complete application.

Clean Unit Determination for NOx

The clean unit determination for NOx will be based on the 1.3 lb/ton of glass pulled (rolling 30-day average) Achieved in Practice NOx limit from the Revised BACT Guideline 1.5.9 for Container Glass Furnaces document in Appendix IV of this evaluation. Although the container glass furnaces at this facility are currently limited to 1.4 lb-NOx/ton on a rolling 30-day average, they are equipped with oxy-fuel firing technology and the furnaces have historically met a limit of 1.3 lb-NOx/ton of glass pulled. Therefore, the furnace meets the definition of clean for Rule 2201 and the baseline emissions are equal to the pre-project potential to emit for NOx. In this case, the baseline emissions have been adjusted in the calculations below to reflect the 1.3 lb-NOx/ton value that has been historically achieved by the furnace.

Baseline NOx = 128,517 tons/year x 1.3 lb-NOx/ton
Baseline NOx = 167,072 lb-NOx/year

Clean Unit Determination for SOx

The clean unit determination for SOx is based on the achieved in practice limits listed in the Revised BACT Guideline 1.5.9 for Container Glass Furnaces document in Appendix IV of this evaluation. As shown in the table below, the unit is currently limited by its permit to the achieved in practice emission levels; therefore, the baseline emissions for SOx are equal to the pre-project potential to emit for SOx.

Pollutant	Guideline Requirement	Current PTO Emission Limits	Clean Emission Unit?
SOx	< 25% mixed color cullet	< 25% mixed color cullet	Yes*
	0.8 lb/ton	0.8 lb/ton	
	≥ 25% mixed color cullet ³	≥ 25% mixed color cullet	
	0.99 lb/ton	0.99 lb/ton	

* The District uses conventional rounding rules for determining compliance with emission limits. For SOx emissions, the current permitted emission limit contains more significant digits than the Achieved in Practice BACT limit from the revised BACT Guideline. Per conventional rounding procedures, the current permitted emission limit has been rounded to 0.8 lb-SOx/ton, to match the significant digits of the BACT limit. After rounding, the current SOx limit was determined to be in compliance with the BACT limit; therefore, the unit is clean for SOx.

³ The SOx emission limit in BACT Guideline 1.5.9 only applies when the mixed color cullet is less than 25% of the total cullet. It was determined in District Project N-1120773 that the Achieved in Practice BACT level for SOx is 1.1 lb/ton when the mixed color cullet is equal to or greater than 25% of the total cullet.

Clean Unit Determination for PM10

The clean unit determination for NO_x will be based the 0.45 lb/ton of glass pulled Achieved in Practice PM10 limit from the Revised BACT Guideline 1.5.9 for Container Glass Furnaces document in Appendix IV of this evaluation. The current permit limits PM10 emissions to 0.45 lb-PM10/ton during normal operation; therefore, the unit is clean for PM10 emissions and $BE_{PM10} = PE1_{PM10}$.

Clean Unit Determination for VOC

The clean unit determination for VOC will be based on the 0.02 lb/ton of glass pulled Achieved in Practice VOC limit from the Revised BACT Guideline 1.5.9 for Container Glass Furnaces document in Appendix IV of this evaluation. Although the container glass furnaces at this facility are currently limited to 0.23 lb-VOC/ton, the furnaces have historically met a limit of 0.02 lb-VOC/ton of glass pulled. Therefore, the furnace meets the definition of clean for Rule 2201 and the baseline emissions are equal to the pre-project potential to emit for VOC. In this case, the baseline emissions have been adjusted in the calculations below to reflect the 0.02 lb-VOC/ton value that has been historically achieved by the furnace.

Baseline VOC = 128,517 tons-glass pulled/year x 0.02 lb-VOC/ton of glass pulled
Baseline VOC = 2,570 lb-VOC/year

7. SB288 Modification

An SB 288 Major Modification is defined in 40 CFR Part 51.165 (in effect 12/19/02) as *"any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act."*

This facility is a Major Source for NO_x, SO_x, PM₁₀, PM_{2.5}, and VOC emissions. There is no SB288 Major Modification threshold for PM_{2.5} emissions; therefore, an SB288 Modification cannot be triggered for PM_{2.5}.

SB288 calculations are required for NO_x, SO_x, PM₁₀, and VOC, to determine whether this project will trigger an SB288 Modification. A project triggers an SB288 Modification if the net emissions increase (NEI) exceeds the thresholds in District Rule 2201. The respective thresholds are 50,000 lb-NO_x/year, 80,000 lb-SO_x/year, 30,000 lb-PM₁₀/year and 50,000 lb-VOC/year.

For existing units, NEI is equal to PE2 – BAE, where:

BAE = Baseline average annual emissions over a representative 2-years of operation.

NOx:

The Baseline Average Emissions for NOx were determined in Appendix III to be 92,014 lb-NOx/year. PE2 was determined earlier in this evaluation.

$$\begin{aligned} \text{NEI} &= \text{PE2} - \text{BAE} = 204,035 \text{ lb-NOx/year} - 92,014 \text{ lb-NOx/year} \\ \text{NEI} &= 112,021 \text{ lb-NOx/year} \end{aligned}$$

Since the NEI for NOx is greater than the SB288 threshold of 50,000 lb-NOx/year, an SB288 modification is triggered for NOx emissions.

SOx:

The Baseline Average Emissions for SOx were determined in Appendix III to be 84,631 lb-SOx/year. PE2 was determined earlier in this evaluation

$$\begin{aligned} \text{NEI} &= \text{PE2} - \text{BAE} = 155,381 \text{ lb-SOx/year} - 84,631 \text{ lb-SOx/year} \\ \text{NEI} &= 70,750 \text{ lb-SOx/year} \end{aligned}$$

Since the NEI for SOx is less than the SB288 modification threshold of 80,000 lb-SOx/year, an SB288 Modification is not triggered for SOx emissions.

PM₁₀:

The Baseline Average Emissions for PM₁₀ were determined in Appendix III to be 13,140 lb-PM₁₀/year. PE2 was determined earlier in this evaluation.

$$\begin{aligned} \text{NEI} &= \text{PE2} - \text{BAE} = 71,298 \text{ lb-PM}_{10}/\text{year} - 13,140 \text{ lb-PM}_{10}/\text{year} \\ \text{NEI} &= 58,158 \text{ lb-PM}_{10}/\text{year} \end{aligned}$$

Since the NEI for PM₁₀ is greater than the SB288 threshold of 30,000 lb-PM₁₀/year, an SB288 modification is triggered for PM₁₀ emissions.

VOC

The Baseline Average Emissions for VOC were determined in Appendix III to be 474 lb-VOC/year. PE2 was determined earlier in this evaluation

$$\begin{aligned} \text{NEI} &= \text{PE2} - \text{BAE} = 3,139 \text{ lb-VOC/year} - 474 \text{ lb-VOC/year} \\ \text{NEI} &= 2,665 \end{aligned}$$

Since the NEI for VOC is less than the SB288 modification threshold of 50,000 lb-VOC/year, an SB288 Modification is not triggered for VOC emissions.

Summary

An SB288 Modification is triggered for NOx and PM₁₀ emissions.

8. Federal Major Modification

District Rule 2201, Section 3.17 states that Federal Major Modifications are the same as "Major Modification" as defined in 40 CFR 51.165 and part D of Title I of the CAA.

This facility is a Major Source for NO_x, SO_x, PM₁₀, PM_{2.5}, and VOC emissions. Therefore, Federal Major Modification calculations are required for these pollutants to determine whether this project will trigger a Federal Major Modification. A project triggers a Federal Major Modification if the net emissions increase (NEI) exceeds the thresholds in the following table:

Pollutant	Federal Major Modification Threshold
NO _x	0 lb/year
SO _x	80,000 lb/year
PM ₁₀	30,000 lb/year
PM _{2.5}	20,000 lb-direct PM _{2.5} /year or 80,000 lb-SO _x /year or 80,000 lb-NO _x /year
VOC	0 lb/year

The NEI is calculated as follows:

$$NEI = PAE - BAE$$

Where,

PAE = Projected Actual Emissions

BAE = Baseline Average Emissions (any 24-month period within last 10 years)

NO_x

For NO_x the facility has chosen a baseline period of June 2007 through May 2009. Based on CEMs data during that period, the average annual baseline NO_x emissions were 108,600 lb-NO_x/year. For the NO_x baseline period, the average annual glass production was 116,800 tons/year. The average emission rate for the NO_x baseline period was 0.93 lb/ton.

The facility provided projected actual NO_x emission estimate based on their forecasted annual average glass production rate in 2025. The forecast is based on the number of added glass forming machines, the growth in glass production capacity due to the project, and the projected market growth of the wine industry.

$$PAE = 141,600 \text{ lb-NO}_x/\text{year}$$

$$NEI = PAE - BAE = 141,600 \text{ lb-NO}_x/\text{year} - 108,600 \text{ lb-NO}_x/\text{year}$$

$$NEI = 33,000 \text{ lb-NO}_x/\text{year}$$

The proposed changes to furnace #2 will not debottleneck any other NOx emitting units at the facility. Since the NEI for NOx is greater than the Federal Major Modification threshold of 0 lb-NOx/year, this project is a Federal Major Modification for NOx emissions.

SOx

For SOx the facility has chosen a baseline period of June 2008 through May 2010. Based on CEMs data during that period, the average annual baseline SOx emissions were 130,800 lb-SOx/year. For the SOx baseline period, the average annual glass production was 113,483 tons/year. The average emission rate for the SOx baseline period was 1.15 lb/ton, which is greater than the lowest applicable emission rate on the permit of 0.81 lb-SOx/ton (when not processing 25% or more total color cullet). Thus, the baseline emissions will be adjusted, using a 0.81 lb-SOx/ton emission factor to determine the most conservative adjusted baseline emission rate.

$$\text{BAE} = 113,483 \text{ tons/year} \times 0.81 \text{ lb-SOx/ton}$$
$$\text{BAE} = 91,921 \text{ lb-SOx/year}$$

The facility provided projected actual SOx emission estimate based on their forecasted annual average glass production rate in 2025. The forecast is based on the number of added glass forming machines, the growth in glass production capacity due to the project, and the projected market growth of the wine industry.

$$\text{PAE} = 155,400 \text{ lb-SOx/year}$$

$$\text{NEI} = \text{PAE} - \text{BAE} = 155,400 \text{ lb-SOx/year} - 91,921 \text{ lb-SOx/year}$$
$$\text{NEI} = 63,479 \text{ lb-SOx/year}$$

The proposed changes to furnace #2 will not debottleneck any other SOx emitting units at the facility. Since the NEI for SOx is less than the Federal Major Modification threshold of 80,000 lb-SOx/year, this project is not a Federal Major Modification for SOx emissions. The facility is proposing to meet BACT requirements for SOx and will conduct a public notice. Therefore, all the potential requirements of triggering a Federal Major Modification for SOx have already been satisfied, and 10-year recordkeeping will not be required to demonstrate that SOx emissions are not triggering a Federal Major Modification.

PM10

For PM10 emissions, the facility has chosen a baseline period of April 2008 through March 2010. Based on source test data during that period, the average annual baseline PM10 emissions were 20,800 lb-PM10/year. For the PM10 baseline period, the average annual glass production was 113,638 tons/year. The average emission rate for the PM10 baseline period was 0.18 lb/ton.

The facility provided projected actual PM10 emission estimate based on their forecasted annual average glass production rate in 2025. The forecast is based on the number of added glass forming machines, the growth in glass production capacity due to the project, and the projected market growth of the wine industry.

$$PAE_{\text{furnace}} = 27,800 \text{ lb-PM10/year}$$

$$NEI_{\text{furnace}} = PAE_{\text{furnace}} - BAE_{\text{furnace}} = 27,800 \text{ lb-PM10/year} - 20,800 \text{ lb-PM10/year}$$
$$NEI_{\text{furnace}} = 7,000 \text{ lb-PM10/year}$$

Additionally, the increase in the glass production limit for furnace #2 will debottleneck the batch plant that supplies batch material to the furnace. Based on historical data for the Gallo furnaces, the batch plant must supply 1.11 tons of batch for each ton of glass produced in the furnaces. Thus, the baseline batch input rate was:

$$\text{Baseline Batch} = 113,638 \text{ tons-glass/year} \times 1.11 \text{ tons-batch/tons glass}$$
$$\text{Baseline Batch} = 126,138 \text{ tons-batch/year}$$

Per District Project N-1141138, the potential annual emissions from the batching operation are 49,618 lb-PM10/year for an annual throughput of 893,520 tons-batch/year. Thus, the emission factor for the batching operation is:

$$EF_{\text{batching}} = 49,618 \text{ lb-PM10/year} \div 893,520 \text{ tons-batch/year}$$
$$EF_{\text{batching}} = 0.056 \text{ lb-PM10/ton-batch}$$

Using this emission factor and the baseline batch throughput, the baseline average emissions for the batching operation is:

$$BAE_{\text{batch}} = 126,138 \text{ tons-batch/year} \times 0.056 \text{ lb-PM10/ton-batch}$$
$$BAE_{\text{batch}} = 7,064 \text{ lb-PM10/year}$$

The projected actual emissions for the batching operation will be calculated based on a conservative estimate of 60% increase in batch production. The actual glass production is expected to increase from approximately 335 tons/day (average) to 417 tons/day (average), which is less than a 60% increase. Therefore, the assumption of a 60% increase in emissions is very conservative.

$$PAE_{\text{batch}} = BAE_{\text{batch}} \times 1.6 = 7,064 \text{ lb-PM10/year} \times 1.6 = 11,302 \text{ lb-PM10/year}$$

$$NEI_{\text{batch}} = PAE_{\text{batch}} - BAE_{\text{batch}} = 11,302 \text{ lb-PM10/year} - 7,064 \text{ lb-PM10/year}$$
$$NEI_{\text{batch}} = 4,238 \text{ lb-PM10/year}$$

The total NEI is equal to the sum of the NEI for the glass furnace and the NEI for the debottlenecked batching operation. Thus,

$$NEI_{\text{total}} = NEI_{\text{furnace}} + NEI_{\text{batch}} = 7,000 \text{ lb-PM10/year} + 4,238 \text{ lb-PM10/year}$$
$$NEI_{\text{total}} = 11,238 \text{ lb-PM10/year}$$

Since the NEI_{total} for PM10 is less than the Federal Major Modification threshold of 30,000 lb-PM10/year, this project is not a Federal Major Modification for PM10 emissions. The facility is proposing to meet BACT requirements for PM10 and will conduct a public notice. Therefore, all the potential requirements of triggering a Federal Major Modification for PM10 have already been satisfied, and 10-year recordkeeping will not be required to demonstrate that PM10 emissions are not triggering a Federal Major Modification.

PM2.5

The PM2.5 baseline period is identical to the PM10 baseline period. Since PM2.5 is a subset of PM10 emissions, the NEI for PM2.5 is less than or equal to the NEI for PM10. Additionally, a Federal Major Modification for PM2.5 includes a threshold of 80,000 lb-NOx/year and 80,000 lb-SOx/year.

$$NEI_{Direct\ PM2.5} \leq NEI_{PM10} \leq 11,238\ lb/year$$
$$NEI_{NOx} = 33,000\ lb-NOx/year$$
$$NEI_{SOx} = 63,479\ lb-SOx/year$$

Since the NEI are less than the PM2.5 Federal Major Modification thresholds of 20,000 lb-PM2.5/year, 80,000 lb-NOx/year, and 80,000 lb-SOx/year, this project is not a Federal Major Modification for PM2.5. The facility is proposing to meet BACT requirements for particulate matter and will conduct a public notice. Therefore, all the potential requirements of triggering a Federal Major Modification for PM2.5 have already been satisfied, and 10-year recordkeeping will not be required to demonstrate that PM2.5 emissions are not triggering a Federal Major Modification.

VOC

The same baseline period for VOC, as used in SB288 Major Modification Calculations, will be used. Therefore, BAE is equal to:

$$BAE = 474\ lb-VOC/year$$

For VOC emissions, NEI will be calculated as $PE2 - BAE$.

$$PE2 = 3,139\ lb-VOC/year$$

$$NEI = PE2 - BAE = 3,139\ lb-VOC/year - 474\ lb-VOC/year$$
$$NEI = 2,665\ lb-VOC/year$$

Since the NEI for VOC is greater than the Federal Major Modification threshold of 0 lb-VOC/year, this project is a Federal Major Modification for VOC emissions.

Summary

A Federal Major Modification is triggered for NOx and VOC emissions.

9. Rule 2410 – Prevention of Significant Deterioration (PSD) Applicability Determination

Rule 2410 applies to pollutants for which the District is in attainment or for unclassified, pollutants. The pollutants addressed in the PSD applicability determination are listed as follows:

- NO₂ (as a primary pollutant)
- SO₂ (as a primary pollutant)
- CO
- PM
- PM₁₀
- Greenhouse gases (GHG): CO₂, N₂O, CH₄, HFCs, PFCs, and SF₆

The first step of this PSD evaluation consists of determining whether the facility is an existing PSD Major Source or not (See Section VII.C.5 of this document).

In the case the facility is an existing PSD Major Source, the second step of the PSD evaluation is to determine if the project results in a PSD significant increase.

I. Project Location Relative to Class 1 Area

As demonstrated in the “PSD Major Source Determination” Section above, the facility was determined to be a existing major source for PSD. Because the project is not located within 10 km of a Class 1 area – modeling of the emission increase is not required to determine if the project is subject to the requirements of Rule 2410.

II. Significance of Project Emission Increase Determination

a. Potential to Emit of attainment/unclassified pollutant for New or Modified Emission Units vs PSD Significant Emission Increase Thresholds

As a screening tool, the potential to emit from all new and modified units is compared to the PSD significant emission increase thresholds, and if total potential to emit from all new and modified units is below this threshold, no further analysis will be needed.

PSD Significant Emission Increase Determination: Potential to Emit (tons/year)						
	NO₂	SO₂	CO	PM⁴	PM10³	CO₂e
Total PE from New and Modified Units	102.0	77.7	15.7	47.5 ⁵	35.6	52,019 ⁶
PSD Significant Emission Increase Thresholds	40	40	100	25	15	75,000
PSD Significant Emission Increase?	Y	Y	N	Y	Y	N

As demonstrated above, because the project has a total potential to emit from all new and modified emission units greater than PSD significant emission increase thresholds for NO₂, SO₂, PM, and PM10, further analysis is required for NO₂, SO₂, PM, and PM10 to determine if the project has an emission increase greater than the PSD significant emission increase thresholds for those pollutants.

b. Emission Increase for Each Attainment/Unclassified Pollutant with a Significant Emission Increase vs PSD Significant Emission Increase Thresholds

In this step, the emission increase for each remaining attainment/unclassified pollutant is compared to the PSD significant emission increase thresholds, and if emission increase for each attainment pollutant is below this threshold, no further analysis is needed.

The method to calculate the NEI is identical to the method used for determining the NEI in the Federal Major Modification Calculations shown earlier in this evaluation.

NO₂

The NEI for NO₂ is identical to the NEI calculated for NO_x in the Federal Major Modification section of this evaluation. Thus,

$$\text{NEI} = 33,000 \text{ lb-NO}_2/\text{year} = 16.5 \text{ tons-NO}_2 \text{ year}$$

⁴ The PM and PM10 emission rates in this table do not include PM and PM10 emissions from the debottlenecked batch plant.

⁵ Pursuant to AP-42 Table 11.15-3, 75% of PM emissions are PM10 emissions for a furnace controlled by an electrostatic precipitator. PM emissions are therefore equal to:

$$\begin{aligned} \text{PE PM} &= \text{PE PM}_{10} + 0.75 \\ \text{PE PM} &= 35.6 \text{ tons-PM}_{10}/\text{year} + 0.75 \\ \text{PE PM} &= 47.5 \text{ tons-PM}/\text{year} \end{aligned}$$

⁶ The facility supplied a projected actual emission (PAE) rate of 52,019 lb-CO₂e/year. Since the net emission increase is calculated as NEI = PAE – BAE, the NEI cannot exceed 52,019 lb-CO₂e/year; thus, the project cannot exceed the PSD Significant Emission Increase Threshold of 75,000 tons/year.

Since the NEI for NO₂ is less than the PSD significant emission increase threshold of 40 tons-NO₂/year, the project does not trigger PSD for NO₂. A 10-year NO₂ recordkeeping requirement will be included on the permit to ensure that PSD is not triggered following the modifications to the glass furnace.

SO₂

The NEI for SO₂ is identical to the NEI calculated for SO_x in the Federal Major Modification section of this evaluation. Thus,

$$\text{NEI} = 63,479 \text{ lb-SO}_2/\text{year} = 31.7 \text{ tons-SO}_2 \text{ year}$$

Since the NEI for SO₂ is less than the PSD significant emission increase threshold of 40 tons-SO₂/year, the project does not trigger PSD for SO₂. Furthermore, even when the NEI is calculated as PE2 – BAE, the 40 ton significant threshold is not triggered. Therefore, recordkeeping for SO_x emissions will not be required to demonstrate that PSD will not be triggered following the modifications to the glass furnace.

PM10

The NEI for PM10 is identical to the NEI calculated for PM10 in the Federal Major Modification section of this evaluation. Thus,

$$\text{NEI}_{\text{total}} = 11,238 \text{ lb-PM10/year} = 5.6 \text{ tons-PM10 year}$$

Since the NEI for PM10 is less than the PSD significant emission increase threshold of 15 tons-PM10/year, the project does not trigger PSD for PM10. A 10-year PM10 recordkeeping requirement will be included on the permit to ensure that PSD is not triggered following the modifications to the glass furnace.

PM

The NEI for PM will be calculated, based on the PM10 NEI and the PM10 fractions. The NEI for PM10 is equal to the NEI from the furnace for PM10 and NEI for the batch operation for PM10.

For the furnace, it was shown earlier than 75% of PM emissions are PM10. Thus,

$$\begin{aligned} \text{NEI}_{\text{furnacePM}} &= \text{NEI}_{\text{furnacePM10}} \div 0.75 = 11,238 \text{ lb-PM10/year} \div 0.75 \\ \text{NEI}_{\text{furnacePM}} &= 14,984 \text{ lb-PM/year} \end{aligned}$$

Since the batch operation is served by baghouses, all PM is expected to be PM10. Thus,

$$\text{NEI}_{\text{batchPM}} = \text{NEI}_{\text{batchPM10}} = 4,238 \text{ lb-PM/year}$$

$$\begin{aligned} \text{NEI}_{\text{total}} \text{ PM} &= \text{NEI}_{\text{furnace}} \text{ PM} + \text{NEI}_{\text{batch}} \text{ PM} = 14,984 \text{ lb-PM/year} + 4,238 \text{ lb-PM/year} \\ \text{NEI}_{\text{total}} \text{ PM} &= 19,222 \text{ lb-PM/year (9.6 tons-PM/year)} \end{aligned}$$

Since the NEI for PM is less than the PSD significant emission increase threshold of 25 tons PM/year, the project does not trigger PSD for PM. A 10-year PM recordkeeping requirement will be included on the permit to ensure that PSD is not triggered following the modifications to the glass furnace.

Summary

Therefore, the project will not trigger a PSD Major Modification.

10. Quarterly Net Emissions Change (QNEC)

The QNEC is calculated solely to establish emissions that are used to complete the District's PAS emissions profile screen. Detailed QNEC calculations are included in Appendix VII.

VIII. Compliance

Rule 1080 Stack Monitoring

This Rule grants the APCO the authority to request the installation and use of continuous emissions monitors (CEMs), and specifies performance standards for the equipment and administrative requirements for recordkeeping, reporting, and notification.

The furnace is equipped with operational CEMs for NO_x and SO_x from the shared stack. Compliance with the requirements of this Rule is anticipated.

The following conditions will be included on the Authority to Construct permit:

- *The furnace shall have continuous monitoring systems for NO_x and SO_x. The monitoring devices shall have continuous recording devices, and all records shall be kept on site. [District Rules 1080 and 4354, §5.9]*
- *One continuous emissions monitoring (CEM) system may be used for monitoring oxy-fuel fired furnaces #1, #2, #3, and #4 provided all of the exhaust gases of each of these furnaces are ducted to a common stack, and monitored down stream of the common stack. The CEMS shall comply with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13, 40 CFR Part 60 Appendix B (Performance Specifications) and Appendix F (Quality Assurance Procedures) and the applicable sections of Rule 1080 (Stack Monitoring). [District Rule 4354, 5.9 and 6.6.1]*
- *The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080]*
- *An annual Relative Accuracy Test Audit (RATA) shall be performed on the continuous monitoring system as outlined in 40 CFR Part 60 Appendix B. [District Rule 1080]*

- *The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F (CGAs and RATAs) and if applicable 40 CFR Part 75, Appendix B (linearity and RATAs) at least once every four calendar quarters and annually within 30 days of the anniversary date of the initial test. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080]*
- *An exceedance of a NO_x or SO_x emission limit as indicated by the CEMS shall be reported by the operator to the APCO within 24 hours. The notification shall include 1) name and location of the facility, 2) identification of furnace(s) causing the exceedances, 3) calculation of actual NO_x, CO and VOC emissions, and 4) corrective actions and schedules to complete the work. [District Rule 1080 and Stanislaus County Rule 1080]*
- *The operator shall notify the APCO no later than one hour after the detection of a breakdown of the CEMS. The operator shall inform the APCO of the intent to shut down the CEMS at least 24 hours prior to the event. [District Rule 1100]*
- *The permittee shall submit a written report including copies of any Equipment Breakdown reports and/or pertinent variance decisions to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess emissions (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080]*
- *Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080]*
- *Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080]*
- *Cylinder gas audits (GGAs) of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080]*
- *{2251} The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary of data shall be in the form and the manner prescribed by the APCO. [District Rule 1080]*

- *Records shall be maintained and shall include: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEMS that have been installed pursuant to District Rule 1080, and emission measurements. [District Rule 1080]*

Rule 1081 Source Sampling

This rule requires adequate and safe facilities for use in sampling to determine compliance with emission limits, and specifies methods and procedures for source testing and sample collection. Compliance with this Rule is expected.

The following conditions will be included on the Authority to Construct permit:

- *The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081]*
- *Source testing to demonstrate compliance with permit conditions and all rules and regulations for both natural gas and LPG shall be conducted within 60 days after the end of the start-up exemption, and at least once every calendar year thereafter. NO_x and CO testing shall be performed using CARB Method 100. VOC testing shall be performed using EPA method 25A. PM₁₀ testing shall be performed using EPA methods 201 and 202, EPA methods 201a and 202, or CARB methods 501 and 5. SO_x testing shall be performed using EPA Method 8 and CARB Method 1-100. [District Rules 1081, 2201, 2520, §9.3.2; and 4354, 6.4 and 6.5]*
- *Source testing when firing on LPG fuel need not be performed if the LPG fuel usage for this furnace does not exceed 100 hours during any one calendar year. A source test shall be performed within 90 days after this furnace exceeds 100 hours of operation, on LPG, on an annual basis. [District Rule 1081]*
- *Source testing shall be conducted by a CARB-certified source testing contractor. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to source testing. The results of each source test shall be submitted to the District within 60 days after the source test date. [District Rule 1081]*
- *PM and PM₁₀ source testing shall be conducted downstream of the electrostatic precipitator and the ceramic filter dust collector in the common stack. Furnaces #1, #2, #3, and #4 must operate simultaneously during source testing unless prior approval is obtained from the District. [District Rule 1081]*

Rule 2201 New and Modified Stationary Source Review Rule

A. Best Available Control Technology (BACT)

1. BACT Applicability

BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following*:

- a. Any new emissions unit with a potential to emit exceeding two pounds per day,
- b. The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day,
- c. Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day, and/or
- d. Any new or modified emissions unit, in a stationary source project, which results in a Major Modification.

*Except for CO emissions from a new or modified emissions unit at a Stationary Source with an SSPE2 of less than 200,000 pounds per year of CO.

a. New emissions units with PE exceeding 2.0 lb/day

There are no new emission units.

b. The relocation of a unit from one stationary to another stationary source.

The applicant is not proposing to relocate any emissions units to another stationary source.

c. Modifications to an existing emissions unit with an Adjusted Increase in Potential to Emit (AIPE) exceeding 2.0 pounds per day.

The Adjusted Increase in Potential to Emit (AIPE) is determined as follows:

$$\text{AIPE} = \text{PE}_2 - \text{HAPE}$$

$$\text{HAPE} = \text{PE}_1 \times (\text{EF}_2 \div \text{EF}_1), \text{ For } \text{EF}_2 > \text{EF}_1, \text{ EF}_2 \div \text{EF}_1 = 1$$

HAPE = Historically Adjusted Potential to Emit (lb/day)

PE₂ = Post-Project Potential to Emit

PE₁ = Pre-Project Potential to Emit

EF₂ = Post-Project Emissions Factor

EF₁ = Pre-Project Emissions Factor

$$\text{AIPE} = \text{PE}_2 - \text{PE}_1 \times (\text{EF}_2 \div \text{EF}_1)$$

The post-project stationary source potential to emit (SSPE2) is less than 200,000 lb-CO/year. Therefore, BACT cannot be triggered for CO emissions.

Pollutant	PE2 (lb/day)	PE1 (lb/day)	EF2 (lb/ton)	EF1 (lb/ton)	AIPE (lb/day)
NOx	559.0	492.9	1.3	1.4	101.3
SOx	425.7	348.6	0.99	0.99	77.1
PM10	305.3	250.0	0.71	0.71	55.3
VOC	8.6	81.0	0.02	0.23	1.6

As demonstrated above, AIPE is greater than 2.0 lb/day for NOx, SOx, and PM10; therefore, BACT is triggered for these pollutants.

d. Any new or modified emissions unit, in a stationary source project, which results in a major modification.

This project triggers an SB288 Modification for NOx and PM10 emissions and triggers a Federal Major Modification for NOx and VOC emissions. Therefore, BACT is triggered for NOx, PM10, and VOC emissions.

As shown above, BACT is triggered for NOx, SOx, PM10, and VOC emissions.

2. BACT Guideline

Revised BACT Guideline 1.5.9, for container glass production, is applicable to the glass furnace in this project. For a copy of the revised BACT Analysis, see Appendix IV.

3. Top-Down BACT Analysis

Per the Top-Down BACT Analysis in Appendix IV, BACT is satisfied with the following:

NOx	1.3 lb/ton of glass pulled on a rolling 30-day average, except during periods of startup, shutdown, and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.
SOx	<u>Oxy-fuel fired furnaces while processing material where ≥ 25.0 percent of the total cullet is mixed color cullet:</u> 0.99 lb-SOx/ton on a rolling 30-day average; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.
	<u>All other Container Glass Furnaces:</u> 0.8 lb-SOx/ton on a rolling 30-day average; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.
PM10	0.45 lb-PM10/ton of glass pulled, except during periods of startup, shutdown, and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.
VOC	0.02 lb-VOC/ton of glass pulled, except during periods of startup, shutdown and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.

As shown in the revised BACT Analysis in Appendix IV, the facilities proposal meets the above requirements. Therefore, BACT requirements are satisfied by this proposal.

B. Offsets

1. Offset Applicability:

Pursuant to Section 4.5.3, offset requirements shall be triggered on a pollutant by pollutant basis and shall be required if the Post-project Stationary Source Potential to Emit (SSPE2) equals to or exceeds emissions of 20,000 lbs/year for NO_x and VOC, 200,000 lbs/year for CO, 54,750 lbs/year for SO_x and 29,200 lbs/year for PM₁₀.

Offset Determination					
	NO _x (lb/year)	CO (lb/year)	VOC (lb/year)	PM ₁₀ (lb/year)	SO _x (lb/year)
Post-project SSPE2 (w/ERC's)	2,069,786	99,437	131,481	503,670	704,639
Offset Threshold	20,000	200,000	20,000	29,200	54,750
Offsets Triggered?	Yes	No	Yes	Yes	Yes

Offsets for PM_{2.5} are not triggered, since this project is not a Federal Major Modification for PM_{2.5}.

2. Quantity of Offsets Required:

Per Sections 4.7.2 and 4.7.3, the quantity of offsets, in pounds per year, is calculated as follows for sources with an SSPE1 greater than the offset threshold levels before implementing the project being evaluated.

Offsets Required (lb/year) = [(SSPE2 – BE) + ICCE) x DOR, for all new or modified emissions units in the project,

Where,

SSPE2 = Post Project Facility Potential to Emit, (lb/year)

BE = Baseline Emissions (lb/year)

ICCE = Increase in Cargo Carrier Emissions, (lb/year)

DOR = Distance Offset Ratio, determined pursuant to Section 4.8

As stated in the calculations section earlier, BE is equivalent to PE1 for NO_x, SO_x, PM₁₀, and VOC emissions, since the glass furnace is a clean emission unit for those pollutants. BE for NO_x, PM₁₀ and VOC was adjusted based on the clean unit determination, and the adjusted BE for those pollutants was presented earlier in this evaluation.

The quantity of offsets required for each pollutant is shown in the following table.

Offset Quantity Determination (N-4597-2-17)				
	NO _x (lb/year)	SO _x (lb/year)	PM ₁₀ (lb/year)	VOC (lb/year)
PE2	204,035	155,381	71,298	3,139
BE	167,072	127,231	58,382	2,570
Difference	36,963	28,150	12,916	569

NOx

The following table shows the quantity of offsets required by quarter for NOx, which have been calculated using the ratio of the number of days per quarter to the number of days/year. Since this is a Federal Major Modification for NOx, the distance ratio is 1.5 per Section 4.8.1 of District Rule 2201. The facility has proposed to use ERC Certificates N-768-2 and N-900-2 to offset the NOx emissions from this project.

Quarter	Q1	Q2	Q3	Q4
Days	90	91	92	92
Quantity of NOx Offsets Required (lb) without the distance ratio	9,114	9,215	9,317	9,317
Distance Ratio	1.5	1.5	1.5	1.5
Quantity of NOx Offsets Required (lb) with the distance ratio	13,671	13,823	13,976	13,976
Quantity of ERC's Reserved from N-768-2	13,435*	10,756	13,976*	8,992
Quantity of ERC's Reserved from N-900-2	236	3,067	0	4,984

* 312 lb-NOx in Quarter 3 have been transferred to Quarter 1 per District Rule 2201 Section 4.13.8 which allows Actual Emission reductions for NOx that occurred from April through November to be used to offset increases in NOx during any period of the year.

SOx

The following table shows the quantity of offsets required by quarter for SOx, which have been calculated using the ratio of the number of days per quarter to the number of days/year. The facility has proposed to use ERC Certificates S-4214-5, S-4215-5, C-1280-5, and C-1281-5 to offset the SOx emissions from this project. The sources of all the proposed ERC credits are more than 15 miles from the glass plant; therefore, an offset distance ratio of 1.5 is applicable per District Rule 2201 4.8.4.

Quarter	Q1	Q2	Q3	Q4
Days	90	91	92	92
Quantity of SOx Offsets Required (lb) without the distance ratio	6,941	7,018	7,095	7,096
Distance Ratio	1.5	1.5	1.5	1.5
Quantity of SOx Offsets Required (lb) with the distance ratio	10,412	10,527	10,643	10,644
Quantity of ERC's Reserved from S-4214-5	1,750	1,750	1,750	1,750
Quantity of ERC's Reserved from S-4215-5	6,377	6,377	6,377	6,377
Quantity of ERC's Reserved from C-1280-5	20	20	21	21
Quantity of ERC's reserved from C-1281-5	2,265	2,380	2,495	2,496
Total Quantity of ERC's Reserved	10,412	10,527	10,643	10,644

The quantity of SOx credits available from the proposed emission reduction certificates is sufficient to offset emissions from the project.

PM10

The following table shows the quantity of offsets required by quarter for PM10, which have been calculated using the ratio of the number of days per quarter to the number of days/year. The facility has proposed to use ERC Certificate N-161-4 to offset the PM10 emissions from this project. Since the reductions that generated the credits for N-161-4 were from the same stationary source, the offset distance ratio is 1.0.

Quarter	Q1	Q2	Q3	Q4
Days	90	91	92	92
Quantity of PM10 Offsets Required (lb) without the distance ratio	3,185	3,220	3,255	3,256
Distance Ratio	1.0	1.0	1.0	1.0
Quantity of PM10 Offsets Required (lb) with the distance ratio	3,185	3,220	3,255	3,256
Quantity of ERC's Reserved from N-161-4	3,185	3,220	3,255	3,256

The quantity of PM10 credits available from ERC Credit N-161-4 is sufficient to offset emissions from the project.

VOC

The following table shows the quantity of offsets required by quarter for VOC, which have been calculated using the ratio of the number of days per quarter to the number of days/year. Since this is a Federal Major Modification for VOC emissions, the distance ratio is 1.5 per Section 4.8.1 of District Rule 2201. The facility has proposed to use ERC Certificate S-4126-1 to offset the VOC emissions from this project.

Quarter	Q1	Q2	Q3	Q4
Days	90	91	92	92
Quantity of VOC Offsets Required (lb) without the distance ratio	140	142	143	144
Distance Ratio	1.5	1.5	1.5	1.5
Quantity of VOC Offsets Required (lb) with the distance ratio	210	213	215	216
Quantity of ERC's Reserved from S-4126-1	210	213	215	216

The quantity of VOC credits available from ERC Credit S-4126-1 is sufficient to offset emissions from the project.

C. Public Notification

1. Applicability

Public noticing is required for:

- a. Any new Major Source, which is a new facility that is also a Major Source,
- b. Major Modifications,
- c. Any new emissions unit with a Potential to Emit greater than 100 pounds during any one day for any one pollutant,
- d. Any project which results in the offset thresholds being surpassed, and/or
- e. Any project with an SSPE of greater than 20,000 lb/year for any pollutant.

a. New Major Source

New Major Sources are new facilities, which are also Major Sources. Since this is not a new facility, public noticing is not required for this project for New Major Source purposes.

b. Major Modification

As demonstrated in VII.C.7, this project triggers both an SB288 modification and a Federal Major Modification. Therefore, a public notice is required for Major Modification purposes.

c. PE > 100 lb/day

Applications which include a new emissions unit with a PE greater than 100 pounds during any one day for any pollutant will trigger public noticing requirements. There are no new emissions units proposed in this project. Therefore, public noticing is not required for this purpose.

d. Offset Threshold

The following table compares the SSPE1 with the SSPE2 in order to determine if any offset thresholds have been surpassed with this project.

Offset Threshold				
Pollutant	SSPE1 w/ERC (lb/year)	SSPE2 w/ERC (lb/year)	Offset Threshold	Offset Threshold Surpassed?
NO _x	2,045,674	2,069,786	20,000 lb/year	No
SO _x	676,489	704,639	54,750 lb/year	No
PM ₁₀	490,754	503,670	29,200 lb/year	No
CO	183,712	99,437	200,000 lb/year	No
VOC	157,901	131,481	20,000 lb/year	No

The offset thresholds for NO_x, SO_x, PM₁₀, and VOC have already been surpassed. Therefore, public notice is not required for this purpose.

e. SSIPE > 20,000 lb/year

Public notification is required for any permitting action that results in a Stationary Source Increase in Permitted Emissions (SSIPE) of more than 20,000 lb/year of any affected pollutant. According to District policy, the SSIPE is calculated as the Post Project Stationary Source Potential to Emit (SSPE2) minus the Pre-Project Stationary Source Potential to Emit (SSPE1), i.e. $SSIPE = SSPE2 - SSPE1$. The values for SSPE2 and SSPE1 are calculated according to Rule 2201, Sections 4.9 and 4.10, respectively. The SSIPE is compared to the SSIPE Public Notice thresholds in the following table:

Stationary Source Increase in Permitted Emissions [SSIPE] – Public Notice					
Pollutant	SSPE2 w/ERC (lb/year)	SSPE1 w/ERC (lb/year)	SSIPE (lb/year)	SSIPE Public Notice Threshold	Public Notice Required?
NO _x	2,069,786	2,045,674	24,112	20,000 lb/year	Yes
SO _x	704,639	676,489	28,150	20,000 lb/year	Yes
PM ₁₀	503,670	490,754	12,916	20,000 lb/year	No
CO	99,437	183,712	< 0	20,000 lb/year	No
VOC	131,481	157,901	< 0	20,000 lb/year	No

As demonstrated in the table above, a public notice is required for SSIPE greater than 20,000 lb/year.

2. Public Notice Action

As discussed above, public noticing is required for this project since the project triggers a Major Modification and since the SSIPE is greater than 20,000 lb/year for NO_x and SO_x. Therefore, public notice documents will be submitted to the California Air Resources Board (CARB) and US EPA, and a public notice will be published in a local newspaper of general circulation prior to the issuance of the ATC for this equipment.

D. Daily Emission Limits (DELs)

Daily Emissions Limitations (DELs) and other enforceable conditions are required by Section 3.16 to restrict a unit's maximum daily emissions, to a level at or below the emissions associated with the maximum design capacity. Per Sections 3.16.1 and 3.16.2, the DEL must be contained in the latest ATC and contained in or enforced by the latest PTO and enforceable, in a practicable manner, on a daily basis. DELs are also required to enforce the applicability of BACT.

The following conditions will be included on the Authority to Construct permit for this furnace.

- *The quantity of glass produced shall not exceed 430 tons during any one day. [District Rules 2201 and 4354]*

- *Except during periods of startup, shutdown, and idling, NOx emissions shall not exceed 1.3 pounds per ton of glass produced (over a rolling 30-day average). This performance based limit is to enforce the NOx emission reductions granted by certificate number N-54-2. Any CEM measurement greater than 1.3 lb-NOx/ton of glass produced for each 30-day rolling average constitutes a violation of this emission limit. [District Rule 2201]*
- *Except during periods of startup, shutdown, and idling, CO emissions shall not exceed 0.2 pounds per ton of glass produced. [District NSR Rule]*
- *Except during periods of startup, shutdown, and idling, VOC emissions shall not exceed 0.02 pounds per ton of glass produced. [District Rule 2201]*
- *Except during periods of startup, shutdown, and idling, the combined SOx emissions from permit units N-1662-1, N-1662-2, N-1662-3 and N-1662-4, while producing glass with equal to or greater than 25% by weight mixed color cullet, shall not exceed 0.99 lb/ton of glass produced (over a rolling 30 day average). [District Rules 2201 and 4354]*
- *Except during periods of startup, shutdown, and idling, the combined SOx emissions from permit units N-1662-1, N-1662-2, N-1662-3 and N-1662-4, while producing glass with less than 25% by weight mixed color cullet, shall not exceed 0.81 lb/ton of glass produced (over a rolling 30 day average). [District Rules 2201 and 4354]*
- *Except during periods of startup, shutdown, idling, and during full or partial emission control system bypass episodes, PM10 emissions shall not exceed 0.45 lb/ton of glass produced.. [District NSR Rules 2201 and 4354]*
- *The PM10 emissions, during full or partial emission control system bypass episodes for routine maintenance, shall not exceed 0.71 lb/ton of glass produced. [District Rule 2201]*
- *The SOx and PM10 emission limits of this permit shall not apply during routine maintenance of the respective add-on control systems. The routine maintenance in each calendar year shall not exceed 144 hours total for all add-on controls and routine maintenance shall be conducted in a manner consistent with good air pollution control practices for minimizing air emissions. Routine maintenance includes, but is not limited to: 1) Calibration and scheduled parts replacement of CEMS equipment per manufacturer's recommendations, 2) Cleaning of particulate control devices and stack ductwork to ensure optimal performance, and 3) Necessary repairs to ensure optimal performance of all parts of the system. [District Rules 2201 and 4354]*

- *The PM10 emissions shall not exceed 18,712 pounds during the first calendar quarter, 18,919 pounds during the second calendar quarter, 19,127 pounds during the third calendar quarter and 19,128 pounds during the fourth calendar quarter. These limits are to enforce the PM10 emission reductions granted by certificate number N-161-4. [District NSR Rule]⁷*

E. Compliance Assurance

1. Source Testing

Initial and annual source testing will be required for NOx, SOx, CO, PM₁₀, and VOC emissions for the glass furnace. The following conditions will be included on the Authority to Construct permit:

- *Source testing to demonstrate compliance with permit conditions and all rules and regulations for both natural gas and LPG shall be conducted within 60 days after the end of the start-up exemption, and at least once every calendar year thereafter. NOx and CO testing shall be performed using CARB Method 100. VOC testing shall be performed using EPA method 25A. PM10 testing shall be performed using EPA methods 201 and 202, EPA methods 201a and 202, or CARB methods 501 and 5. SOx testing shall be performed using EPA Method 8 and CARB Method 1-100. [District Rules 1081, 2201, 2520, §9.3.2; and 4354, 6.4 and 6.5]*

2. Monitoring

This glass furnace shares a stack with three other glass furnaces. The shared stack is equipped with a CEMS for NOx and SOx. Further information on the requirements for the CEMS is included in the District Rule 1080 and District Rule 4354 section of this document.

Additionally, District Rule 4354 requires monitoring of PM₁₀, CO, and VOC emissions. The applicant has chosen to monitor these pollutants using parametric monitoring systems. The parametric monitoring system requirements are discussed further in the Rule 4354 section of this document.

3. Recordkeeping

In addition to the recordkeeping requirements that are included in the District Rule 4354 section of this document, the following recordkeeping requirements will be included on the Authority to Construct permit:

⁷ Current PTO N-1662-2-16 includes a condition that requires PM10 emissions not to exceed 15,527 lb-PM10 in the 1st quarter, 15,699 lb-PM10 in the 2nd quarter, 15,872 lb-PM10 in the 3rd quarter, and 15,827 lb-PM10 in the 4th quarter, to enforce ERC certificate N-161-4. In this project, the facility will be offsetting 3,185 lb-PM10 in the 1st quarter, 3,220 lb-PM10 in the 2nd quarter, 3,255 lb-PM10 in the 3rd quarter, and 3,256 lb-PM10 in the 4th quarter. These quantities have been added to determine the final quarterly emission limit for PM10, to ensure the PM10 emission reductions for ERC N-161-4 continue to be enforced.

- *Permittee shall keep a record of the daily hours of operation, the amount of glass pulled from the furnace (in tons), the NO_x emissions (in lb/ton of glass pulled), the SO_x emissions (in lb/ton of glass pulled), the weight of mixed color mix cullet used, the total amount of cullet used (by weight) and the ratio of the mixed color cullet weight to the total cullet weight (in percent). [District Rules 2201 and 4354]*
- *A record of the PM₁₀ emissions from this unit, in pounds per calendar quarter, shall be kept. [District Rule 2201]*
- *A record of the cumulative annual number of hours that the emission control system is either fully or partially bypassed shall be kept. The record shall be updated at least weekly. [District Rules 2201 and 4354]*
- *The operator shall monitor and record the pressure differential gauge reading of the ceramic filter dust collector at least once during each day that the unit operates. [District Rules 2201 and 4354 and 40 CFR Part 64]*
- *Records of dust collector maintenance, inspections and repairs shall be maintained. The records shall include, date of inspection, change outs of filter media, corrective action taken, and identification of the individual performing the inspection. [District Rules 2201 and 2520, 9.4.2]*
- *The permittee shall keep a record of the cumulative annual hours of operation of the glass furnace on LPG fuel. [District Rule 2201]*

4. Reporting

Reporting is not required for District Rule 2201 for this operation.

F. Ambient Air Quality Analysis (AAQA)

An AAQA shall be conducted for the purpose of determining whether a new or modified Stationary Source will cause or make worse a violation of an air quality standard. The District's Technical Services Division conducted the required analysis. Refer to Appendix V of this document for the AAQA summary sheet.

The proposed location is in an attainment area for NO_x, CO, and SO_x. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for NO_x, CO, or SO_x.

The proposed location is in a non-attainment area for the state's PM₁₀ as well as federal and state PM_{2.5} thresholds. As shown by the AAQA summary sheet the proposed equipment will not cause a violation of an air quality standard for PM₁₀ and PM_{2.5}.

G. Compliance Certification

Section 4.15.2 of this Rule requires the owner of a new Major Source or a source undergoing a Title I Modification to demonstrate to the satisfaction of the District that all other Major Sources owned by such person and operating in California are in compliance or are on a schedule for compliance with all applicable emission limitations and standards. As discussed in Section VIII above, this facility triggers a Federal Major Modification, therefore this requirement is applicable. Gallo also owns:

1. A Modesto Winery
2. A Livingston Winery; and
3. A Fresno Winery.

The application submitted by Gallo Glass Company states that all these sources currently comply with the applicable emission limitations and standards. Therefore, this requirement is satisfied.

H. Alternate Siting Analysis

The current project occurs at an existing facility. The applicant is proposing to rebuild and expand an existing glass furnace.

Use of the existing site will result in the least possible impact from the project. Alternative sites would involve the relocation and/or construction of various support structures on a much greater scale, and would therefore result in a much greater impact.

Rule 2410 Prevention of Significant Deterioration

As demonstrated earlier in this project, District Rule 2410 requirements are not applicable to this project.

Rule 2520 Federally Mandated Operating Permits

This facility is subject to this Rule, and has received their Title V Operating Permit. A significant permit modification is defined as a "permit amendment that does not qualify as a minor permit modification or administrative amendment, since the project is a Major Modification. Therefore, a public notice must be performed prior to issuance of the Authority to Construct permit.

As discussed above, the facility has applied for a Certificate of Conformity (COC). Therefore, the facility must apply to modify their Title V permit with an administrative amendment, prior to operating with the proposed modifications. Continued compliance with this rule is expected. The facility may construct/operate under the ATC upon submittal of the Title V administrative amendment application.

Rule 4001 New Source Performance Standards (NSPS)

40 CFR Part 60 Subpart CC, "Standards of Performance for Glass Manufacturing Plants" applies to each glass furnace that commences construction or modification after June 15, 1979.

This project will be a modification to the glass furnace. Therefore, Subpart CC requirements are applicable to the furnace. The furnace uses a modified process (oxy-fuel firing); therefore, the requirements of 60.292 do not apply.

Section 60.293(b)(2) states that glass furnaces using a modified process and manufacturing pressed and blown glass with a borosilicate recipe must meet a rate of 1.0 g-PM/KG of glass produced. Using conversion factors of 453.6 g/lb and 907.18 kg/ton, this emission rate is equal to 2.0 lb-PM/ton of glass produced.

The unit is limited to 0.45 lb-PM₁₀/ton. Per AP-42 table 11.15.3, approximately 75% of PM is PM₁₀ for a controlled furnace. Using this ratio and the proposed 0.45 lb-PM₁₀/ton of glass produced limit, the expected PM rate from the furnace is:

$$\text{PM EF} = 0.45 \text{ lb-PM}_{10}/\text{ton of glass} \times 1 \text{ lb-PM}/0.75 \text{ lb-PM}_{10} = 0.6 \text{ lb-PM}/\text{ton}$$

Therefore, compliance with the 1.0 g-PM/KG of glass produced limit is expected. The following condition will be placed on the permit:

- *PM emissions from the glass furnace shall not exceed 1 gram of particulate matter per kilogram of glass produced. [40 CFR 60.293(b)(2)]*

Section 60.293(c) requires the facility to install a continuous opacity monitoring system; however, Section 60.293(d) allows the facility to request that an alternate continuous monitoring system for the measurement of one or more process or operating parameters that is or are demonstrated to enable accurate and representative monitoring of an emission limit be used in lieu of a continuous opacity monitor. Gallo Glass Company currently employs a continuous monitoring system that monitors the primary and secondary voltage and current of the electrostatic precipitator, and such monitoring has previously been determined to be adequate to show compliance with the PM₁₀ emission limit for District Rule 4354 and Compliance Assurance Monitoring purposes. Therefore, the use of a continuous monitoring system to measure primary and secondary voltage and current of the electrostatic precipitator system is an accurate and representative continuous alternate monitoring scheme, and will be used in lieu of installing a continuous opacity monitoring system. The following conditions will be included on the Authority to Construct permit:

- *Devices to measure the primary and secondary voltage and current of the electrostatic precipitator shall be maintained in accordance with the manufacturer's specifications. [District Rule 4354, 40 CFR 60.293(d), and 40 CFR Part 64]*
- *The specific power of the electrostatic precipitator shall be at least 70 milliwatts/acfm except during the bypass episodes allowed by this permit. [District Rule 2520, §9.3.2, 40 CFR 60.293(d), and 40 CFR Part 64]*

- *The specific power of the electrostatic precipitator shall be continuously monitored and recorded. [District Rules 2201 and 4354, 40 CFR 60.293(d), and 40 CFR Part 64]*
- *The permittee shall maintain daily records of the specific power of the electrostatic precipitator (in milliwatts/acfm). [District Rules 2201, 4354, 40 CFR 60.293(d) and 40 CFR Part 64]*

Rule 4002 National Emission Standards for Hazardous Air Pollutants

40 CFR Part 61 Subpart N, National Emission Standard for Inorganic Arsenic Emissions from Glass Manufacturing Plants

This subpart is applicable to glass melting furnaces that use commercial arsenic as a raw material. This furnace is currently prohibited from using arsenic as a raw material by a permit condition and this permit condition will remain on the glass furnace permit; therefore, Subpart N requirements are not applicable to this glass furnace.

40 CFR Part 63 Subpart SSSSSS, National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources

Subpart SSSSSS is applicable to glass manufacturing furnaces that meet all of the following criteria:

1. The source is a glass manufacturing facility is a plant site that manufactures flat glass, glass containers, or pressed and blown glass by melting a mixture of raw materials to produce molten glass and form the molten glass into sheets, containers, or other shapes;
2. The source is an area source of HAP emissions; and
3. The glass manufacturing facility uses one or more continuous furnaces to produce glass that contains compounds of one or more glass manufacturing metal HAP as raw materials in a glass manufacturing batch formulation.

This facility is subject to Subpart SSSSSS requirements and compliance was determined in a previous permitting evaluation (see District Project N-1103820). This furnace rebuild is not expected to alter the metal HAP emission rate, in lb/ton, for the furnace. Therefore, continued compliance is expected. The following condition will be included on the Authority to Construct permit:

- *Any glass melting furnace located at an Area Source of hazardous air pollutants shall comply with 40 CFR Part 63 Subpart SSSSSS (National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources). [40 CFR Part 63 Subpart SSSSSS]*

Rule 4101 Visible Emissions

District Rule 4101, Section 5.0, indicates that no air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour, which is dark or darker than Ringelmann 1 or equivalent to 20% opacity.

The following condition will be listed on the Authority to Construct permit

- *{4383} No air contaminants shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour which is as dark or darker than Ringelmann #1 or equivalent to 20% opacity and greater, unless specifically exempted by District Rule 4101 (02/17/05). If the equipment or operation is subject to a more stringent visible emission standard as prescribed in a permit condition, the more stringent visible emission limit shall supersede this condition. [District Rule 4101, and County Rules 401 (in all eight counties in the San Joaquin Valley)]*

Rule 4102 Nuisance

Section 4.0 prohibits discharge of air contaminants, which could cause injury, detriment, nuisance or annoyance to the public. Public nuisance conditions are not expected as a result of these operations provided the equipment is well maintained. Therefore, compliance with this rule is expected.

The following condition will be included on the Authority to Construct permit:

- *No air contaminant shall be released into the atmosphere, which causes a public nuisance. [District Rule 4102]*

California Health & Safety Code 41700 (Health Risk Assessment)

District Policy APR 1905 – Risk Management Policy for Permitting New and Modified Sources specifies that for an increase in emissions associated with a proposed new source or modification, the District perform an analysis to determine the possible impact to the nearest resident or worksite.

A risk management review (RMR) was conducted. The following table summarizes the results of the RMR. For the complete summary, please see Appendix V.

RMR Summary			
Categories	Furnace (Unit 2-17)	Project Totals	Facility Totals
Prioritization Score	94	>1.0	>1.0
Acute Hazard Index	0.00	0.00	0.01
Chronic Hazard Index	0.00	0.00	0.00
Maximum Individual Cancer Risk (10 ⁻⁶)	1.73	1.73	2.51
T-BACT Required?	Yes		
Special Permit Conditions?	No		

T-BACT

T-BACT is triggered for PM₁₀ from the glass furnace. T-BACT is satisfied with BACT for PM₁₀. The BACT requirement for PM₁₀ is use of an electrostatic precipitator and a PM₁₀ emission rate equal to or less than 0.45 lb-PM₁₀/ton. The applicant is proposing to meet this level of control. Therefore, the furnace satisfies the T-BACT emission requirements.

Rule 4201 Particulate Matter Concentration

Section 3.1 prohibits discharge of dust, fumes, or total particulate matter into the atmosphere from any single source operation in excess of 0.1 grain per dry standard cubic foot. As shown in the calculations below, compliance is expected for the glass furnace.

Source testing was conducted in 1994 to determine the particulate matter concentration from this furnace, when bypassing the electrostatic precipitator. The highest concentration recorded was 0.063 gr-PM/dscf. This project will result in a 22% increase in PM emissions (based on the daily PM₁₀ emission rates). Thus, the grain loading is expected to also increase by 22%, for an expected grain loading of:

$$\text{Expected Grain Loading} = 0.063 \text{ gr-PM/dscf} \times 1.22 = 0.077 \text{ gr-PM/dscf}$$

Rule 4202 Particulate Matter Emission Rate

Per Section 4.1, particulate matter emissions from any source operation shall not exceed the allowable hourly emission rate (E) as calculated using the following formulas:

$$\begin{aligned} E \text{ (lb/hr)} &= 3.59 P^{0.62} \text{ for process rates } \leq 30 \text{ tons/hr, and} \\ E \text{ (lb/hr)} &= 17.31 P^{0.16} \text{ for process rates } > 30 \text{ tons/hr} \end{aligned}$$

Where,

P = process weight in tons/hr

Daily Throughput: 430 tons/day

Hourly Throughput = 430 tons/day ÷ 24 hr/day = 17.92 tons/hr

$$\begin{aligned} E \text{ (lb/hr)} &= 3.59 \times (17.92 \text{ tons/hr})^{0.62} \\ E \text{ (lb/hr)} &= 21.49 \text{ lb-PM/hr} \end{aligned}$$

The worst-case PM₁₀ emission rate is 305.3 lb-PM₁₀/day, while bypassing the electrostatic precipitator. Per AP-42 Table 11.15-3, 95% of the PM is expected to be PM₁₀ when the furnace is uncontrolled. Thus,

$$\begin{aligned} \text{Actual PM Rate} &= 305.3 \text{ lb-PM}_{10}/\text{day} \times 1 \text{ lb-PM}/0.95 \text{ lb-PM}_{10} \div 24 \text{ hr/day} \\ \text{Actual PM Rate} &= 13.39 \text{ lb-PM/hr} \end{aligned}$$

Since the actual hourly PM emission rate of 13.39 lb-PM/hr is less than the allowable PM emission rate of 21.49 lb-PM/hr, compliance with District Rule 4202 is expected.

Rule 4301 Fuel Burning Equipment

This rule applies to fuel burning equipment, which is defined as any furnace, boiler, apparatus, stack, and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. The glass melting furnace is a direct-fired unit and does not produce heat or power by indirect heat transfer. Therefore, the requirements of District Rule 4301 are not applicable to the glass melting furnace.

District Rule 4354 Glass Melting Furnaces

This rule is applicable to any glass melting furnace. The glass melting furnace in this project is subject to District Rule 4354 requirements.

Section 5.1: NO_x Emission Limits

Section 5.1.1 Table 1 lists a NO_x requirement of 1.5 lb/ton (on a rolling 30-day average) for container glass furnaces. Since compliance is demonstrated for all four furnaces as a furnace battery, a 10% air quality benefit applies, and the limit with the 10% benefit would be 1.4 lb/ton. The facility has proposed a NO_x limit of 1.3 lb/ton (on a rolling 30-day average). Therefore, compliance is expected.

Section 5.2: CO and VOC Emission Limits

Section 5.2.1 Table 2 lists a CO requirement of 1.0 lb/ton of glass produced, and a VOC requirement of 0.25 lb/ton of glass produced. Since compliance is demonstrated for all four furnaces as a furnace battery, a 10% air quality benefit applies, and the limits with the 10% benefit would be 0.9 lb-CO/ton and 0.23 lb-VOC/ton. The facility has proposed a CO limit of 0.2 lb/ton of glass produced and a VOC limit of 0.02 lb/ton of glass produced. Therefore, compliance is expected.

Section 5.3: SO_x Emission Limits

Section 5.3.2 Table 3 of this rule list a SO_x requirement of 1.1 lb/ton of glass produced (when the total cullet used is more than 25.0% mixed color cullet) and 0.9 lb/ton otherwise, both based on a 30-day rolling average. Since compliance is demonstrated for all four furnaces as a furnace battery, a 10% air quality benefit applies, and the limits with the 10% benefit would be 0.99 lb-SO_x/ton (>25% mixed color cullet) and 0.81 lb-SO_x/ton (otherwise). The facility has proposed these emission limits; therefore, compliance is expected.

Section 5.4: PM₁₀ emission limits

Section 5.4 Table 4 lists a PM₁₀ requirement of 0.5 lb/ton for container glass furnaces. Since compliance is demonstrated for all four furnaces as a furnace battery, a 10% air quality benefit applies, and the limit with the 10% benefit would be 0.45 lb/ton. The facility has proposed a limit of 0.45 lb-PM₁₀/ton of glass pulled; therefore compliance is expected.

Section 5.5: Start-up Requirements

Sections 5.5.1 through 5.5.7 list furnace start-up requirements for start-ups associated with a furnace rebuild.

Section 5.5.1 states that the operator must submit a request for start-up exemption to the APCO, ARB, and EPA in conjunction with or in advance of an application for an Authority to Construct associated with a furnace rebuild. Gallo Glass has submitted a formal request for the start-up exemption with their Authority to Construct application (see appendix VI). Therefore, this requirement is satisfied.

Section 5.5.2 states that the operator must submit to the APCO, ARB, and EPA any information necessary to determine the appropriate length of start-up exemption. This information was included with the request for the startup exemption; therefore, this requirement has been satisfied.

Section 5.5.3 states that the start-up exemption shall begin upon activation of the primary combustion system. Compliance with this requirement is expected. The following condition will be included on the Authority to Construct permit:

- *Startup exemption time period shall not exceed 18 days, beginning from the time of primary combustion system activation. [District Rule 4354]*

Section 5.5.4 states that the approved length of start-up exemption shall be determined by the APCO, ARB, and EPA at the time of ATC issuance, but in any case shall not exceed 104 days if using a typical NOx control system, or 208 days if using an innovate NOx control system that meets the requirements of Section 5.5.4.2. The facility has requested an 18-day startup exemption period which satisfies the requirements of Section 5.5.4. The following condition will be included on the Authority to Construct permit:

- *The startup exemption time period shall not exceed 18 days, beginning from the time of primary combustion system activation. [District Rule 4354]*

Section 5.5.5 states that, during the startup period, the stoichiometric ratio of the primary furnace combustion system must not exceed 5% excess oxygen, except during the time when the oxidant stream for an oxy-fuel fired furnace contains at least 50% oxygen. The following condition will be included on the Authority to Construct permit:

- *During start-up period, the stoichiometric ratio of the primary furnace combustion system shall not exceed 5% excess oxygen, as calculated from the actual fuel and oxidant flow measurements for combustion in the furnace, except during the time when the oxidant stream for an oxy-fuel fired furnace contains at least 50% oxygen. [District Rule 4354]*

Section 5.5.6 states that the emission control system must be in operation as soon as technologically feasible during start-up to minimize emissions. The following condition will be included on the Authority to Construct permit:

- *The emission control systems shall be in operation whenever conditions are consistent with manufacturer's specifications during startup, idling and shutdown periods. [District Rule 4354]*

Section 5.5.7 states that notifications must be performed and records kept in accordance with Section 6.7. Compliance with this requirement is expected.

Section 5.6: Shutdown

Section 5.6 lists the following shutdown requirements for glass furnaces:

1. The duration of shutdown, as measured from the time the furnace operations drop below the idle threshold to when all emissions from the furnace cease, must not exceed 20 days;
2. The emission control system must be in operation whenever technologically feasible during shutdown to minimize emissions; and
3. Notifications must be performed and records kept in accordance with Section 6.7.

The following conditions will be included on the Authority to Construct permit:

- *The duration of a furnace shutdown shall not exceed 20 days, measured from the time furnace operations drop below the idle threshold specified in Section 3.17 of District Rule 4354 to when all emissions from the furnace cease. [District Rule 4354]*
- *The emission control systems shall be in operation whenever conditions are consistent with manufacturer's specifications during startup, idling and shutdown periods. [District Rule 4354]*

Section 5.7: Idling Requirements

Section 5.7.1 states that the emission control system shall be in operation whenever technologically feasible during idling to minimize emissions. The following condition will be included on the Authority to Construct permit:

- *The emission control systems shall be in operation whenever conditions are consistent with manufacturer's specifications during startup, idling and shutdown periods. [District Rule 4354]*

Section 5.7.2 states that the emissions of NO_x, CO, VOC, SO_x, and PM₁₀ during idling shall not exceed the amount as calculated using the following equation:

$$E_{i,max} = E_i \times \text{Capacity}$$

Where,

- $E_{i,max}$ = maximum daily emissions of pollutant i during idling, in lb per day.
- E_i = Applicable emission limit for pollutant i, in lb per ton.
- Capacity = Furnace's permitted glass production capacity in tons glass produced per day.

The following condition will be included on the Authority to Construct permit:

- *NO_x, CO, VOC, SO_x, and PM₁₀ emissions during idling shall not exceed the amount as calculated using the following equation: NO_x, CO, VOC, SO_x, or PM₁₀ (lb/day) = Applicable emission limit (lb/ton) x Furnace permitted production capacity (tons/day). [District Rule 4354]*

Section 5.7.3 states that notifications must be performed and records kept in accordance with Section 6.7. Compliance is expected with this requirement.

Section 5.8 Compliance Determination

This section states that any source test result, CEMS, or alternate emission monitoring method averaged value exceeding the applicable emission limits in Section 5.1, Section 5.2, Section 5.3, or Section 5.4 will constitute a violation of the rule. Compliance is expected with this requirement. A condition will be included on the Authority to Construct permit.

Section 5.9: Monitoring Requirements

Section 5.9.1 lists NO_x emission monitoring requirements. The operator of any glass melting furnace must implement a NO_x CEMS that meets the requirements of Section 6.6. The applicant is proposing the use of a NO_x CEMS on this furnace and compliance with this requirement is expected. Permit conditions outlining the CEMS requirements were included earlier in this evaluation.

Section 5.9.2.1 requires each furnace subject to Table 2 CO limits to implement the use of a CO CEMS that meets the requirements of Section 6.6.1. Section 5.9.2.3 states that in lieu of installing and operating a CEMS for CO, an operator may propose an alternate monitoring scheme for CO. Gallo Glass Company previously received approval of an alternate monitoring scheme for CO from the District. The following conditions will be included on the Authority to Construct permit:

- *The oxygen to fuel ratio shall be continuously monitored and recorded. [District Rule 4354]*
- *The permittee shall maintain the burner oxygen to fuel ratio records required by this permit. [District Rules 2201 and 4354]*

Section 5.9.2.2 requires each furnace subject to Table 2 VOC limits to implement the use of a VOC CEMS that meets the requirements of Section 6.6.1. Section 5.9.2.3 states that in lieu of installing and operating a CEMS for VOC, the operator may propose an alternate monitoring scheme for VOC's. Gallo Glass Company previously received approval of an alternate monitoring scheme for VOC. The following conditions will be included on the Authority to Construct permit:

- *The oxygen to fuel ratio shall be continuously monitored and recorded. [District Rule 4354]*
- *The permittee shall maintain the burner oxygen to fuel ratio records required by this permit. [District Rules 2201 and 4354]*

- *The oxygen to fuel ratio shall be maintained within the range shown by the most recent source test to result in compliance with the CO and VOC limits of this permit. The acceptable range of the oxygen to fuel ratio shall be established during the initial source test and during each subsequent annual source test.*

Section 5.9.3.1 requires each furnace, subject to Section 5.3, to implement a SO_x CEMS that meets the requirements of Section 6.6.1. The applicant is proposing the use of a SO_x CEMS and compliance with this requirement is expected. Permit conditions outlining the CEMS requirements were included earlier in this evaluation.

Section 5.9.4.1 requires the operators to propose key system operating parameter(s) and frequency of monitoring and recording of those parameters, for PM₁₀ monitoring. Gallo Glass Company previously received approval of an alternate monitoring scheme for PM₁₀. The following conditions will be included on each Authority to Construct permit:

- *Devices to measure the primary and secondary voltage and current of the electrostatic precipitator shall be maintained in accordance with the manufacturer's specifications. [District Rule 4354, 40 CFR 60.293(d) and 40 CFR Part 64]*
- *The specific power of the electrostatic precipitator shall be at least 70 milliwatts/acfm except during the bypass episodes allowed by this permit. [District Rule 2520, §9.3.2, 40 CFR 60.293(d), and 40 CFR Part 64]*
- *The ceramic filter dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the filters. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rules 2201 and 4354 and 40 CFR Part 64]*
- *During operation of the ceramic filter dust collector, the pressure differential gauge reading shall be 5 to 10 inches of water column. [District Rules 2201 and 4354 and 40 CFR Part 64]*
- *The specific power of the electrostatic precipitator shall be continuously monitored and recorded. [District Rules 2201 and 4354, 40 CFR 60.293(d), and 40 CFR Part 64]*
- *The permittee shall maintain daily records of the specific power of the electrostatic precipitator (in milliwatts/acfm). [District Rules 2201, 4354, 40 CFR 60.293(d), and 40 CFR Part 64]*
- *The operator shall monitor and record the pressure differential gauge reading of the ceramic filter dust collector at least once during each day that the unit operates. [District Rules 2201 and 4354 and 40 CFR Part 64]*

Section 5.10: Routine Maintenance of Add-On Emission Control Systems

Section 5.10 states that during routine maintenance of add-on emission control system a glass furnace is exempt from the emission requirements listed in Sections 5.1 through 5.4 if:

1. Routine maintenance in each calendar year does not exceed 144 hours total for all add-on controls.
2. Routine maintenance is conducted in a manner consistent with good air pollution control practices for minimizing emissions.

The following conditions will be included on the Authority to Construct permit:

- *The SO_x and PM₁₀ emission limits of this permit shall not apply during routine maintenance of the respective add-on control systems. The routine maintenance in each calendar year shall not exceed 144 hours total for all add-on controls and routine maintenance shall be conducted in a manner consistent with good air pollution control practices for minimizing air emissions. Routine maintenance includes, but is not limited to: 1) Calibration and scheduled parts replacement of CEMS equipment per manufacturer's recommendations, 2) Cleaning of particulate control devices and stack ductwork to ensure optimal performance, and 3) Necessary repairs to ensure optimal performance of all parts of the system. [District Rules 2201 and 4354]*
- *A record of the cumulative annual number of hours that the emission control system is either fully or partially bypassed shall be kept. The record shall be updated at least weekly. [District Rules 2201 and 4354]*

Section 6.1: Permitted Glass Production Capacity and Fuel Use Capacity

Section 6.1 states that on and after October 1, 2009, each glass melting furnace permit shall include the furnace's permitted glass production capacity in tons of glass pulled per day as a permit condition. A condition limiting the furnace #2 glass production was presented earlier in this evaluation. Compliance is expected with this requirement.

Section 6.2: Operation Records

Section 6.2 lists recordkeeping requirements that apply through December 31, 2010. This date has passed; therefore, Section 6.2 requirements are not applicable.

Section 6.3: Operation Records

Section 6.3.1 states that the applicant shall keep daily records of the following items:

- 6.3.1.1: Total hours of operation;
- 6.3.1.2: The quantity of glass pulled from each furnace;
- 6.3.1.3: NO_x emission rate in lb/ton of glass pulled;
- 6.3.1.4: CO emission rate in lb/ton of glass pulled, if a CEMS is used;
- 6.3.1.5: VOC emission rate in lb/ton of glass pulled, if a CEMS is used;
- 6.3.1.6: SO_x emission rate in lb/ton of glass pulled, if a CEMS is used;
- 6.3.1.7: PM₁₀ emission rate in lb/ton of glass pulled, if a CEMS is used;

- 6.3.1.8: For container glass furnaces that are oxy-fuel fired:
- 6.3.1.8.1: The weight of mixed color mix cullet used;
 - 6.3.1.8.2: The total amount of cullet used by weight; and
 - 6.3.1.8.3: The ratio expressed in percent of mixed color mix weight to total cullet weight

The applicant is proposing to keep the appropriate records for the applicable items of the items listed above. Therefore, compliance is expected. The following condition will be included on the Authority to Construct permit:

- *A daily record of the hours of operation, the amount of glass pulled from the furnace (in tons), the NOx emissions (in lb/ton of glass pulled), the SOx emissions (in lb/ton of glass pulled), the weight of mixed color mix cullet used, the total amount of cullet used (by weight) and the ratio of the mixed color cullet weight to the total cullet weight (in percent). [District Rules 2201 and 4354]*

Section 6.3.2 states that for pollutants monitored using an approved parametric monitoring arrangement, operators shall record the operating values of the key system operating parameters at the approved recording frequency. Compliance with this requirement is expected. The following condition will be included on the Authority to Construct permit:

- *Permittee shall maintain records of the following: 1) Source tests and source test results, 2) the acceptable range for each approved key system operating parameter, as established during source tests, 3) The operating values of the key system operating parameters at the approved recording frequency, 4) any maintenance and repair, and 5) any malfunctions. [District Rule 4354]*

Section 6.3.3 requires operators to keep the following records:

- 6.3.3.1: Source tests and source test results
- 6.3.3.2: The acceptable range for each approved key system operating parameter, as established during source test;
- 6.3.3.3: Maintenance and repair; and
- 6.3.1.4: Malfunction.

The applicant is proposing to keep the appropriate records for the items listed above. The condition listed above includes the requirement to keep these records.

Section 6.3.4 requires the operator to retain records specified in Sections 6.3.1 through 6.3.3 for a period of five years; make the records available on site during normal business hours to the APCO, ARB, or EPA; and submit the records to the APCO, ARB, or EPA upon request. Compliance with this requirement is expected. The following condition will be included on the Authority to Construct permit:

- *All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 2201 and 4354 and 40 CFR Part 64]*

Section 6.4: Compliance Source Testing

Section 6.4.1 requires each glass melting furnace or a furnace battery to be source tested at least once every calendar year, but not more than every 18 months and not sooner than every 6 months to demonstrate compliance with the applicable requirements of Section 5.0. Compliance with this requirement is expected. A permit condition enforcing this requirement was presented earlier in this evaluation.

Section 6.4.2 requires the source test conditions to be representative of normal operations, but not less than 60 percent of the permitted glass production capacity. The following condition will be included on the Authority to Construct permit:

- *Source test conditions shall be representative of operations equal to or greater than 60 percent of the fuel use capacity for each furnace as stated in the Permit to Operate. [District Rule 4354, §6.4.2]*

Section 6.4.3 requires operators using alternate monitoring systems to, during the source test, monitor and record, at a minimum, all operating data for each parameter, fresh feed rate, and flue gas flow rate and submit that data with the test report. Compliance with this requirement is expected.

Section 6.4.4 requires states that the arithmetic average of three 30-consecutive minute source test runs must be used to determine compliance with the NO_x, CO, VOC, and SO_x emission limits. Compliance with this requirement is expected. The following condition will be included on the Authority to Construct permit:

- *For source testing purposes, the arithmetic average of three 30-consecutive-minute test runs shall be used to determine compliance with NO_x, CO, VOC, SO_x, and NH₃ emission limits. [District Rules 2201 and 4354]*

Section 6.4.5 requires states that the arithmetic average of three 60-consecutive minute source test runs must be used to determine compliance with the PM₁₀ emission limits. Compliance with this requirement is expected. The following condition will be included on the Authority to Construct permit:

- *For source testing purposes, the arithmetic average of three 60-consecutive-minute test runs shall be used to determine compliance with PM₁₀ emission limits. [District Rule 4354]*

Section 6.4.6 states that for a given pollutant, if two of the three runs individually demonstrate emission above the applicable limit, the test cannot be used to demonstrate compliance for the furnace, even if the averaged emissions of all three test runs is less than the applicable limit. The following condition will be included on the Authority to Construct permit:

- *For source testing purposes, if two of the three runs individually demonstrate emissions above the applicable limit, the test cannot be used to demonstrate compliance for the furnace, even if the averaged emissions of all three test runs is less than the applicable limit. [District Rule 4354]*

Section 6.5: Test Methods

Section 6.5 states that Compliance with the requirements of 5.0 shall be determined in accordance with the following source test procedures or their equivalents approved by the EPA, ARB, and the APCO:

Pollutant/Parameter to be Measured	Test Methods
Oxides of Nitrogen	EPA Method 7E, EPA Method 19, or ARB Method 100
Carbon Monoxide (ppmv)	EPA Method 10 or ARB Method 100
Volatile Organic Compounds (ppmv)	EPA Method 25A expressed in terms of carbon, or ARB Method 100. EPA Method 18 or ARB method 422 shall be used to determine emissions of exempt compounds.
Stack Gas Oxygen, Carbon Dioxide, Excess Air, and Dry Molecular Weight	EPA Method 3 or 3A, or ARB Method 100
Stack Gas Velocity or Volumetric Flow Rate	EPA Method 2
Oxides of Sulfur	EPA Method 6C, EPA Method 8, or ARB Method 100
Sulfur Content of Liquid Fuel	ASTM D 6248-99 or ASTM D5433-99
Filterable PM10	EPA Method 5; EPA Method 201; or EPA Method 201A. An operator choosing EPA Method 5 shall count all PM as PM10.
Condensable PM10	EPA Method 202

A condition enforcing these requirements was included earlier in this evaluation.

Section 6.6: Emission Monitoring Systems

Section 6.6.1 states that an approved CEMS must comply with all of the following requirements:

1. Code of Federal Regulations title 40 CFR Part 51;
2. 40 CFR Part 60.7 (Notification and Recordkeeping);
3. 40 CFR Part 60.13 (Monitoring Requirements);
4. 40 CFR Part 60 Appendix B (Performance Specifications);
5. 40 CFR Part 60 Appendix F (Quality Assurance Procedures);
6. and the applicable sections of District Rule 1080 (Stack Monitoring).

The NOx and SOx CEMS are expected to comply with the above requirements.

Section 6.6.2 states that an approved alternate emissions monitoring method must be capable of determining the furnace emissions on an hourly basis and must comply with the following requirements:

1. 40 CFR 64 (Compliance Assurance Monitoring); and
2. 40 CFR 60.13 (Monitoring Requirements).

The proposed CO, VOC, and PM₁₀ alternate monitoring schemes will comply with the above requirements.

Section 6.7: Notification and Records for Start-up, Shutdown, and Idling

Section 6.7.1 states that the operator of any glass melting furnace claiming an exemption under Section 4.4 must notify the APCO by telephone at least 24 hours before initiating idling, shutdown, or start-up. The notification must include the date and time for the start of the exempt operation, reason for performing the operation, and an estimated completion date. The following condition will be included on the Authority to Construct permit:

- *The emission limitations of District Rule 4354 shall not apply during periods of start-up, shutdown, and idling, as defined by District Rule 4354. The permittee shall notify the District at least 24 hours prior to initiating idling, shutdown, or startup of the glass furnace and this notification shall include: The date and time of the start of the exempt operation, reason for performing the operation, and an estimated completion date. The permittee shall notify the District by telephone within 24 hours after completion of the operation and shall maintain operating records and/or support documentation necessary to claim exemption. [District Rule 4354]*

Section 6.8: Records for Exempt Furnaces

Section 6.8 of this rule applies to exempt furnaces. The furnace in this project is not exempt. Therefore, the requirements of Section 6.8 are not applicable.

Conclusion:

Compliance with all of the requirements of District Rule 4354 is expected.

District Rule 4801 Sulfur Compounds

Per Section 3.1, a person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 % by volume (2000 ppmvd) calculated as SO₂ on a dry basis averaged over 15 consecutive minutes.

The furnaces were last source tested on May 30, 2013, and the furnaces were operating at 284.3 ppmvd SO₂. This project is not expected to increase the SO₂ concentration by a significant amount. Therefore, continued compliance is expected.

40 CFR Part 64 Compliance Assurance Monitoring

40 CFR Part 64 requires Compliance Assurance Monitoring (CAM) for units that meet the following three criteria:

- 1) the unit must have an emission limit for the pollutant;
- 2) the unit must have add-on controls for the pollutant; these are devices such as flue gas recirculation (FGR), baghouses, and catalytic oxidizers; and
- 3) the unit must have a pre-control potential to emit of greater than the major source thresholds.

The following Major Source thresholds will be used, as necessary, to determine whether CAM is triggered.

Pollutant	lb/year	ton/year
NOx	20,000	10
SOx	140,000	70
PM10	140,000	70
CO	200,000	100
VOC	20,000	10

The facility is a Major Source for NOx, SOx, PM10 and VOC, therefore, a CAM determination must be performed for these pollutants.

NOx CAM Determination:

Pursuant to Section 64.2(b)(vi), emission limits or standards for which the permit specifies a continuous compliance determination method are exempt from CAM requirements. This glass furnace will be equipped with a Continuous Emission Monitoring System (CEMs) that directly measures NOx emissions. Therefore, the glass furnace is exempt from CAM requirements for NOx emissions.

SOx CAM Determination

Pursuant to Section 64.2(b)(vi), emission limits or standards for which the permit specifies a continuous compliance determination method are exempt from CAM requirements. This glass furnace will be equipped with a Continuous Emission Monitoring System (CEMs) that directly measures SOx emissions. Therefore, the glass furnace is exempt from CAM requirements for SOx emissions.

PM10 CAM Determination

The current permit includes CAM monitoring requirements for PM10. Those monitoring requirements, shown below, will be retained on the ATC.

- *Devices to measure the primary and secondary voltage and current of the electrostatic precipitator shall be maintained in accordance with the manufacturer's specifications. [District Rule 4354 and 40 CFR Part 64]*
- *The specific power of the electrostatic precipitator shall be at least 70 milliwatts/acfm except during the bypass episodes allowed by this permit. [District Rule 2520, §9.3.2 and 40 CFR Part 64]*
- *The ceramic filter dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the filters. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rules 2201 and 4354 and 40 CFR Part 64]*

- *During operation of the ceramic filter dust collector, the pressure differential gauge reading shall be 5 to 10 inches of water column. [District Rules 2201 and 4354 and 40 CFR Part 64]*
- *The specific power of the electrostatic precipitator shall be continuously monitored and recorded. [District Rules 2201 and 4354 and 40 CFR Part 64]*
- *The permittee shall maintain daily records of the specific power of the electrostatic precipitator (in milliwatts/acfm). [District Rules 2201, 4354 and 40 CFR Part 64]*
- *The operator shall monitor and record the pressure differential gauge reading of the ceramic filter dust collector at least once during each day that the unit operates. [District Rules 2201 and 4354 and 40 CFR Part 64]*

VOC CAM Determination

This unit is not equipped with an add-on control device for VOC emissions. Therefore, the unit is not subject to CAM for VOC emissions.

California Environmental Quality Act (CEQA)

CEQA requires each public agency to adopt objectives, criteria, and specific procedures consistent with CEQA Statutes and the CEQA Guidelines for administering its responsibilities under CEQA, including the orderly evaluation of projects and preparation of environmental documents. The District adopted its *Environmental Review Guidelines* (ERG) in 2001. The basic purposes of CEQA are to:

- Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities;
- Identify the ways that environmental damage can be avoided or significantly reduced;
- Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
- Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

Greenhouse Gas (GHG) Significance Determination

It is determined that no other agency has prepared or will prepare an environmental review document for the project. Thus the District is the Lead Agency for this project.

On December 17, 2009, the District's Governing Board adopted a policy, APR 2005, *Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*, for addressing GHG emission impacts when the District is Lead Agency under CEQA and approved the District's guidance document for use by other agencies when addressing GHG impacts as lead agencies under CEQA. Under this policy, the District's determination of significance of project-specific GHG emissions is founded on the principal that projects with GHG emission reductions consistent with AB 32 emission reduction targets are considered to have a less than significant impact

on global climate change. Consistent with District Policy 2005, projects complying with an approved GHG emission reduction plan or GHG mitigation program, which avoids or substantially reduces GHG emissions within the geographic area in which the project is located, would be determined to have a less than significant individual and cumulative impact for GHG emission.

The California Air Resources Board (ARB) adopted a Cap-and-Trade regulation as part one of the strategies identified for AB 32. This Cap-and-Trade regulation is a statewide plan, supported by a CEQA compliant environmental review document, aimed at reducing or mitigating GHG emissions from targeted industries. Facilities subject to the Cap-and-Trade regulation are subject to an industry-wide cap on overall GHG emissions. Any growth in emissions must be accounted for under that cap such that a corresponding and equivalent reduction in emissions must occur to allow any increase. Further, the cap decreases over time, resulting in an overall decrease in GHG emissions.

Under District policy APR 2025, *CEQA Determinations of Significance for Projects Subject to ARB's GHG Cap-and-Trade Regulation*, the District finds that the Cap-and-Trade is a regulation plan approved by ARB, consistent with AB32 emission reduction targets, and supported by a CEQA compliant environmental review document. As such, consistent with District Policy 2005, projects complying project complying with Cap-and-Trade requirements are determined to have a less than significant individual and cumulative impact for GHG emissions.

Facility N-1662 is subject to the Cap-and-Trade regulation. Therefore, as discussed above, consistent with District Policies APR 2005 and APR 2025, the District concludes that the GHG emissions increases associated with this project would have a less than significant individual and cumulative impact on global climate change.

District CEQA Findings

The District is the Lead Agency for this project because there is no other agency with broader statutory authority over this project. The District performed an Engineering Evaluation (this document) for the proposed project and determined that the activity will occur at an existing facility and the project involves negligible expansion of the existing use. Furthermore, the District determined that the activity will not have a significant effect on the environment. The District finds that the activity is categorically exempt from the provisions of CEQA pursuant to CEQA Guideline § 15301 (Existing Facilities), and finds that the project is exempt per the general rule that CEQA applies only to projects which have the potential for causing a significant effect on the environment (CEQA Guidelines §15061(b)(3)).

IX. Recommendation

Compliance with all applicable rules and regulations is expected. Issue Authority to Construct permit N-1662-2-17 subject to the permit conditions on the attached draft Authority to Construct permit in Appendix I.

X. Billing Information

Annual Permit Fees			
Permit Number	Fee Schedule	Fee Description	Previous Fee Schedule
N-1662-2-17	3020-02-H	75 MMBtu/hr	3020-02-H

Appendices

- I: Draft Authority to Construct Permit
- II: Current Permit to Operate
- III. Baseline Actual Emissions for SB288 Emission Calculations
- IV: Revised BACT Analysis 1.5.9 for Container Glass Furnaces
- V: Risk Management Review and Ambient Air Quality Analysis Results
- VI. Startup Exemption Submittal
- VII. Quarterly Net Emissions Change (QNEC)
- VIII. EPA Comments and District Response

APPENDIX I

Draft Authority to Construct Permit

San Joaquin Valley
Air Pollution Control District

AUTHORITY TO CONSTRUCT

ISSUANCE DATE: DRAFT
DRAFT

PERMIT NO: N-1662-2-17

LEGAL OWNER OR OPERATOR: GALLO GLASS COMPANY
MAILING ADDRESS: PO BOX 1230
MODESTO, CA 95353

LOCATION: 605 S SANTA CRUZ AVE
MODESTO, CA 95354

EQUIPMENT DESCRIPTION:

MODIFICATION OF GLASS FURNACE #2 WITH 12 GAS/OXYGEN BURNERS AND ASSOCIATED FORMING EQUIPMENT (80 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR. TO REBRICK THE FURNACE, TO REMOVE TWO 2.5 MMBTU/HR BURNERS, TO EXPAND THE FOOTPRINT OF THE FURNACE TO 1425 SQUARE FEET, TO INCREASE THE FURNACE PRODUCTION CAPACITY TO 430 TONS OF GLASS PULLED PER DAY, TO LIMIT NOX EMISSIONS TO 1.3 LB/TON OF GLASS PULLED, TO LIMIT CO EMISSIONS TO 0.2 LB/TON OF GLASS PULLED, AND TO LIMIT VOC EMISSIONS TO 0.02 LB/TON OF GLASS PULLED. POST-PROJECT EQUIPMENT DESCRIPTION: GLASS FURNACE #2 WITH 10 MAXON GAS/OXYGEN BURNERS (OR EQUIVALENT) AND ASSOCIATED FORMING EQUIPMENT (75 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR, AND A FURNACE CHARGING AREA SERVED BY TWO DUST COLLECTORS

CONDITIONS

1. {1830} This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. {1831} Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT.** This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director, APCO

Arnaud Marjolle, Director of Permit Services

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3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions (not including the offset ratio): 1st quarter - 9,114 lb, 2nd quarter - 9,215 lb, 3rd quarter - 9,317 lb, and 4th quarter - 9,317 lb. Offsets shall be provided at a distance offset ratio 1.5 to 1. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOx emission reduction credits for the following quantity of emissions (not including the offset ratio): 1st quarter - 6,941 lb, 2nd quarter - 7,018 lb, 3rd quarter - 7,095 lb, and 4th quarter - 7,096 lb. Offsets shall be provided at the applicable offset ratio specified in District Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions (not including the offset ratio): 1st quarter - 3,185 lb, 2nd quarter - 3,220 lb, 3rd quarter - 3,255 lb, and 4th quarter - 3,256 lb. Offsets shall be provided at the applicable offset ratio specified in District Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions (not including the offset ratio): 1st quarter - 140 lb, 2nd quarter - 142 lb, 3rd quarter - 143 lb, and 4th quarter - 143 lb. Offsets shall be provided at a distance offset ratio of 1.5 to 1. [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC certificates S-4126-1, N-768-2, N-900-2, S-4214-5, S-4215-5, C-1280-5, C-1281-5, and N-161-4 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. {4383} No air contaminants shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour which is as dark or darker than Ringelmann #1 or equivalent to 20% opacity and greater, unless specifically exempted by District Rule 4101 (02/17/05). If the equipment or operation is subject to a more stringent visible emission standard as prescribed in a permit condition, the more stringent visible emission limit shall supersede this condition. [District Rule 4101, and County Rules 401 (in all eight counties in the San Joaquin Valley)] Federally Enforceable Through Title V Permit
9. {98} No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
10. Particulate matter emissions shall not exceed 0.1 grain/dscf in concentration. [District Rule 4201 and Stanislaus County Rule 404] Federally Enforceable Through Title V Permit
11. The furnace shall be fired on natural gas and LPG only. [District NSR Rule] Federally Enforceable Through Title V Permit
12. The furnace shall have continuous monitoring systems for NOx and SOx. The monitoring devices shall have continuous recording devices, and all records shall be kept on site. [District Rules 1080 and 4354, §5.9] Federally Enforceable Through Title V Permit
13. One continuous emissions monitoring (CEM) system may be used for monitoring oxy-fuel fired furnaces #1, #2, #3, and #4 provided all of the exhaust gases of each of these furnaces are ducted to a common stack, and monitored down stream of the common stack. The CEMS shall comply with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13, 40 CFR Part 60 Appendix B (Performance Specifications) and Appendix F (Quality Assurance Procedures) and the applicable sections of Rule 1080 (Stack Monitoring). [District Rule 4354, 5.9 and 6.6.1] Federally Enforceable Through Title V Permit
14. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

15. The common exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit
16. The permittee shall notify the District at least 24 hours prior to initiating idling, shutdown, or startup of the glass furnace and this notification shall include: The date and time of the start of the exempt operation, reason for performing the operation, and an estimated completion date. The permittee shall notify the District by telephone within 24 hours after completion of the operation and shall maintain operating records and/or support documentation necessary to claim exemption. [District Rule 4354] Federally Enforceable Through Title V Permit
17. During startups, the permittee shall comply with the requirements of section 5.5 of District Rule 4354. [District Rule 4354, §5.5] Federally Enforceable Through Title V Permit
18. The startup exemption time period shall not exceed 18 days, beginning from the time of primary combustion system activation. [District Rule 4354] Federally Enforceable Through Title V Permit
19. During start-up period, the stoichiometric ratio of the primary furnace combustion system shall not exceed 5% excess oxygen, as calculated from the actual fuel and oxidant flow measurements for combustion in the furnace, except during the time when the oxidant stream for an oxy-fuel fired furnace contains at least 50% oxygen. [District Rule 4354] Federally Enforceable Through Title V Permit
20. The emission control systems shall be in operation whenever conditions are consistent with equipment manufacturer's specifications during startup, idling and shutdown periods. [District Rule 4354] Federally Enforceable Through Title V Permit
21. The duration of a furnace shutdown shall not exceed 20 days, measured from the time furnace operations drop below the idle threshold specified in Section 3.17 of District Rule 4354 to when all emissions from the furnace cease. [District Rule 4354] Federally Enforceable Through Title V Permit
22. NO_x, CO, VOC, SO_x, and PM₁₀ emissions during idling shall not exceed the amount as calculated using the following equation: NO_x, CO, VOC, SO_x, or PM₁₀ (lb/day) = Applicable emission limit (lb/ton) x Furnace permitted production capacity (tons/day). [District Rule 4354] Federally Enforceable Through Title V Permit
23. The oxygen to fuel ratio shall be maintained within the range shown by the most recent source test to result in compliance with the CO and VOC limits of this permit. The acceptable range of the oxygen to fuel ratio shall be established during the initial source test and during each subsequent annual source test. [District Rule 4354] Federally Enforceable Through Title V Permit
24. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59P^{0.62}$ ($P < 30$ tph) or $E=17.31P^{0.16}$ ($P > 30$ tph). [District Rule 4202] Federally Enforceable Through Title V Permit
25. Sulfur compound emissions shall not exceed 0.2% by volume, 2000 ppmv, on a dry basis averaged over 15 consecutive minutes. [Stanislaus County Rule 407 and District Rule 4801] Federally Enforceable Through Title V Permit
26. Source testing to demonstrate compliance with permit conditions and all rules and regulations for both natural gas and LPG shall be conducted within 60 days after the end of the start-up exemption, and at least once every calendar year thereafter. NO_x and CO testing shall be performed using CARB Method 100. VOC testing shall be performed using EPA method 25A. PM₁₀ testing shall be performed using EPA methods 201 and 202, EPA methods 201a and 202, or CARB methods 501 and 5. SO_x testing shall be performed using EPA Method 8 and CARB Method 1-100. [District Rules 1081, 2201, 2520, §9.3.2; and 4354, 6.4 and 6.5] Federally Enforceable Through Title V Permit
27. Source testing when firing on LPG fuel need not be performed if the LPG fuel usage for this furnace does not exceed 100 hours during any one calendar year. A source test shall be performed within 90 days after this furnace exceeds 100 hours of operation, on LPG, on an annual basis. [District Rule 1081] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

28. Source testing shall be conducted by a CARB-certified source testing contractor. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to source testing. The results of each source test shall be submitted to the District within 60 days after the source test date. [District Rule 1081] Federally Enforceable Through Title V Permit
29. Source test conditions shall be representative of operations equal to or greater than 60 percent of the fuel use capacity for each furnace as stated in the Permit to Operate. [District Rule 4354, §6.4.2] Federally Enforceable Through Title V Permit
30. For source testing purposes, the arithmetic average of three 30-consecutive-minute test runs shall be used to determine compliance with NO_x, CO, VOC, and SO_x emission limits. [District Rule 4354] Federally Enforceable Through Title V Permit
31. For source testing purposes, the arithmetic average of three 60-consecutive-minute test runs shall be used to determine compliance with PM₁₀ emission limits. [District Rule 4354] Federally Enforceable Through Title V Permit
32. For source testing purposes, if two of the three runs individually demonstrate emissions above the applicable limit, the test cannot be used to demonstrate compliance for the furnace, even if the averaged emissions of all three test runs is less than the applicable limit. [District Rule 4354] Federally Enforceable Through Title V Permit
33. PM and PM₁₀ source testing shall be conducted downstream of the electrostatic precipitator and the ceramic filter dust collector in the common stack. Furnaces #1, #2, #3, and #4 must operate simultaneously during source testing unless prior approval is obtained from the District. [District Rule 1081] Federally Enforceable Through Title V Permit
34. An annual Relative Accuracy Test Audit (RATA) shall be performed on the continuous monitoring system as outlined in 40 CFR Part 60 Appendix B. [District Rule 1080] Federally Enforceable Through Title V Permit
35. The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F (CGAs and RATAs) and if applicable 40 CFR Part 75, Appendix B (linearity and RATAs) at least once every four calendar quarters and annually within 30 days of the anniversary date of the initial test. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080] Federally Enforceable Through Title V Permit
36. An exceedance of a NO_x or SO_x emission limit as indicated by the CEMS shall be reported by the operator to the APCO within 24 hours. The notification shall include 1) name and location of the facility, 2) identification of furnace(s) causing the exceedances, 3) calculation of actual NO_x, CO and VOC emissions, and 4) corrective actions and schedules to complete the work. [District Rule 1080 and Stanislaus County Rule 1080] Federally Enforceable Through Title V Permit
37. {2251} The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary of data shall be in the form and the manner prescribed by the APCO. [District Rule 1080, 7.1] Federally Enforceable Through Title V Permit
38. Records shall be maintained and shall include: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEMS that have been installed pursuant to District Rule 1080, and emission measurements. [District Rule 1080] Federally Enforceable Through Title V Permit
39. The operator shall notify the APCO no later than one hour after the detection of a breakdown of the CEMS. The operator shall inform the APCO of the intent to shut down the CEMS at least 24 hours prior to the event. [District Rule 1100] Federally Enforceable Through Title V Permit
40. The permittee shall submit a written report including copies of any Equipment Breakdown reports and/or pertinent variance decisions to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess emissions (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

41. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
42. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] Federally Enforceable Through Title V Permit
43. Cylinder gas audits (GGAs) of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit
44. Compliance with the conditions in the permit requirements for this unit shall be deemed compliance with District Rule 4201, Stanislaus County Rule 404, District Rule 4202 and Stanislaus County Rule 405. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
45. Compliance with the conditions in the permit requirements for this unit shall be deemed compliance with District Rule 4801 and Stanislaus County Rule 407. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
46. The requirements of District Rule 4301 and Stanislaus County Rule 408 were determined to not apply to this unit because the unit does not utilize indirect heat transfer. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
47. The requirements of 40 CFR Part 61, Subpart N were determined to not apply to this unit because the unit does not use commercial arsenic. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
48. Any glass melting furnace located at an Area Source of hazardous air pollutants shall comply with 40 CFR Part 63 Subpart SSSSSS (National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources). [40 CFR Part 63 Subpart SSSSSS] Federally Enforceable Through Title V Permit
49. The quantity of glass produced shall not exceed 430 tons during any one day. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
50. Except during periods of startup, shutdown, and idling, NOx emissions shall not exceed 1.3 pounds per ton of glass produced (over a rolling 30-day average). This performance based limit is to enforce the NOx emission reductions granted by certificate number N-54-2. Any CEM measurement greater than 1.3 lb-NOx/ton of glass produced for each 30-day rolling average constitutes a violation of this emission limit. [District Rule 2201] Federally Enforceable Through Title V Permit
51. Except during periods of startup, shutdown, and idling, CO emissions shall not exceed 0.2 pounds per ton of glass produced. [District NSR Rule] Federally Enforceable Through Title V Permit
52. Except during periods of startup, shutdown, and idling, VOC emissions shall not exceed 0.02 pounds per ton of glass produced. [District Rule 2201] Federally Enforceable Through Title V Permit
53. Except during periods of startup, shutdown, and idling, the combined SOx emissions from permit units N-1662-1, N-1662-2, N-1662-3 and N-1662-4, while producing glass with equal to or greater than 25% by weight mixed color cullet, shall not exceed 0.99 lb/ton of glass produced (over a rolling 30 day average). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
54. Except during periods of startup, shutdown, and idling, the combined SOx emissions from permit units N-1662-1, N-1662-2, N-1662-3 and N-1662-4, while producing glass with less than 25% by weight mixed color cullet, shall not exceed 0.81 lb/ton of glass produced (over a rolling 30 day average). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
55. Except during periods of startup, shutdown, idling, and during full or partial emission control system bypass episodes, PM10 emissions shall not exceed 0.45 lb/ton of glass produced. [District NSR Rules 2201 and 4354] Federally Enforceable Through Title V Permit

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56. The PM10 emissions, during full or partial emission control system bypass episodes for routine maintenance, shall not exceed 0.71 lb/ton of glass produced. [District Rule 2201] Federally Enforceable Through Title V Permit
57. PM emissions from the glass furnace shall not exceed 1 lb of particulate matter per ton of glass produced. [40 CFR 60.293(b)(1)] Federally Enforceable Through Title V Permit
58. The SOx and PM10 emission limits of this permit shall not apply during routine maintenance of the respective add-on control systems. The routine maintenance in each calendar year shall not exceed 144 hours total for all add-on controls and routine maintenance shall be conducted in a manner consistent with good air pollution control practices for minimizing air emissions. Routine maintenance includes, but is not limited to: 1) Calibration and scheduled parts replacement of CEMS equipment per manufacturer's recommendations, 2) Cleaning of particulate control devices and stack ductwork to ensure optimal performance, and 3) Necessary repairs to ensure optimal performance of all parts of the system. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
59. The PM10 emissions shall not exceed 18,712 pounds during the first calendar quarter, 18,919 pounds during the second calendar quarter, 19,127 pounds during the third calendar quarter and 19,128 pounds during the fourth calendar quarter. These limits are to enforce the PM10 emission reductions granted by certificate number N-161-4. [District NSR Rule] Federally Enforceable Through Title V Permit
60. The facility shall not use commercial arsenic as a raw material in the production process. [40 CFR Part 61 Subpart N] Federally Enforceable Through Title V Permit
61. Each dust collector shall be maintained and operated in the range that optimizes control efficiency as recommended by the manufacturer. [District Rule 2201] Federally Enforceable Through Title V Permit
62. Each dust collectors cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
63. Material removed from each dust collector shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
64. Replacement filters numbering at least 10% of the total number of filters in the largest dust collector, and for each type of filter, shall be maintained on the premises. [District Rule 2201] Federally Enforceable Through Title V Permit
65. Devices to measure the primary and secondary voltage and current of the electrostatic precipitator shall be maintained in accordance with the manufacturer's specifications. [District Rule 4354, 40 CFR 60.293(d) and 40 CFR Part 64] Federally Enforceable Through Title V Permit
66. The specific power of the electrostatic precipitator shall be at least 70 milliwatts/acfm except during the bypass episodes allowed by this permit. [District Rule 2520, §9.3.2, 40 CFR 60.293(d), and 40 CFR Part 64] Federally Enforceable Through Title V Permit
67. The ceramic filter dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the filters. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
68. Each of the furnace dust collectors shall be equipped with a pressure differential gauge to indicate the pressure drop across the filters. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201] Federally Enforceable Through Title V Permit
69. During operation of the ceramic filter dust collector, the pressure differential gauge reading shall be 5 to 10 inches of water column. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
70. During operation of the furnace charger dust collectors, the pressure differential gauge reading for each dust collector shall be 2 to 8 inches of water column. [District Rule 2201] Federally Enforceable Through Title V Permit
71. The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR Part 64.7. [40 CFR Part 64] Federally Enforceable Through Title V Permit
72. If the District or EPA determine that a Quality Improvement Plan is required under 40 CFR Part 64.7(d)(2), the permittee shall develop and implement the Quality Improvement Plan in accordance with 40 CFR Part 64.8. [40 CFR Part 64] Federally Enforceable Through Title V Permit

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73. The permittee shall comply with the record keeping and reporting requirements of 40 CFR Part 64.9. [40 CFR Part 64] Federally Enforceable Through Title V Permit
74. The specific power of the electrostatic precipitator shall be continuously monitored and recorded. [District Rules 2201 and 4354, 40 CFR 60.293(d), and 40 CFR Part 64] Federally Enforceable Through Title V Permit
75. Dust collector filters shall be inspected annually while in operation for evidence of particulate matter breakthrough and replaced as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
76. Dust collector filters shall be inspected annually while not in operation for tears, scuffs, abrasions or hole that might interfere with the PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
77. Permittee shall keep a record of the daily hours of operation, the amount of glass pulled from the furnace (in tons), the NOx emissions (in lb/ton of glass pulled), the SOx emissions (in lb/ton of glass pulled), the weight of mixed color mix cullet used, the total amount of cullet used (by weight) and the ratio of the mixed color cullet weight to the total cullet weight (in percent). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
78. Permittee shall maintain records of the following: 1) Source tests and source test results, 2) the acceptable range for each approved key system operating parameter, as established during source tests, 3) The operating values of the key system operating parameters at the approved recording frequency, 4) any maintenance and repair, and 5) any malfunctions. [District Rule 4354] Federally Enforceable Through Title V Permit
79. The oxygen to fuel ratio shall be continuously monitored and recorded. [District Rule 4354] Federally Enforceable Through Title V Permit
80. The permittee shall maintain daily records of the aggregated NOx emissions. [District Rules 2520, 9.3.2 and 4354, 9.6.1 and 9.7] Federally Enforceable Through Title V Permit
81. The permittee shall maintain the burner oxygen to fuel ratio records required by this permit. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
82. A record of the PM10 emissions from this unit, in pounds per calendar quarter, shall be kept. [District Rule 2201] Federally Enforceable Through Title V Permit
83. A record of the cumulative annual number of hours that the emission control system is either fully or partially bypassed shall be kept. The record shall be updated at least weekly. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
84. The permittee shall keep a record of the cumulative annual hours of operation of the glass furnace on LPG fuel. [District Rule 2201] Federally Enforceable Through Title V Permit
85. The permittee shall maintain daily records of the specific power of the electrostatic precipitator (in milliwatts/acfm). [District Rules 2201, 4354, 40 CFR 60.293(d), and 40 CFR Part 64] Federally Enforceable Through Title V Permit
86. The operator shall monitor and record the pressure differential gauge reading of the ceramic filter dust collector at least once during each day that the unit operates. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
87. Records of dust collector maintenance, inspections and repairs shall be maintained. The records shall include, date of inspection, change outs of filter media, corrective action taken, and identification of the individual performing the inspection. [District Rules 2201 and 2520, 9.4.2] Federally Enforceable Through Title V Permit

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CONDITIONS CONTINUE ON NEXT PAGE

88. The permittee shall maintain records of the actual NO₂, PM₁₀, and PM emissions from this unit for each 12 consecutive-month rolling period for a period of 10 years beginning on the date the unit starts operation under this permit for the purposes of demonstrating that there has not been a PSD "significant net emissions increase" above the baseline actual NO₂, PM₁₀, and PM emission levels reported under projects N-1141107 and N-1142733. The actual net emissions increase shall be calculated in accordance with 40 CFR 52.21 (June 16, 2011 version). If a significant net emissions increase for NO₂, PM₁₀, and PM emissions occurs during any 12 consecutive month period in the 10 year recordkeeping period, the permittee shall submit a permit application to modify the permit to meet the Prevention of Significant Deterioration requirements that were avoided under projects N1141107 and N-1142733, which are the public notice and modeling requirements of 40 CFR 52.21 (June 16, 2011 version). Actual PM and PM₁₀ emissions for the furnace may be calculated using source test results and the throughput of the glass furnace. [District Rule 2201] Federally Enforceable Through Title V Permit
89. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit

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APPENDIX II
Current Permit to Operate

San Joaquin Valley Air Pollution Control District

PERMIT UNIT: N-1662-2-16

EXPIRATION DATE: 06/30/2016

EQUIPMENT DESCRIPTION:

GLASS FURNACE #2 WITH 10 MAXON GAS/OXYGEN BURNERS AND ASSOCIATED FORMING EQUIPMENT (75 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR.

PERMIT UNIT REQUIREMENTS

1. Particulate matter emissions shall not exceed 0.1 grain/dscf in concentration. [District Rule 4201 and Stanislaus County Rule 404] Federally Enforceable Through Title V Permit
2. The furnace shall be fired on natural gas and LPG only. [District NSR Rule] Federally Enforceable Through Title V Permit
3. The furnace shall have continuous monitoring systems for NOx and SOx. The monitoring devices shall have continuous recording devices, and all records shall be kept on site. [District Rules 1080 and 4354, §5.9] Federally Enforceable Through Title V Permit
4. One continuous emissions monitoring (CEM) system may be used for monitoring oxy-fuel fired furnaces #1, #2, #3, and #4 provided all of the exhaust gases of each of these furnaces are ducted to a common stack, and monitored down stream of the common stack. The CEMS shall comply with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13, 40 CFR Part 60 Appendix B (Performance Specifications) and Appendix F (Quality Assurance Procedures) and the applicable sections of Rule 1080 (Stack Monitoring). [District Rule 4354, 5.9 and 6.6.1] Federally Enforceable Through Title V Permit
5. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit
6. The exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NOx, CO, and O2 analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit
7. During startups, the permittee shall comply with the requirements of section 5.5 of District Rule 4354. [District Rule 4354, §5.5] Federally Enforceable Through Title V Permit
8. The NOx control system shall be in operation as soon as technologically feasible during the startup period to minimize emissions. [District Rule 4354, §5.5.6] Federally Enforceable Through Title V Permit
9. The NOx control system shall be in operation whenever technologically feasible during shutdown to minimize emissions. [District Rule 4354, §5.6.2] Federally Enforceable Through Title V Permit
10. The NOx control system shall be in operation whenever technologically feasible during furnace idling to minimize emissions. [District Rule 4354, §5.7.1] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

11. The duration of shutdown, as measured from the time the furnace operations drop below the idle threshold specified in section 3.17 of District Rule 4354 to when all emissions from the furnace cease, shall not exceed 20 days. [District Rule 4354, §5.6.1] Federally Enforceable Through Title V Permit
12. The oxygen to fuel ratio shall be maintained within the range shown by the most recent source test to result in compliance with the CO and VOC limits of this permit. The acceptable range of the oxygen to fuel ratio shall be established during the initial source test and during each subsequent annual source test. [District Rule 4354] Federally Enforceable Through Title V Permit
13. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59P^{0.62}$ ($P < 30$ tph) or $E=17.31P^{0.16}$ ($P > 30$ tph). [District Rule 4202] Federally Enforceable Through Title V Permit
14. Sulfur compound emissions shall not exceed 0.2% by volume, 2000 ppmv, on a dry basis averaged over 15 consecutive minutes. [Stanislaus County Rule 407 and District Rule 4801] Federally Enforceable Through Title V Permit
15. Source testing to demonstrate compliance with permit conditions and all rules and regulations for both natural gas and LPG shall be conducted at least once every calendar year. NOx and CO testing shall be performed using CARB Method 100. VOC testing shall be performed using EPA method 25A. PM10 testing shall be performed using EPA methods 201 and 202, EPA methods 201a and 202, or CARB methods 501 and 5. SOx testing shall be performed using EPA Method 8 and CARB Method 1-100. [District Rules 1081, 2201, 2520, §9.3.2; and 4354, 6.4 and 6.5] Federally Enforceable Through Title V Permit
16. Source testing when firing on LPG fuel need not be performed if the LPG fuel usage for this furnace does not exceed 100 hours during any one calendar year. A source test shall be performed within 90 days after this furnace exceeds 100 hours of operation, on LPG, on an annual basis. [District Rule 1081] Federally Enforceable Through Title V Permit
17. Source testing shall be conducted by a CARB-certified source testing contractor. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to source testing. The results of each source test shall be submitted to the District within 60 days after the source test date. [District Rule 1081] Federally Enforceable Through Title V Permit
18. Source test conditions shall be representative of operations equal to or greater than 60 percent of the fuel use capacity for each furnace as stated in the Permit to Operate. [District Rule 4354, §6.4.2] Federally Enforceable Through Title V Permit
19. PM and PM10 source testing shall be conducted downstream of the electrostatic precipitator and the ceramic filter dust collector in the common stack. Furnaces #1, #2, #3, and #4 must operate simultaneously during source testing unless prior approval is obtained from the District. [District Rule 1081] Federally Enforceable Through Title V Permit
20. An annual Relative Accuracy Test Audit (RATA) shall be performed on the continuous monitoring system as outlined in 40 CFR Part 60 Appendix B. [District Rule 1080] Federally Enforceable Through Title V Permit
21. The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F (CGAs and RATAs) and if applicable 40 CFR Part 75, Appendix B (linearity and RATAs) at least once every four calendar quarters and annually within 30 days of the anniversary date of the initial test. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080] Federally Enforceable Through Title V Permit
22. An exceedance of a NOx or SOx emission limit as indicated by the CEMS shall be reported by the operator to the APCO within 24 hours. The notification shall include 1) name and location of the facility, 2) identification of furnace(s) causing the exceedances, 3) calculation of actual NOx, CO and VOC emissions, and 4) corrective actions and schedules to complete the work. [District Rule 1080 and Stanislaus County Rule 108] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

23. The operator shall notify the APCO no later than one hour after the detection of a breakdown of the CEMS. The operator shall inform the APCO of the intent to shut down the CEMS at least 24 hours prior to the event. [District Rule 1100] Federally Enforceable Through Title V Permit
24. The permittee shall submit a written report including copies of any Equipment Breakdown reports and/or pertinent variance decisions to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess emissions (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080] Federally Enforceable Through Title V Permit
25. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
26. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] Federally Enforceable Through Title V Permit
27. Cylinder gas audits (GGAs) of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit
28. Compliance with the conditions in the permit requirements for this unit shall be deemed compliance with District Rule 4201, Stanislaus County Rule 404, District Rule 4202 and Stanislaus County Rule 405. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
29. Compliance with the conditions in the permit requirements for this unit shall be deemed compliance with District Rule 4801 and Stanislaus County Rule 407. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
30. The requirements of District Rule 4301 and Stanislaus County Rule 408 were determined to not apply to this unit because the unit does not utilize indirect heat transfer. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
31. The requirements of 40 CFR Part 60, Subpart CC were determined to not apply to this unit because the unit was constructed prior to the effective date in the regulation and has not been modified (according to the definition of "modified" in the regulation). A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
32. The requirements of 40 CFR Part 61, Subpart N were determined to not apply to this unit because the unit does not use commercial arsenic. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
33. Any glass melting furnace located at an Area Source of hazardous air pollutants shall comply with 40 CFR Part 63 Subpart SSSSSS (National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources). [40 CFR Part 63 Subpart SSSSSS] Federally Enforceable Through Title V Permit
34. The amount of glass produced shall not exceed 352.1 tons during any one day. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
35. NO_x emissions shall not exceed 1.4 pounds per ton of glass produced. This performance based limit is to enforce the NO_x emission reductions granted by certificate number N-54-2. [District NSR Rule] Federally Enforceable Through Title V Permit
36. CO emissions shall not exceed 0.90 pounds per ton of glass produced. [District NSR Rule] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE

These terms and conditions are part of the Facility-wide Permit to Operate.

37. The VOC emissions shall not exceed 0.23 pounds per ton of glass produced. [District Rule 2201] Federally Enforceable Through Title V Permit
38. The combined SOx emissions from permit units N-1662-1, N-1662-2, N-1662-3 and N-1662-4, while producing glass with equal to or greater than 25% by weight mixed color cullet, shall not exceed 0.99 lb/ton of glass produced (over a rolling 30 day average). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
39. The combined SOx emissions from permit units N-1662-1, N-1662-2, N-1662-3 and N-1662-4, while producing glass with less than 25% by weight mixed color cullet, shall not exceed 0.81 lb/ton of glass produced (over a rolling 30 day average). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
40. The PM10 emissions, except during full or partial emission control system bypass episodes, shall not exceed 0.45 lb/ton of glass produced. [District NSR Rules 2201 and 4354] Federally Enforceable Through Title V Permit
41. The PM10 emissions, during full or partial emission control system bypass episodes, shall not exceed 0.71 lb/ton of glass produced. [District Rule 2201] Federally Enforceable Through Title V Permit
42. The amount of time that the furnace exhaust is not fully treated by a control device shall not exceed 144 hours per calendar year. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
43. The PM10 emissions shall not exceed 15,527 pounds during the first calendar quarter, 15,699 pounds during the second calendar quarter, 15,872 pounds during the third calendar quarter and 15,872 pounds during the fourth calendar quarter. These limits are to enforce the PM10 emission reductions granted by certificate number N-161-4. [District NSR Rule] Federally Enforceable Through Title V Permit
44. During furnace idling, NOx emissions shall not exceed 528.2 pounds in any one day. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
45. During furnace idling, CO emissions shall not exceed 352.1 pounds in any one day. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
46. During furnace idling, VOC emissions shall not exceed 88.0 pounds in any one day. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
47. During furnace idling, SOx emissions shall not exceed 387.3 pounds in any one day when producing glass with equal to or greater than 25% by weight mixed color cullet. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
48. During furnace idling, SOx emissions shall not exceed 316.9 pounds in any one day when producing glass with less than 25% by weight mixed color cullet. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
49. During furnace idling, PM10 emissions shall not exceed 176.1 pounds in any one day. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
50. The facility shall not use commercial arsenic as a raw material in the production process. [40 CFR Part 61 Subpart N] Federally Enforceable Through Title V Permit
51. The ceramic filter dust collector shall be maintained and operated according to manufacturer's specifications. [District Rule 2201] Federally Enforceable Through Title V Permit
52. The ceramic filter dust collector cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
53. Material removed from the ceramic filter dust collector shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
54. Replacement filters numbering at least 10% of the total number of filters in the ceramic filter dust collector shall be maintained on the premises. [District Rule 2201] Federally Enforceable Through Title V Permit
55. Devices to measure the primary and secondary voltage and current of the electrostatic precipitator shall be maintained in accordance with the manufacturer's specifications. [District Rule 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE
These terms and conditions are part of the Facility-wide Permit to Operate.

56. The specific power of the electrostatic precipitator shall be at least 70 milliwatts/acfm except during the bypass episodes allowed by this permit. [District Rule 2520, §9.3.2 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
57. The ceramic filter dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the filters. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
58. During operation of the ceramic filter dust collector, the pressure differential gauge reading shall be 5 to 10 inches of water column. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
59. The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR Part 64.7. [40 CFR Part 64] Federally Enforceable Through Title V Permit
60. If the District or EPA determine that a Quality Improvement Plan is required under 40 CFR Part 64.7(d)(2), the permittee shall develop and implement the Quality Improvement Plan in accordance with 40 CFR Part 64.8. [40 CFR Part 64] Federally Enforceable Through Title V Permit
61. The permittee shall comply with the record keeping and reporting requirements of 40 CFR Part 64.9. [40 CFR Part 64] Federally Enforceable Through Title V Permit
62. The specific power of the electrostatic precipitator shall be continuously monitored and recorded. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
63. Dust collector filters shall be inspected annually while in operation for evidence of particulate matter breakthrough and replaced as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
64. Dust collector filters shall be inspected annually while not in operation for tears, scuffs, abrasions or hole that might interfere with the PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
65. A daily record of the hours of operation, the amount of glass pulled from the furnace (in tons), the NO_x emissions (in lb/ton of glass pulled), the SO_x emissions (in lb/ton of glass pulled), the weight of mixed color mix cullet used, the total amount of cullet used (by weight) and the ratio of the mixed color cullet weight to the total cullet weight (in percent). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
66. The oxygen to fuel ratio shall be continuously monitored and recorded. [District Rule 4354] Federally Enforceable Through Title V Permit
67. The permittee shall maintain daily records of the aggregated NO_x emissions. [District Rules 2520, 9.3.2 and 4354, 9.6.1 and 9.7] Federally Enforceable Through Title V Permit
68. The permittee shall maintain the burner oxygen to fuel ratio records required by this permit. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
69. A record of the PM₁₀ emissions from this unit, in pounds per calendar quarter, shall be kept. [District Rule 2201] Federally Enforceable Through Title V Permit
70. A record of the cumulative annual number of hours that the emission control system is either fully or partially bypassed shall be kept. The record shall be updated at least weekly. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
71. The permittee shall maintain daily records of the specific power of the electrostatic precipitator (in milliwatts/acfm). [District Rules 2201, 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
72. The operator shall monitor and record the pressure differential gauge reading of the ceramic filter dust collector at least once during each day that the unit operates. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit

PERMIT UNIT REQUIREMENTS CONTINUE ON NEXT PAGE
These terms and conditions are part of the Facility-wide Permit to Operate.

73. Records of dust collector maintenance, inspections and repairs shall be maintained. The records shall include, date of inspection, change outs of filter media, corrective action taken ,and identification of the individual performing the inspection. [District Rules 2201 and 2520, 9.4.2] Federally Enforceable Through Title V Permit
74. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit

These terms and conditions are part of the Facility-wide Permit to Operate.

APPENDIX III

Baseline Actual Emission Calculations for SB288 Modification Calculations

Baseline Actual Emissions Calculations for SB288 Modification Calculations

Determination of the Representative Baseline Period

The following table shows the furnace #2 glass production rate for the previous five calendar years, and the average annual glass production rate.

Year	Glass Production (tons of glass pulled)
2009	111,414
2010	97,552
2011	111,414
2012	115,393
2013	88,782
5-year Average Annual Glass Production	104,911

To choose a representative baseline period, the two-year period average annual glass production will be compared with the five-year average annual glass production. The two-year period with an average glass production closest to the above 5-year average annual glass production will be chosen as the representative baseline period. The following table compares the 2-year averages with the 5-year average.

Baseline Period Candidates	2-year Candidate Baseline Period Average Annual Glass Production (tons/year)	5-year Average Annual Glass Production (tons/year)	Difference (tons/year)
2009 & 2010	104,483	104,911	-428
2010 & 2011	104,483	104,911	-428
2011 & 2012	113,404	104,911	8,493
2012 & 2013	102,088	104,911	-2,823

A 2-year baseline period of 2010 and 2011 will be chosen as the baseline period that is most representative of normal operations for the purposes of determining the baseline emissions for SB288 Modification calculations.

Baseline Emissions for NOx from Glass Furnace #2

The facility has four furnaces that share an exhaust stack that is equipped with a NOx CEMS. The following table shows the total glass production from the four furnaces and the annual NOx emissions reported to the District for the calendar year, and an emission factor that is calculated by dividing the calendar year NOx emissions by the calendar year glass production.

Calendar Year	NOx Emissions (lb)	Total Facility Glass Production (tons)	Emission Factor (lb-NOx/ton of glass)
2010	389,920	450,235	0.87
2011	436,720	491,985	0.89

Furnace #2 baseline emissions will be calculated by multiplying calendar year baseline glass production by the emission factors presented in the previous table. The following table shows the results of this calculation, and the average annual NOx emissions during the baseline period.

Calendar Year	Glass Production (tons)	EF (lb-NOx/ton of glass)	Annual NOx (lb/year)
2010	97,552	0.87	84,870
2011	111,414	0.89	99,158
Average Annual Baseline NOx Emissions			92,014

Therefore, the baseline actual emissions for NOx for SB288 Modification Calculations is 92,014 lb/year.

Baseline Emissions for SOx from Glass Furnace #2

The facility has four furnaces that share an exhaust stack that is equipped with a SOx CEMS. The following table shows the total glass production from the four furnaces and the annual SOx emissions reported to the District for the calendar year, and an emission factor that is calculated by dividing the calendar year SOx emissions by the calendar year glass production.

Calendar Year	SOx Emissions (lb)	Total Facility Glass Production (tons)	Emission Factor (lb-SOx/ton of glass)
2010	568,900	450,235	1.26
2011	432,920	491,985	0.88

The current permit requires the furnace to meet a SOx emission factor of 0.81 lb-SOx/ton when using less than 25% by weight mixed color cullet, and 0.99 lb-SOx/ton when using 25% by weight mixed color cullet, or more. Conservatively, baseline SOx emissions will be calculated using a SOx emission factor of 0.81 lb-SOx/ton.

Furnace #2 baseline emissions will be calculated by multiplying calendar year baseline glass production by 0.81 lb-SOx/ton emission factor. The following table shows the results of this calculation, and the average annual SOx emissions during the baseline period.

Calendar Year	Glass Production (tons)	EF (lb-SOx/ton of glass)	Annual SOx (lb/year)
2010	97,552	0.81	79,017
2011	111,414	0.81	90,245
Average Annual Baseline SOx Emissions			84,631

Therefore, the baseline actual emissions for SOx for SB288 Modification Calculations is 84,631 lb/year.

Baseline Emissions for PM10 from Glass Furnace #2

The source test results shown in the following table will be used to calculate the baseline actual emissions for the furnace.

Source Test Date	Emission Rate (lb-PM10/ton of glass)
4/22/2010	0.202
5/12/2011	0.059

Furnace #2 baseline emissions will be calculated by multiplying calendar year baseline glass production by the emission factors presented in the previous table. The following table shows the results of this calculation, and the average annual PM10 emissions during the baseline period.

Calendar Year	Glass Production (tons)	EF (lb-PM10/ton of glass)	Annual PM10 (lb/year)
2010	97,552	0.202	19,706
2011	111,414	0.059	6,573
Average Annual Baseline PM10 Emissions			13,140

Therefore, the baseline actual emissions for PM10 for SB288 Modification Calculations is 13,140 lb/year.

Baseline Emissions for VOC from Glass Furnace #2

The source test results shown in the following table will be used to calculate the baseline actual emissions for the furnace.

Source Test Date	Emission Rate (lb-VOC/ton of glass)
4/22/2010	0.004
5/12/2011	0.005

Furnace #2 baseline emissions will be calculated by multiplying calendar year baseline glass production by the emission factors presented in the previous table. The following table shows the results of this calculation, and the average annual VOC emissions during the baseline period.

Calendar Year	Glass Production (tons)	EF (lb-VOC/ton of glass)	Annual VOC (lb/year)
2010	97,552	0.004	390
2011	111,414	0.005	557
Average Annual Baseline VOC Emissions			474

Therefore, the baseline actual emissions for VOC for SB288 Modification Calculations is 474 lb/year.

APPENDIX IV

Revised BACT Guideline 1.5.9 for Glass Container Melting Furnaces

Proposed Pages For the BACT Clearinghouse

**San Joaquin Valley
Unified Air Pollution Control District**

Best Available Control Technology (BACT) Guideline 1.5.9*

Emission Unit: Glass Melting Furnace

Industry Type: Container Glass
Production

Equipment Rating: All

Last Update: TBD

	Achieved in Practice or contained in SIP	Technologically Feasible	Alternate Basic Equipment
NOx	1.3 lb-NOx/ton of glass pulled on a rolling 30-day average, except during periods of startup, shutdown, and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.		Electric Furnace
SOx	<u>Oxy-fuel fired furnaces while processing material where ≥ 25.0 percent of the total cullet is mixed color cullet:</u> 0.99 lb-SOx/ton of glass pulled on a rolling 30-day average; And compliance with District Rule 4354 requirements for startup, shutdown, and idling. <u>All other Container Glass Furnaces:</u> 0.8 lb-SOx/ton of glass pulled on a rolling 30-day average; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.		Electric Furnace
PM10	0.45 lb-PM10/ton of glass pulled, except during periods of startup, shutdown, and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.		Electric Furnace
CO	0.20 lb-CO/ton of glass pulled, except during periods of startup, shutdown, and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.		Electric Furnace
VOC	0.02 lb-VOC/ton of glass pulled, except during periods of startup, shutdown and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.		Electric Furnace

BACT is the most stringent control technique for the emissions unit and class of source. Control techniques that are not achieved in practice or contained in a state implementation plan must be cost effective as well as feasible. Economic analysis to demonstrate cost effectiveness is required for all determinations that are not achieved in practice or contained in an EPA approved State Implementation Plan.

***This is a Summary Page for this Class of Source - Permit Specific BACT Determinations on Next Page(s)**

**San Joaquin Valley
Unified Air Pollution Control District**

Best Available Control Technology (BACT) Guideline 1.5.9B

Emission Unit: Container Glass Melting
Furnace

Equipment Rating: All

Facility: Gallo Glass Company

References: ATC #: N-1662-2-17
Project #: N-1141107

Location: 605 S Santa Cruz Ave, Modesto, CA

Date of Determination: TBD

Pollutant	BACT Requirements
VOC	0.02 lb-VOC/ton of glass pulled, except during periods of startup, shutdown and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.
SO _x	<u>Oxy-fuel fired furnaces while processing material where ≥ 25.0 percent of the total cullet is mixed color cullet:</u> 0.99 lb-SO _x /ton of glass pulled on a rolling 30-day average; And compliance with District Rule 4354 requirements for startup, shutdown, and idling. <u>All other Container Glass Furnaces:</u> 0.8 lb-SO _x /ton of glass pulled on a rolling 30-day average; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.
NO _x	1.3 lb-NO _x /ton of glass pulled on a rolling 30-day average, except during periods of startup, shutdown, and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.
CO	BACT NOT TRIGGERED
PM ₁₀	0.45 lb-PM ₁₀ /ton of glass pulled, except during periods of startup, shutdown, and idling; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.

- BACT Status:**
- Achieved in practice Small Emitter T-BACT
 - Technologically feasible BACT
 - At the time of this determination achieved in practice BACT was equivalent to technologically feasible BACT
 - Contained in EPA approved SIP
 - The following technologically feasible option was not cost effective:
 - Alternate Basic Equipment
 - Not evaluated for units that are being modified
 - The following alternate basic equipment was not cost effective:

BACT CLEARINGHOUSE

--Submission Form--

Category

Source Category

Container Glass Manufacturing

SIC Code

3221

[View SIC Code List](#)

NAICS Code

327213

[View NAICS Code List](#)

Emission Unit Information

Manufacturer

Custom

Type

Oxy-fuel Fired Furnace

Model

N/A

Equipment Description

GLASS FURNACE #2 WITH 10 MAXON GAS/OXYGEN BURNERS (OR EQUIVALENT) AND ASSOCIATED FORMING EQUIPMENT (75 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR, AND A FURNACE CHARGING AREA SERVED BY TWO DUST COLLECTORS

Capacity/Dimensions

430 tons of glass pulled/day

Fuel Type

Natural gas/oxygen

Multiple Fuel Types

Operating Schedule

Continuous 24 hrs/day, 8,760 hours/yr

Function of Equipment

Manufacture glass containers for wine industry

Facility/District Information

Facility Name

Gallo Glass Company

Facility County

Stanislaus County

Facility Zip Code

95354

District Contact

Arnaud Marjollet, San Joaquin Valley Air Pollution District

District Contact Phone

(559) 230-6000

District Contact E-mail

carlos.garcia@valleyair.org

Project/Permit Information

Application or Permit Number N-1662-2-17
 New Construction/Modification Modification
 ATC Date (mm-dd-yyyy) TBD Example: 03-29-2001
 PTO Date (mm-dd-yyyy) TBD
 Startup Date (mm-dd-yyyy) TBD
 Technology Status Achieved in Practice
 Source Test Available Yes
 Source Test Results Available upon request

BACT Information

Pollutant Limit(s) and Control Method(s) – Please include proper units

<u>NOx</u>	Limit: 1.3 Units: lb/ton of glass Averaging Time: 30-day rolling pulled Control Method Type: Oxy-fuel combustion system Control Method Description: Use of oxygen as a primary oxidant instead of air. Verified via CEMs
<u>CO</u>	Limit: Not triggered Units: Averaging Time: Control Method Type: Control Method Description:
<u>VOC</u>	Limit: 0.02 Units: lb/ton of glass Averaging Time: N/A pulled Control Method Type: None Control Method Description:
<u>PM</u>	Limit: Not Triggered Units: Averaging Time: Control Method Type: Control Method Description:
<u>PM 2.5</u>	Limit: Not Triggered Units: Averaging Time: Control Method Type: Control Method Description:

<u>PM 10</u>	<p>Limit: 0.45 Units: lb/ton of glass Averaging Time: N/A, CEMS not used pulled</p> <p>Control Method Type: Electrostatic Precipitator/Ceramic Filter in parallel.</p> <p>Control Method Description: ECP/Trim-Mer Ceramic Filter</p>
<u>SOx</u>	<p>Limit: 0.8 or 0.99 Units: lb/ton Averaging Time: rolling 30-day average</p> <p>Control Method Type: SOx scrubber</p> <p>0.99 lb/ton limit applies when 25.0% or more of the total cullet processed is mixed color cullet in an oxyfuel-fired furnace. 0.8 limit is required for all other operating scenarios. Verified via CEMs.</p>

BACT Analysis
(Revised BACT Determination)
Container Glass Manufacturing

Processing Engineer: James Harader
Lead Engineer: Nick Peirce
Date: September 30, 2014

Facility Name: Gallo Glass Company
Mailing Address: PO Box 1230
Modesto, CA 95353

Contact Person: Julia Bonardi
Phone: (209) 341-4298

Project #: N-1141107
Application #: N-1662-2-17

I. PROPOSAL

Gallo Glass Company, a container glass manufacturer, is proposing to rebrick and expand glass furnace #2 to allow for a higher production rate.

At the request of EPA, the District has agreed to review and update existing BACT Guideline 1.5.9 requirements for Glass Furnace Manufacturing. This determination will include an evaluation of BACT for periods of startup, shutdown, and idling of the glass melting furnace.

II. PROJECT LOCATION

Gallo Glass Company's facility is located at 605 S Santa Cruz Ave in Modesto, CA.

III. EQUIPMENT LISTING

N-1662-2-17:

GLASS FURNACE #2 WITH 10 MAXON GAS/OXYGEN BURNERS (OR EQUIVALENT) AND ASSOCIATED FORMING EQUIPMENT (75 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR, AND A FURNACE CHARGING AREA SERVED BY TWO DUST COLLECTORS

IV. PROCESS DESCRIPTION

Gas Furnace #2 is a gas-oxygen fired furnace. The furnace is lined with refractory brick and contains molten glass. Mixed batch (sand, limestone, soda ash) and cullet (recycled glass) are fed from the batch plant and deposited upon the molten glass within the furnace, which has a typical glass bath depth of 73 inches. At the operating temperature of the furnace (2850 °F), soda ash and calcium carbonate decompose and release carbon dioxide (CO₂), which comprises about 15% by weight of the batch added to the furnace. The sodium sulfate in the blended batch acts as a refining agent. Sodium sulfate (Na₂SO₄) also decomposes and releases sulfur trioxide (SO₃). SO₃ is soluble in glass and tends to agglomerate small glass bubbles as it rises in the melt, thus removing gas bubbles that are considered an impurity in the glass. As the batch and cullet melt, the melt moves gravimetrically towards the front of the melter and eventually flows through a throat leading to the glass refiner. Recovered dust from the electrostatic precipitator (ESP) or ceramic dust collector system may be used in conjunction with salt cake as a fining agent, as ESP dust is a functional representative for salt cake.

Currently, twelve natural gas-fired burners, ten rated at 7.5 MMBtu/hr each and two rated at 2.5 MMBtu/hr each, provide the furnace with up to 80 MMBtu/hr of radiant heat input capacity to maintain the furnace operating temperature. A gas-oxygen furnace uses oxygen, rather than ambient air, as the oxidizer, which reduces thermal NO_x formation and results in more complete combustion thus also minimizing CO and VOC emissions. Eighteen 3-inch diameter boost electrodes powered by three 1,166 kVa single phase transformers (3,498 kVa of electric boost) provide heat to the lower regions of the glass bath that are not directly heated by the gas-oxygen burners. The furnace is equipped with one side exhaust port. Exhaust from the furnace is discharged into a common header shared by three other gas-oxygen furnaces. The combined exhaust passes through an electrostatic precipitator equipped with a lime scrubber, which removes SO₃ and filterable PM. The main stack is also equipped with parallel ceramic dust filter dust collector that treats a slip stream of the exhaust gas while the ESP treats the majority of the main exhaust gas. The main stack discharges the combined furnace exhaust to the atmosphere.

The four walls of Glass Furnace #2 will be widened and the furnace walls will be rebricked. These modifications will increase the footprint of the glass furnace #2 from 836 ft² to 1,425 ft². The glass bath depth will also be increased to 80 inches. The two 2.5 MMBtu/hr burners will be removed from service while the ten existing 7.5 MMBtu/hr burners will be retained. The eighteen 3-inch diameter electric boost electrodes will be replaced with eighteen 2.5-inch diameter boost electrodes and eight additional barrier boost electrodes powered by a new transformer. The modified glass furnace #2 will provide 2,700 kW of electric boost to further heat the submerged melt. The operating temperature will be increased to 2,875 °F. The alterations are being implemented to increase the glass production capacity, extend furnace life, and improve energy efficiency. The glass production will increase from 352.1 tons per day to 430 tons per day.

IV. CONTROL EQUIPMENT EVALUATION

The furnace is equipped with emission control equipment for NO_x, SO_x and PM₁₀. NO_x is controlled utilizing oxy-fuel firing, SO_x is controlled utilizing a shared dry SO_x scrubber and PM₁₀ is controlled utilizing a shared electrostatic precipitator (ESP) and/or a shared ceramic filter type dust collector. The shared control devices are shared with Glass Furnaces #1, #3, and #4.

Oxy-Fuel Firing:

Oxy-fuel firing is utilized to control NO_x emissions. In oxy-fuel firing, oxygen is generated and replaces air in the combustion process. The absence of nitrogen containing combustion air inhibits the formation of thermal NO_x.

Shared Dry SO_x Scrubber:

Gallo Glass utilizes a scrubber for SO_x control followed by an Electrostatic Precipitator (ESP) for SO_x/particulate matter control.

From the furnace, the SO_x contaminated airstream travels through a scrubber. Inside of the scrubber, SO_x is absorbed by a reagent (lime, trona, etc.), which exits the scrubber in the form of particulate matter. The contaminated airstream (sulfur contaminated scrubber reagent and the particulate matter generated in the furnace) then enters the ESP. The ESP causes the influent particulate matter to be charged and captured on oppositely charged plates.

Shared Electrostatic Precipitator:

An electrostatic precipitator (ESP) is utilized to control the particulate matter emissions generated in the glass melting process and from the SO_x scrubber. The contaminated air stream is passed through positively or negatively charged electrodes that place a charge on the particulate matter. The contaminated air stream, including the charged particles, is then passed through oppositely charged electrodes that attract and collect the particulate matter.

Shared Ceramic Filter Type Dust Collector:

The dust collector operates like a traditional fabric filter type baghouse but utilizes ceramic filters that will provide a reliably high filtering efficiency at high temperatures. The unit utilizes reverse pulse air type cartridge cleaning.

A. Best Available Control Technology (BACT) for Permit Unit N-1662-2-17:

Applicability

District Rule 2201 Section 4.1 states that BACT requirements are triggered on a pollutant-by-pollutant basis and on an emissions unit-by-emissions unit basis for the following:

- a) Any new emissions unit with a potential to emit exceeding two pounds per day,
- b) The relocation from one Stationary Source to another of an existing emissions unit with a potential to emit exceeding two pounds per day, and/or
- c) Modifications to an existing emissions unit with a valid Permit to Operate resulting in an AIPE exceeding two pounds per day.
- d) When a Major Modification is triggered for a modification project at a facility that is a Major Source.

Section 4.2 states that BACT is not triggered for CO emissions if the facility's post project Stationary Source Potential to Emit (SSPE2) is less than 200,000 lb of CO per year. SSPE2 for this facility is less than 200,000 lb of CO per year; therefore, BACT is not triggered for CO from this facility.

PE Table	NO _x (lb/day)	SO _x (lb/day)	PM10 (lb/day)	VOC (lb/day)
AIPE N-1662-2-17	101.3	77.1	55.3	0.8
Major Modification	Yes	No	Yes	Yes
BACT Triggered?	Yes	Yes	Yes	Yes

As shown above, BACT is triggered for NO_x, SO_x, PM10, and VOC emissions. Although BACT is not triggered for CO, the District will proactively evaluate BACT for CO and revise the CO BACT limit, as necessary.

B. BACT Policy

Per District Policy APR 1305, Section IX, "A top-down BACT analysis shall be performed as a part of the Application Review for each application subject to the BACT requirements pursuant to the District's NSR Rule for source categories or classes covered in the BACT Clearinghouse, relevant information under each of the following steps may be simply cited from the Clearinghouse without further analysis".

Existing BACT Guideline 1.5.9 (Attachment I) is applicable; however, the District has agreed to perform a **revised BACT determination** for container glass production furnaces. The revised BACT determination will address BACT for NO_x, SO_x, PM10, and VOC for Gallo Glass Company's proposal and will proactively evaluate BACT for CO emissions.

D. Top-Down BACT Analysis

BACT Clearinghouses

The Environmental Protection Agency (EPA), California Air Resources Board (CARB), South Coast Air Quality Management District (SCAQMD), and Bay Area Air Quality Management District (BAAQMD) BACT Clearinghouses were reviewed to determine potential control technologies for this class and category of operation. No BACT Guidelines were identified for Container Glass Manufacturing.

Existing SJVAPCD BACT Guideline 1.5.9 (Attachment I) lists the following control options:

Pollutant	Achieved in Practice	Technologically Feasible	Alternative Basic Equipment
NOx	Natural gas-fired oxy-fuel furnace using LPG backup fuel and NOx emissions of ≤ 1.5 lb/ton of glass pulled	Natural gas-fired oxy-fuel furnace using LPG backup fuel and NOx emissions of ≤ 1.3 lb/ton of glass pulled	Electric Furnace
SOx	Natural gas-fired oxy-fuel furnace using LPG backup fuel and SOx emissions of ≤ 0.8 lb/ton of glass pulled		Electric Furnace
PM10	Natural gas-fired oxy-fuel furnace with an electrostatic precipitator in series with a semi-dry scrubber using LPG backup fuel, and PM10 emissions of ≤ 0.45 lb/ton of glass pulled		Electric Furnace
CO	Natural gas-fired oxy-fuel furnace with CO emissions of ≤ 0.20 lb/ton of glass pulled (on a pounds per day basis)		Electric Furnace
VOC	Natural gas-fired furnace with VOC emissions of ≤ 0.2 lb/ton of glass pulled	<ol style="list-style-type: none"> 1. natural gas-fired furnace with a catalytic oxidizer and VOC emissions of ≤ 0.01 lb/ton of glass pulled (95% control efficiency) 2. natural gas-fired oxy-fuel furnace with LPG backup fuel, and VOC emissions of ≤ 0.01 lb/ton of glass pulled (95% control efficiency) 3. natural gas-fired furnace with VOC emission of 3.4 ppmv at 15% O₂ dry and VOC emissions of ≤ 0.184 lb/ton of glass pulled (block 24-hour average) (8% control efficiency) 	Electric Furnace

The European Union adopted Best Available Techniques (BAT) for glass melting furnaces on February 28, 2012 under Directive 2010/75/EU of the European Parliament and of the Council on Industrial Emissions for the Manufacture of Glass. The following table summarizes the BAT requirements established by the European Union:

Pollutant	Best Available Technique
CO	<p>< 100 mg-CO Nm³ on a 24-hr average (Equivalent to 0.15 kg-CO/tonne of glass pulled, using the conversion factor for general container glass production that is listed in the BAT document) (Equivalent to 0.3 lb-CO/ton of glass pulled)</p>
PM (filterable)	<p>Use of an electrostatic precipitator or bag filter. The expected emission rate using these techniques is 0.015 to 0.06 kg-PM/tonne of glass pulled on a 24-hour average. (Equivalent to 0.03 to 0.12 lb-PM/ton of glass pulled).</p>
NOx	<p>Oxy-fuel melting: < 0.5 to 0.8 kg-NOx/tonne of glass pulled on a 24-hour average (equivalent to 1.0 to 1.6 lb-NOx /ton of glass pulled). Selective Catalytic Reduction : < 0.75 kg-NOx/tonne of glass pulled on a 24-hour average (equivalent to 1.5 lb-NOx/ton of glass pulled) Electric Melting: < 0.3 kg-NOx /tonne of glass pulled on a 24-hour average (equivalent to 0.6 lb-NOx /ton of glass pulled)</p>
SOx	<p>Use of dry or semi-dry scrubber in combination with a filter system and/or minimization of sulfur content of the batch formulation, and/or use of low sulfur content fuels The expected emission rate using these techniques is < 0.3 to 0.75 kg-SOx/tonne of glass pulled on a 24-hour average (equivalent to 0.6 to 1.5 lb-SOx/ton)</p>

Air District, State, and Federal Requirements

San Joaquin Valley Air Pollution Control District Rule 4354 includes the following limits for container glass furnaces:

- NOx: 1.5 lb/ton of glass pulled on a rolling 30-day average, excluding startup, shutdown and idling periods.
- SOx: 1.1 lb/ton of glass pulled on a rolling 30-day average for oxy-fuel furnaces and ≥ 25.0% of total cullet is mixed color cullet, excluding startup, shutdown, and idling periods.
- SOx: 0.90 lb/ton of glass pulled on a rolling 30-day average for all other furnaces, excluding startup, shutdown, and idling periods.

- PM10: 0.50 lb/ton of glass pulled on a block 24-hour average, excluding startup, shutdown, and idling periods
- CO: 1.0 lb/ton of glass pulled on a rolling 3-hour average for oxygen-assisted or oxy-fuel furnaces, or 300 ppmv @ 8% O₂ on a rolling 3-hour average for 100% air-fired furnaces, both excluding startup, shutdown, and idling periods.
- VOC: 0.25 lb/ton of glass pulled on a rolling 3-hour average for oxygen-assisted or oxy-fuel furnaces, excluding startup, shutdown, and idling periods.
- VOC: 20 ppmv @ 8% O₂ on a rolling 3-hour average for 100% air-fired furnaces, excluding startup, shutdown, and idling periods.
- Startup: Limited to 70 days maximum startup for most NO_x control systems. During startup, the stoichiometric ratio of the primary furnace combustion shall not exceed 5% oxygen as calculated from actual fuel and oxidant stream flow measurements for combustion in the glass melting furnace, except during the time when the oxidant stream for an oxy-fuel fired furnace contains at least 50% oxygen. The emission control system shall be in operation as soon as technologically feasible during start-up to minimize emissions.
- Shutdown: The duration of shutdown, as measured from the time the furnace operations drop below the idle threshold specified in District Rule 4354 to when all emissions from the furnace cease must not exceed 20 days. The emission control system shall be in operation whenever technologically feasible during shutdown to minimize emissions.
- Idling: the emission control system must be in operation whenever technologically feasible during idling to minimize emissions. Emissions of NO_x, CO, VOC, SO_x, and PM10 during idling shall not exceed the amount calculated as follows: $E_{i,max} = E_i * Capacity$, where $E_{i,max}$ is the maximum daily emissions of pollutant i during idling in pounds of pollutant per day; E_i is the applicable emission limit from Rule 4534 for pollutant i in pounds per ton of glass pulled; and Capacity is equal to the furnaces permitted glass production capacity in tons of glass pulled per day.

South Coast AQMD SIP-approved Rule 1117 limits NO_x emissions from glass furnaces to 4.0 lb-NO_x/ton of glass pulled on a 3-hour average, excluding startup, shutdown, and idling periods. This rule does not include any limits for other pollutants, nor does it contain any requirements for startup, shutdown, or idling periods.

Bay Area AQMD SIP-approved Regulation 9 Rule 12 limits NO_x emissions from glass furnaces to 5.5 lb-NO_x/ton of glass pulled on a 3-hour average, excluding startup, shutdown, and idling periods. This rule does not include any limits for other pollutants, nor does it contain any requirements for startup, shutdown, or idling periods.

State of Maryland COMAR 26.11 limits PM emissions from glass melting furnaces to a lb/hr limit based on the following equation:

$$E = 5 + 0.48(P), \text{ where:}$$

E = the maximum weight of PM discharged per hour in pounds

P = Process weigh in tons per hour

For Gallo Glass's proposed furnace, this equates to a limit of approximately 0.76 lb-PM/ton.

Additionally, 40 CFR 60 Subpart CC limits container glass furnaces to 0.2 lb-PM/ton (filterable).

Survey of Container Glass Manufacturing Operations

The following table summarizes the results of a District survey of the control systems utilized by various container glass manufacturing facilities. Additional facilities were identified; however, emissions information wasn't as readily available for those facilities. The table below includes all of the potential control technologies identified by the District's survey.

Facility	NOx Control	SOx Control	PM10 Control
Ardagh Glass Seattle, WA (4 furnaces)	Oxy-Fuel Fired (1.3 lb/ton, 30-day rolling average)	3 furnaces are uncontrolled 1 furnace equipped with a Tri-Mer Cloud Chamber Scrubber (1.6 lb/ton)	3 furnaces are uncontrolled 1 furnace equipped with a Cloud Chamber Scrubber (0.2 lb/ton - filterable)
Bennu Glass Kalama, WA (1 furnace)	Oxy-Fuel Fired (1.0 lb/ton, 1-hr average)	Dry SOx Scrubber (0.5 lb/ton, 1-hr average)	Baghouse (0.27 lb/ton – Total PM10)
Owens Brockway Portland, OR (2 furnaces)	Uncontrolled	Uncontrolled	Uncontrolled
Owens-Brockway Oakland, CA (3 furnaces)	Uncontrolled	Uncontrolled	2 furnaces share an Electrostatic Precipitator (0.15 grains/dscf - filterable) 1 furnace is uncontrolled
Owens Brockway Tracy, CA (3 furnaces)	Selective Catalytic Reduction on each furnace (1.5 lb/ton, rolling 30-day average)	Dry SOx Scrubber on each furnace (0.9 lb/ton, rolling 30-day average)	Electrostatic Precipitator on each furnace (0.5 lb/ton – Total PM10)
Ardagh Glass Madera, CA (2 furnaces)	Oxy-Fuel Fired (1.3 lb/ton, rolling 30-day average)	Shared Semi-Dry SOx Scrubber (0.8 lb/ton, 24-hour average)	Shared Electrostatic Precipitator (0.5 lb/ton – Total PM10)
Owens-Brockway Waco, TX (3 furnaces)	In the process of installing Selective Catalytic Reduction (1.2 lb/ton, 30-day rolling average, EPA Consent Decree)	In the process of installing Dry Scrubber(s) (0.8 lb/ton, rolling 30-day average, EPA Consent Decree)	In the process of installing Electrostatic Precipitator(s) (0.2 lb/ton-filterable, EPA Consent Decree)
Ardagh Glass Dolton, IL (3 furnaces)	In the process of installing Selective Catalytic Reduction (1.3 lb/ton, 30-day rolling average, EPA Consent Decree)	In the process of installing Dry Scrubber(s) (70% control efficiency, or 50 ppmvd @ 8% O ₂ , EPA Consent Decree)	In the process of installing Electrostatic Precipitator(s) (0.2 lb/ton-filterable, EPA Consent Decree)

I. NOx Emissions:

Step 1 - Identify all control technologies

The District's current BACT Guideline 1.5.9 (Attachment I) lists BACT options of 1.5 lb-NOx/ton of glass pulled (Achieved in Practice) and 1.3 lb-NOx/ton of glass pulled (Technologically Feasible). Oxy-fuel firing or Selective Catalytic Reduction are the two control technologies identified that reduce NOx emissions from container glass melting furnaces.

Control Option #1: Oxy-Fuel Firing

Oxy-fuel firing is a combustion process that burns a fuel using pure oxygen instead of air as the primary oxidant. The use of oxygen as a primary oxidant eliminates the production of thermal NOx that is formed from the heating of nitrogen that is contained in air. The European Best Available Techniques reference document lists an expected emission range of 1.0 lb-NOx/ton of glass pulled to 1.6 lb-NOx/ton of glass pulled for furnaces utilizing this control technology.

Ardagh Glass Inc. (Formerly Saint-Gobain Containers) located in Madera, CA, has operated one oxy-fuel fired glass melting furnace with a 1.3 lb-NOx/ton of glass pulled permit limit since 2007. Therefore, 1.3 lb/ton of glass pulled is considered to be achieved in practice for an oxy-fuel fired furnace. Gallo Glass Company's furnace battery uses similar oxy-fuel firing equipment as the Ardagh Glass Inc. Facility and has also historically achieved an emission rate of 1.3 lb-NOx/ton of glass pulled on a rolling 30-day average.

Bennu Glass in Kalama, WA, operates an oxy-fuel fired furnace with a permitted NOx limit of 1.0 lb-NOx/ton of glass pulled on a one-hour average; however, that facility is only required to verify their NOx limit using annual source testing. Without the use of a CEMs to verify emission rates, it isn't possible to know whether the Bennu Glass facility in fact achieves a 1.0 lb-NOx/ton limit consistently throughout an entire furnace campaign, nor under all possible furnace operating conditions.

The District reviewed the available source testing data for oxy-fuel fired furnaces operated by Ardagh Glass Inc. and Gallo Glass Company to determine whether a limit lower than 1.3 lb/ton of glass pulled might in fact be feasible. NOx for the oxy-fuel fired furnaces operated by these companies has ranged from 0.074 lb/ton of glass pulled to 1.22 lb/ton of glass pulled. Based on the data available, a limit lower than 1.3 lb/ton of glass pulled does not appear to be consistently achievable over all possible furnace operating conditions and for an entire furnace campaign.

Control Option #2: Selective Catalytic Reduction (SCR)

Selective catalytic reduction reduces nitrogen oxides by introducing ammonia in the presence of a catalyst. The ammonia reacts with NOx and O₂, converting N₂ and H₂O. The catalysts used to aid the reaction are made from various ceramic materials, such as titanium oxide, and include active catalytic components that are usually either oxides of base metals (vanadium, molybdenum, tungsten), zeolites, or various precious metals. The European Best Available Techniques reference document lists an expected emission rate of 1.5 lb-NOx/ton for furnaces utilizing this control technology.

Selective Catalytic Reduction is not as commonly used as oxy-fuel firing for controlling NOx emissions from container glass furnaces and most SCR installations at container glass furnaces are very recent; therefore, data isn't as readily available to determine the emission rates that SCR systems can consistently achieve for an entire furnace campaign. Owens-Brockway in Tracy, CA operates three glass furnaces within the District, each with a Selective Catalytic Reduction system that was installed in late 2013. Initial source testing of the furnaces was conducted in November, 2013 and the furnaces achieved emission rates of 1.01 lb-NOx/ton of glass pulled, 0.86 lb-NOx/ton of glass pulled, and 1.38 lb-NOx/ton of glass pulled. At the time, the facility was still tuning the control device to achieve the lowest NOx emissions possible. It is believed that these units will be able to consistently achieve a NOx emissions level of 1.3 lb/ton on a rolling 30-day basis; however, data does not yet exist to adequately determine whether a lower lb-NOx/ton level can actually be achieved over a full furnace campaign.

Control Option #3: Electric Furnace (Alternate Basic Equipment)

Electric furnaces use electricity rather than fuel combustion to generate the heat within the glass furnace. The electrodes for electric furnaces are typically positioned at the bottom of the furnace (Cold-top furnace). The batch material used in electric furnaces typically includes nitrates to provide the necessary oxidizing conditions for a stable, safe, and efficient glass manufacturing process; therefore, NOx is still generally emitted from the oxidation of those nitrates in the furnace. The typical NOx emission rate for an electric furnace is approximately 0.6 lb-NOx/ton, per the European BAT reference document for glass furnaces.

Startup, Shutdown and Idling Periods

The District's survey did not identify any control technologies or techniques that reduce NOx emissions during startup, shutdown, and idling period more effectively than the startup, shutdown, and idling requirements of District Rule 4354.

Step 2 - Eliminate Technologically Infeasible Options

There are no Technologically Infeasible control options.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Control Technology	Control Efficiency	Achieved in Practice
1.3 lb-NOx/ton of glass pulled on a rolling 30-day average, except during periods of startup, shutdown, and idling (use of an oxy-fuel fired furnace, or a natural gas/air fired furnace with Selective Catalytic Reduction) AND Compliance with District Rule 4354 requirements for startup, shutdown, and idling.	N/A	Yes

Additionally, the use of an electric furnace must be considered as Alternate Basic Equipment for new units.

Step 4 - Cost Effectiveness Analysis

Per District policy APR 1305, Best Available Control Technology (BACT) Policy, Section IX.D.1, a cost effective analysis is not required for Achieved in Practice control options. An Evaluation of Alternate Basic Equipment is not required since this is an existing furnace. Since the only control option listed in Step 3 is Achieved in Practice, a Cost Effective Analysis is not required.

Step 5 - Select BACT

The applicant has proposed to limit their glass furnace to 1.3 lb/ton of glass pulled on a rolling 30-day average and to meet the Rule 4354 requirements for startup, shutdown, and idling. Thus, BACT for NO_x is satisfied by the applicant's proposal.

II. SO_x Emissions:

Step 1 - Identify all control technologies

The District's current BACT Guideline 1.5.9 (Attachment I) currently lists a BACT option of 0.8 lb-SO_x/ton of glass pulled (Achieved in Practice). It was determined in District Project N-1120773 that the current BACT requirement of 0.8 lb-SO_x/ton of glass pulled does not apply to oxy-fuel fired furnaces where 25.0% of the total cullet is mixed color cullet.

Effect of Mixed Color Cullet on SO_x Emissions, at Oxy-fuel fired Furnaces

To comply with California rules regarding the diversion of materials away from landfills, glass plants often utilize mixed color cullet as a partial substitute for virgin ingredients such as sand, soda ash, and limestone. The substitution has the benefit of reducing the amount of furnace energy that is required. Mixed color cullet is recycled glass that is contaminated with items such as food residue, plastic, paper labels, and metallic labels. These contaminants can destabilize an oxy-fuel fired furnace. To counteract effects of these contaminants, sulfates are added to the mixture. The introduction of these additional sulfates into the batch results in the formation of additional SO_x. Additionally, mixed color cullet is embedded with various levels of intrinsic SO₃. The amount of intrinsic SO₃ in the mixed color cullet is related to the specific color of the mixed color cullet. The portion of the mixed color cullet that is different in color than the finished product is evolved in the furnace such that the batch mixture reaches a final bulk glass chemistry to produce a product with the desired color. When the mixed color cullet is evolved, additional SO_x is released. Thus, the use of mixed color cullet increases SO_x emissions from a furnace.

Control Option #1: Cloud Chamber Scrubber

Cloud Chamber Scrubber technology, currently licensed and sold by Tri-Mer Corporation, works by passing the dirty gas stream through a chamber that contains a carefully generated scrubbing cloudlet of high density, charged water droplets. Inside the Cloud Chamber system, billions of charged droplets rapidly react with the particle-bearing process stream. When a particle and a droplet pass within 20 microns, electrical forces cause mutual attraction and the particle, being less massive by orders of magnitude, is pulled into the droplet. Each individual droplet becomes a particle collector. The cloud chamber scrubber technology is used to simultaneously reduce SO_x and PM₁₀ emissions.

This technology has been installed on one container glass furnace at Ardagh Glass in Seattle, WA, and the furnace operates with a permitted limit of 1.6 lb-SO_x/ton of glass pulled. Tri-Mer Corporation has recently introduced the Ultratemp and UltraCat ceramic filter systems that are more effective and economical at capturing particulate emissions and which reduce SO_x emissions using a dry scrubber; therefore, Tri-Mer Corporation currently recommends those systems for glass furnaces instead of the Cloud Chamber Scrubber technology.

Control Option #2: Dry or Semi-Dry SOx scrubber

In a dry or semi-dry SOx scrubber, dry powder or a suspension/solution of alkaline reagent are introduced and dispersed in the waste gas stream. The material reacts with the sulfur gasses in the waste stream to form a solid which must be removed by filtration (electrostatic precipitator or filter system).

When Processing Material where 25.0% or More of the Total Color Cullet is Mixed Color Cullet in an oxy-fuel fired furnace:

When 25.0 percent or more of the total cullet is mixed color cullet in an oxy-fuel fired furnace, the SOx emission rate is elevated due to reasons discussed earlier. Gallo Glass Company has historically operated their oxy-fuel fired furnace battery with total cullet that contains more than 25.0 percent mixed color cullet and has experimented with the various reagent injection rates into their dry scrubber. During this experimentation it was found that the reagent injection rate must be limited or the reagent collects and hardens on the ESP plates in quantities sufficient to cause a masking condition. The masking condition can render the ESP ineffective in controlling PM emissions. The facility operator determined through this experimentation that the highest reagent injection rate that will allow the ESP to operate without plate masking results in a SOx cullet emission rate of just under 0.99 lb-SOx/ton of glass pulled (rolling 30-day average).

All other Container Glass Furnaces (including furnaces where less than 25% of the Total Color Cullet is Mixed Color Cullet in an oxy-fuel fired furnace):

For all other container glass furnaces, the District's current BACT guideline limits SOx emissions to 0.8 lb-SOx/ton of glass pulled. Owen's Brockway in Tracy, CA recently installed dry-SOx scrubbers on each of their three furnace lines. Source test results for this facility have ranged from 0.5 lb-SOx/ton of glass pulled to 0.81 lb-SOx/ton of glass pulled. Test results have varied from 0.44 lb-SOx/ton of glass pulled to 0.65 lb-SOx/ton of glass pulled at Ardagh Glass Inc. in Madera, CA, which operates a semi-dry scrubber. Furthermore, both facilities utilize CEMs systems to verify SOx emissions and have been operating at levels that would be in compliance with the existing 0.8 lb/ton of glass pulled BACT limit.

One facility, Bennu Glass in Kalama, WA, operates a container glass furnace with a 0.5 lb-SOx/ton of glass pulled limit; however, that facility is only required to conduct annual source testing to verify the SOx limit. Since a CEMs is not utilized to verify SOx emissions, data isn't available to demonstrate that Bennu Glass can meet a 0.5 lb/ton of glass pulled emission level for all operating conditions and possible batch material recipes, nor for an entire operating campaign. Furthermore, the State of California requires material to be diverted from landfills, resulting in higher usage rates of mixed color cullet and corresponding higher SOx emission rates compared to furnaces operating in locations where facilities are able to be more selective in the quantity and type of cullet utilized.

Based on the available data, the 0.8 lb-SOx/ton of glass pulled limit, on a rolling 30-day basis, continues to be the recommended BACT emission level that is consistently achievable when using dry/semi-dry SOx scrubbers controlling emissions for the furnaces that fall within this category.

Control Option #3: Electric Furnace

A portion of the SOx emissions from a glass furnace are created from the combustion of fuel that contains sulfur compounds. The use of an electric furnace eliminates this source of SOx emissions. Gallo Glass Company has one permitted electric furnace with a SOx limit of 0.018 lb/ton of glass pulled.

Startup, Shutdown and Idling Periods

The District's survey did not identify any control technologies or techniques that reduce SOx emissions during startup, shutdown, and idling period more effectively than the startup, shutdown, and idling requirements of District Rule 4354.

Step 2 - Eliminate Technologically Infeasible Options

None of the control options are technologically infeasible.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Control Technology	Control Efficiency	Achieved in Practice
<p><u>Oxy-fuel fired furnaces while processing material where ≥ 25.0 percent of the total cullet is mixed color cullet:</u></p> <p>0.99 lb-SOx/ton on a rolling 30-day average; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.</p> <p><u>All other Container Glass Furnaces:</u></p> <p>0.8 lb-SOx/ton on a rolling 30-day average; And compliance with District Rule 4354 requirements for startup, shutdown, and idling.</p>	N/A	Yes

Since the use of a dry or semi-dry scrubber is as effective as or more effective than a Cloud Chamber scrubber, the Cloud Chamber scrubber will not be listed on the District's BACT Guideline for inclusion in the District's BACT Clearinghouse.

Additionally, the use of an electric furnace must be considered as Alternate Basic Equipment for new units.

Step 4 - Cost Effectiveness Analysis

Per District policy APR 1305, Best Available Control Technology (BACT) Policy, Section IX.D.1, a cost effective analysis is not required for Achieved in Practice control options. An Evaluation of Alternate Basic Equipment is not required since this is an existing furnace. Since the only control option listed in Step 3 is Achieved in Practice, a Cost Effective Analysis is not required.

Step 5 - Select BACT

The applicant is proposing the use of a dry SO_x scrubber that will meet the Achieved-in-Practice limits listed in Step 3. Thus, BACT for SO_x is satisfied by the applicant's proposal.

III. PM10 Emissions:

Step 1 - Identify all control technologies

The District's current BACT Guideline 1.5.9 (Attachment I) lists a BACT options of 0.45 lb-PM10/ton of glass pulled (Achieved in Practice). For PM10, electrostatic precipitators, baghouses, or ceramic filters may be used to reduce emissions.

Control Option #1: Electrostatic Precipitator

An electrostatic precipitator is a highly efficient filtration device that removes fine particles from a flowing gas using the force of an induced electrostatic charge while minimally impeding the flow of gases through the unit. The European Best Available Techniques reference document lists an expected emission rate of 0.03 lb-PM10/ton of glass pulled to 0.12 lb-PM10/ton of glass pulled for furnaces utilizing this control technology; however, this emission rate does not include the condensable fraction of PM10.

The facilities identified outside the District that operate with electrostatic precipitators all have filterable PM limits on their permits, and no limits for total PM10. Test data wasn't readily available from these facilities.

All three container glass furnace facilities located within the San Joaquin Valley Air Pollution Control District operate using electrostatic precipitators as their primary control device. Total PM10 emissions at Ardagh Glass Inc. in Madera, CA have ranged from 0.067 lb-PM10/ton of glass pulled to 0.158 lb/ton of glass pulled since the installation of a shared electrostatic precipitator. Total PM10 emissions from Owens-Brockway have ranged from 0.013 lb-PM10/ton of glass pulled to 0.313 lb-PM10/ton of glass pulled when using an electrostatic precipitator. At Gallo Glass Company, test results have ranged from 0.053 lb-PM10/ton of glass pulled to 0.39 lb-PM10/ton of glass pulled (total PM10). For the test with the highest lb/ton emission rate, two of the three test runs were slightly greater than 0.4 lb-PM10/ton. Gallo Glass Company has not significantly changed their operation or made any changes to their furnace operations since the installation of their shared electrostatic precipitator. PM10 emissions measured during source tests vary considerably, depending on the current operating conditions and batch materials used within the container glass furnace.

Control efficiency testing for electrostatic precipitators isn't common within the glass furnace industry. Outside of the District, the majority of the units identified that operate electrostatic precipitators were only subject to filterable PM limits expressed in lb-PM (filterable) per ton of glass pulled, with no limitation on the condensable emissions. Units that fall into this category include units at Ardagh Glass and Owens Brockway that are subject to recent EPA Consent Decrees. Thus, testing data for total PM10 control is unlikely to be available for those facilities.

Ardagh Glass, in Madera, CA, operates two glass furnaces with a shared electrostatic precipitator. The facility has never conducted simultaneous inlet and outlet PM or PM10 testing. The average emission rate for the four years prior to installing the shared electrostatic precipitator is 0.52 lb-PM/ton of glass pulled. Since installing the shared electrostatic precipitator, the average controlled emission rate is 0.08 lb-PM/ton of glass pulled. This data yields a rough estimate of an 85% reduction in PM emissions (by weight) since the installation of the electrostatic precipitator.

Owens Brockway recently installed new electrostatic precipitators on each of their three furnace lines. Testing of the uncontrolled emissions from the furnaces was not available for this facility; therefore, the actual percentage level of PM10 reductions is not known. The manufacturer of the electrostatic precipitators expected a minimum of an 83% reduction in PM10 emissions (by weight), per the performance specifications submitted to the District.

Gallo Glass is the only facility identified that has ever performed simultaneous inlet and outlet PM and PM10 testing of their shared electrostatic precipitator. That testing indicates a total PM reduction efficiency of 88.5% (by weight) and a total PM10 reduction efficiency of 95.8% (by weight). Therefore, the available data suggests that Gallo's electrostatic precipitator provides a level of control that is equal to, or better than, the level of control identified for other glass furnaces equipped with an electrostatic precipitator.

Many operating factors may affect the control efficiency of an electrostatic precipitator. As evident from the testing performed at Gallo Glass, the size profile of the uncontrolled particulate matter affects the measured control efficiency. Additionally, the chemical makeup and resistivity of the uncontrolled particulate matter may affect the achievable control efficiency measured, and the chemical makeup is likely to vary based on the glass recipe and the quantity of trona injected for SO_x control. Moreover, some EPA documents suggest that the temperature of the particulate matter affects the resistivity, which in turn can affect the control efficiency of a precipitator. Consequently, some variation in the control efficiency of an electrostatic precipitator is expected; however, the variation cannot be estimated at this time due to the lack of available control efficiency source test data. Thus, the establishment of a control efficiency-based BACT limit is not recommended. Rather, the District recommends establishing a lb/ton based BACT limit because the body of source test data available for such a limit is much more reliable. To allow for all of the potential operating conditions and batch material recipes utilized by Gallo Glass, it is recommended that the existing BACT limit of 0.45 lb-PM10/ton be retained for this option.

Control Option #2: Baghouse/Ceramic Filter

A baghouse, or fabric filter, is an air pollution control device that removes particulates out of air or gas released from commercial processes or combustion processes using a filter media. The European Best Available Techniques reference document lists an expected emission rate of 0.03 to 0.12 lb-PM10/ton of glass pulled for furnaces utilizing a fabric filter system; however, this emission rate does not include the condensable fraction of PM10. Pursuant to the EU BAT reference document, baghouses are expected to offer a similar level of PM10 control as an electrostatic precipitator. Baghouses are not as commonly used as a PM10 control device for glass furnaces since the filters can be damaged by the intense heat of the glass furnace exhaust or acid gasses.

Ceramic filters operate similarly to fabric filters; however the ceramic filter is designed to withstand the intense heat of the glass furnace exhaust. Gallo Glass Company operates a ceramic filter that controls a portion of the exhaust gas from their glass furnaces. Gallo Glass Company is the only known container glass facility to utilize a ceramic filter in the United States. Extensive data has yet to be compiled to fully ascertain the level of control achievable from a ceramic filter system; therefore, the District accepts the statement from the European Union BAT documents that filter systems are expected to offer a similar level of control as an electrostatic precipitator.

Control Option #3: Cloud Chamber Scrubber

Cloud Chamber Scrubber technology, currently licensed and sold by Tri-Mer Corporation, works by passing the dirty gas stream through a chamber that contains a carefully generated scrubbing cloudlet of high density, charged water droplets. Inside the Cloud Chamber system, billions of charged droplets rapidly react with the particle-bearing process stream. When a particle and a droplet pass within 20 microns, electrical forces cause mutual attraction and the particle, being less massive by orders of magnitude, is pulled into the droplet. Each individual droplet becomes a particle collector. The cloud chamber scrubber technology is used to simultaneously reduce SO_x and PM₁₀ emissions.

This technology has been installed on one container glass furnace at Ardagh Glass in Seattle, WA, and the furnace operates with a permitted limit of 0.2 lb-PM₁₀/ton of glass pulled (filterable only). The manufacturer for this system does not expect this system to be as effective in controlling total PM₁₀ as the ceramic filter systems that it now markets for PM₁₀ control at glass furnaces.

Control Option #4: Electric Furnace

A portion of the PM₁₀ emissions from a glass furnace are created from the combustion of fuel. The use of an electric furnace eliminates this source of PM₁₀ emissions. Gallo Glass Company has one permitted electric furnace with a PM₁₀ limit of 0.024 lb/ton of glass pulled.

Startup, Shutdown and Idling Periods

The District's survey did not identify any control technologies or techniques that reduce PM₁₀ emissions during startup, shutdown, and idling period more effectively than the startup, shutdown, and idling requirements of District Rule 4354.

Step 2 - Eliminate Technologically Infeasible Options

There are no Technologically Infeasible control options.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Control Technology	Control Efficiency	Achieved in Practice
0.45 lb-PM10/ton of glass pulled, except during periods of startup, shutdown, and idling AND Compliance with District Rule 4354 requirements for startup, shutdown, and idling. ¹	N/A	Yes

Additionally, the use of an electric furnace must be considered as Alternate Basic Equipment for new units.

Step 4 - Cost Effectiveness Analysis

Per District policy APR 1305, Best Available Control Technology (BACT) Policy, Section IX.D.1, a cost effective analysis is not required for Achieved in Practice control options. An Evaluation of Alternate Basic Equipment is not required since this is an existing furnace. Since the only control option listed in Step 3 is Achieved in Practice, a Cost Effective Analysis is not required.

Step 5 - Select BACT

The applicant has proposed to limit their glass furnace to 0.45 lb-PM10/ton of glass pulled and to meet the Rule 4354 requirements for startup, shutdown, and idling. Thus, BACT for PM10 is satisfied by the applicant's proposal.

¹ This emission rate is expected when using an Electrostatic Precipitator. Baghouses and ceramic filters are expected to achieve an emission rate identical to that of an Electrostatic Precipitator, while cloud chamber scrubbers are expected to offer less control of PM10. Only the most effective control level was included in this table, since it is achieved in practice.

IV. CO Emissions:

Step 1 - Identify all control technologies

The District's current BACT Guideline 1.5.9 (Attachment I) currently lists a BACT option of 0.2 lb-CO/ton of glass pulled (Achieved in Practice).

An industry survey did not reveal any Achieved in Practice add-on controls for CO emissions emitted by container glass furnaces. CO and NOx emissions are generally inversely related for combustion sources. Thus, requiring a lower CO emissions rate could result in an increase in NOx emissions from this source category. The District's attainment plan for ozone identifies the reduction of NOx emissions as the most effective path towards attainment with State and Federal ozone Standards. Additionally, NOx emissions contribute to PM10 and PM2.5 pollution in the San Joaquin Valley. Therefore, a reduction in the CO BACT limit is not recommended at this time.

Electric Furnace Option

The combustion of fuel is the only expected source of CO emissions within a glass furnace. Therefore, the use of an electric furnace is expected to completely eliminate CO emissions.

Startup, Shutdown and Idling Periods

The District's survey did not identify any control technologies or techniques that reduce CO emissions during startup, shutdown, and idling period more effectively than the startup, shutdown, and idling requirements of District Rule 4354.

Step 2 - Eliminate Technologically Infeasible Options

There are no Technologically Infeasible control options.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Control Technology	Control Efficiency	Achieved in Practice
0.2 lb-CO/ton of glass pulled AND Compliance with District Rule 4354 requirements for startup, shutdown, and idling.	N/A	Yes

Additionally, the use of an electric furnace must be considered as Alternate Basic Equipment for new units.

Step 4 - Cost Effectiveness Analysis

This specific project did not trigger BACT for CO emissions; thus, a cost effective analysis is not required for this specific project.

Step 5 - Select BACT

This project did not trigger BACT for CO emissions; therefore, the selection of BACT for CO emissions is not required.

V. VOC Emissions:

Step 1 - Identify all control technologies

The District's current BACT Guideline 1.5.9 (Attachment I) lists the following BACT Options for VOC emissions:

- Natural gas-fired furnace with VOC emissions of ≤ 0.2 lb-VOC/ton of glass pulled. (Achieved in Practice)
- Natural gas-fired furnace with a catalytic oxidizer and VOC emissions of ≤ 0.01 lb-VOC/ton of glass pulled (95% control efficiency, Technologically Feasible)
- Natural gas-fired oxy-fuel furnace with LPG backup fuel and VOC emissions of ≤ 0.01 lb-VOC/ton of glass pulled (Technologically Feasible).
- Natural gas-fired furnace with VOC emissions of ≤ 0.184 lb-VOC/ton of glass pulled (block 24-hour average, Technologically feasible).

The District reviewed the source test results from the three container glass facilities operating within the District. Measured VOC emissions have ranged from 0.003 lb-VOC/ton of glass pulled to 0.011 lb-VOC/ton of glass pulled, for both oxy-fuel fired furnaces and natural gas/air fired furnaces. To allow for an adequate margin of compliance, a BACT level of 0.02 lb-VOC/ton is recommended.

Electric Furnace Option

The combustion of fuel is the only expected source of VOC emissions within a glass furnace. Therefore, the use of an electric furnace is expected to completely eliminate the emission of VOC compounds.

Startup, Shutdown and Idling Periods

The District's survey did not identify any control technologies or techniques that reduce VOC emissions during startup, shutdown, and idling period more effectively than the startup, shutdown, and idling requirements of District Rule 4354.

Step 2 - Eliminate Technologically Infeasible Options

The District's previous BACT Guideline listed catalytic oxidizers as a technologically feasible control option. Container glass furnaces already operate with temperatures in excess of 2,000 degrees Fahrenheit, equivalent to the chamber temperatures of a thermal oxidizer. Therefore, a container glass furnace is expected to already inherently control VOC emissions to the level that would be expected from the use of a catalytic oxidizer. The use of a catalytic oxidizer to control VOC emissions from container glass furnaces is not expected to offer a significant nor measureable quantity of additional VOC emission reductions; therefore, the use of a catalytic oxidizer will be eliminated from consideration.

Step 3 - Rank Remaining Control Technologies by Control Effectiveness

Control Technology	Control Efficiency	Achieved in Practice
0.02 lb-VOC/ton of glass pulled, except during periods of startup, shutdown, and idling AND Compliance with District Rule 4354 requirements for startup, shutdown, and idling.	N/A	Yes

Additionally, the use of an electric furnace must be considered as Alternate Basic Equipment for new units.

Step 4 - Cost Effectiveness Analysis

Per District policy APR 1305, Best Available Control Technology (BACT) Policy, Section IX.D.1, a cost effective analysis is not required for Achieved in Practice control options. An Evaluation of Alternate Basic Equipment is not required since this is an existing furnace. Since the only control option listed in Step 3 is Achieved in Practice, a Cost Effective Analysis is not required.

Step 5 - Select BACT

The applicant has proposed to limit their glass furnace to 0.02 lb-VOC/ton of glass pulled and to meet the Rule 4354 requirements for startup, shutdown, and idling. Thus, BACT for VOC is satisfied by the applicant's proposal.

Attachment I

Current BACT Guideline 1.5.9 for Container Glass Manufacturing

APPENDIX V

Risk Management Review and Ambient Air Quality Analysis Results

San Joaquin Valley Air Pollution Control District Risk Management Review

To: James Harader AQE – Permit Services
 From: Esteban Gutierrez AQS – Technical Services
 Date: May 2, 2014
 Facility Name: Gallo Glass Co
 Location: 605 S Santa Cruz Ave, Modesto CA
 Application #(s): N-1662-2-17
 Project #: N-1141107

A. RMR SUMMARY

RMR Summary			
Categories	Furnace (Unit 2-17)	Project Totals	Facility Totals
Prioritization Score	94	>1.0	>1.0
Acute Hazard Index	0.00	0.00	0.01
Chronic Hazard Index	0.00	0.00	0.00
Maximum Individual Cancer Risk (10 ⁻⁶)	1.73	1.73	2.51
T-BACT Required?	Yes		
Special Permit Conditions?	No		

Proposed Permit Conditions

To ensure that human health risks will not exceed District allowable levels; the following permit conditions must be included for:

Unit # 2-17

No special conditions are required.

B. RMR REPORT

I. Project Description

Technical Services received a request on April 25, 2014, to perform an Ambient Air Quality Analysis and a Risk Management Review for the modification of a glass Furnace.

II. Analysis

Technical Services performed a prioritization using the District's HEARTs database. Since the total facility prioritization score was greater than one, a refined health risk assessment was required. Emissions calculated using Ventura County emission factors for Glass Furnace were input into the HEARTs database. The AERMOD model was used, with the parameters outlined below and meteorological data for 2005-2009 from Modesto to determine the dispersion factors (i.e., the predicted concentration or X divided by the normalized source strength or Q) for a receptor grid. These dispersion factors were input into the Hot Spots Analysis and Reporting Program (HARP) risk assessment module to calculate the chronic and acute hazard indices and the carcinogenic risk for the project.

The following parameters were used for the review:

Analysis Parameters Unit 2-17			
Source Type	Point	Location Type	Urban
Stack Height (m)	42	Closest Receptor (m)	160
Stack Diameter. (m)	1.46	Type of Receptor	Residential
Stack Exit Velocity (m/s)	6.93	Max Hours per Year	8760
Stack Exit Temp. (°K)	613	Fuel Type	NA
Furnace throughput (PM10/yr)	9,629		

Technical Services performed modeling for criteria pollutants CO, NO_x, SO_x and PM₁₀; as well as a RMR. The emission rates used for criteria pollutant modeling were 0 lb/hr CO, 2.75 lb/hr NO_x, 3.21 lb/hr SO_x, and 2.3 lb/hr PM₁₀. The engineer supplied the maximum fuel rate for the IC engine used during the analysis.

The results from the Criteria Pollutant Modeling are as follows:

Criteria Pollutant Modeling Results*

Diesel ICE	1 Hour	3 Hours	8 Hours	24 Hours	Annual
CO	Pass	X	Pass	X	X
NO _x	Pass ¹	X	X	X	Pass
SO _x	Pass	Pass	X	Pass	Pass
PM ₁₀	X	X	X	Pass	Pass ²
PM _{2.5}	X	X	X	Pass ²	Pass ²

*Results were taken from the attached PSD spreadsheet.

¹The project was compared to the 1-hour NO₂ National Ambient Air Quality Standard that became effective on April 12, 2010 using the District's approved procedures.

²The criteria pollutants are below EPA's level of significance as found in 40 CFR Part 51.165 (b)(2).

III. Conclusion

The acute and chronic indices are below 1.0 and the cancer risk associated with the project is greater than 1.0 in a million, but less than 10 in a million. **In accordance with the District's Risk Management Policy, the project is approved with Toxic Best Available Control Technology (T-BACT).**

To ensure that human health risks will not exceed District allowable levels; the permit conditions listed on page 1 of this report must be included for this proposed unit.

These conclusions are based on the data provided by the applicant and the project engineer. Therefore, this analysis is valid only as long as the proposed data and parameters do not change.

The emissions from the proposed equipment will not cause or contribute significantly to a violation of the State and National AAQS.

III. Attachments

- A. RMR request from the project engineer
- B. Additional Information from the applicant/project engineer
- C. Toxic emissions summary
- D. Prioritization score
- E. Facility Summary

APPENDIX VI
Startup Exemption Submittal



**GALLO GLASS
COMPANY**

18 March 2014

Via Email & Certified Mail

Mark Schonhoff
San Joaquin Valley Air Pollution Control District
4800 Enterprise Way
Modesto CA 95356

Re: Furnace 2 Rebuild

Dear Mark:

The following information is submitted to complete the application for an ATC for the repair of furnace 2.

Gallo Glass would like to pursue a short exemption from the emission limits of Rule 4354, according to Section 5.2.1, as follows:

- The time required to bring the furnace to operating temperatures on the primary combustion system is approximately 120 hours.
- The time required to fill the furnace and establish a glass pull is an additional 4 to 5 days.
- Time to hot seal the furnace and tune the combustion systems is an additional 7 to 8 days.
- Total maximum time the exemption would be necessary is 18 days.

If there is any additional information required, kindly call Dan Armagost or me.

Sincerely,

Julia Bonardi

cc: Dan Armagost, Anne Root Becraft & Joe Majewski - Gallo Glass Company
Chris Savage & Christi Ryan - E&J Gallo Winery Corporate Environmental Affairs

APPENDIX VII
Quarterly Net Emissions Change

QNEC Calculations

$$\text{QNEC} = (\text{PE2} - \text{BE}) \div 4$$

As shown in Section VII.C.5, BE is equal to PE1 for all pollutants. Therefore, the equation for QNEC reduces to:

$$\text{QNEC} = (\text{PE2} - \text{PE1}) \div 4$$

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Pollutant	PE2 (lb/year)	PE1 (lb/year)	QNEC (lb/qtr)
NOx	204,035	179,923	6,028.0
SOx	155,381	127,231	7,037.5
PM10	71,298	58,382	3,229
CO	31,390	115,665	-21,068.75
VOC	3,139	29,559	-6,605.0

APPENDIX VIII
EPA Comments and District Response

Comment 1: (NOx emission limit – Compliance Verification)

Furnace #2 has a NOx emission limit of 1.3 lb/ton of glass produced, while the other 3 furnaces are subject to the higher NOx emission limits in Rule 4354, i.e., 1.4 lb/ton of glass produced. EPA notes however, that Condition 12 of the authority to construct (ATC) requires only one CEM to be used if all 4 furnaces are vented to a common stack. By allowing the use of a single CEM, it is not clear how compliance with the differing emission limits will be demonstrated. Similar to the Rule 4354 Section 9 language (regarding multiple furnaces), the District must add a condition to clarify that any CEM measurement greater than the 1.3 lb/ton NOx emission limit constitutes a violation for Furnace #2 for each 30-day rolling average period above this emission limit, or provide an alternative method for verifying compliance with the Furnace #2 emission limit. This type of permit condition is necessary to prevent the possibility of the source claiming that Furnace #2 was under its emission limit when averaged with the other furnaces that have higher emission limits.

District Response to EPA Comment #1:

Gallo Glass Company's furnace battery has historically operated at emission levels less than 1.3 lb-NOx/ton of glass produced over a rolling 30-day average. The District has added language to permit condition #49 to clarify that a CEM measurement greater than 1.3 lb-NOx/ton constitutes a violation for each 30-day rolling average period above this emission limit.

Comment 2: (SOx emission limit – Compliance Verification)

Condition 52 of the proposed ATC specifies a SOx emission limit of 0.99 lb/ton of glass produced (over a rolling 30 day average), when the glass being produced utilizes mixed color cullet of 25% or more by weight. Similarly Condition 53 specifies a SOx emission limit of 0.81 lb/ton of glass produced (over a rolling 30 day average), when the glass being produced utilizes mixed color cullet of less than 25% by weight. Because Condition 12 allows the use of a single CEMS for all 4 furnaces, it is not clear how compliance with the lower 0.81 lb/ton emission limit can be determined if at least one furnace utilizes mixed colored cullet greater than 25%. The permit must include all conditions necessary to verify compliance with each permit condition and operating scenario. Please revise the permit to add conditions as necessary to verify compliance with both of these stated SOx emission limits.

District Response to EPA Comment #2:

The SOx emission limits referred to in EPA Comment #2 originated from the amendments to District Rule 4354 that came into effect on October 16, 2008. Gallo Glass permitted these units as a furnace battery, in accordance with the provisions of District Rule 4354 Section 9.0. Pursuant to the final staff report for the October 16, 2008 amendments to District Rule 4354:

In lieu of compliance with emission limits described in the previous paragraph, operators of multiple furnaces/furnace batteries can choose to consider the multiple furnace/furnace battery as a single unit. If the operator makes this election, the multiple furnaces/furnace battery would be subject to the provisions of Section 9.0.

Thus, the intent of Rule 4354 was to consider a combination of multiple furnaces within a furnace battery as a single unit when evaluating District Rule 4354 compliance. Furthermore, the District Rule 4354 limits were used as the basis for establishing BACT for SOx emissions from glass furnaces.

The mixed color cullet content utilized by each of the individual furnaces within the furnace battery is not relevant, since compliance with the furnace battery limits is evaluated as though the furnace battery is a single unit. When the furnace battery utilizes mixed color cullet of 25% or more by weight, the 0.99 lb-SOx/ton limit applies. When the furnace battery utilizes mixed color cullet of less than 25% by weight, the limit of 0.81 lb-SOx/ton applies. SOx emissions from the furnace battery are verified via source testing and continuous monitoring. Additional requirements are not necessary to verify compliance with the applicable SOx requirements.

Comment 3: (PM10 emission limits – Compliance Verification)

The proposed ATC provides PM10 emission limits that apply when the control equipment is in operation (Condition 54) and during full or partial emission control system bypass episodes (Condition 55). While Condition 82 requires records of the cumulative annual number of hours that the emission control system is either fully or partially bypassed, there is no specific limit on the number of hours the PM10 control units may be bypassed. (EPA notes that ATC condition 57 limits the amount of time that the furnace exhaust is not required to be fully treated by a control device to 144 hrs per calendar year, but this condition is not specific to PM10.) EPA could not find any discussion in the evaluation or any condition in the ATC that would specify when the furnace would be allowed to operate during a full or partial bypass of the emission control system, except during routine maintenance, which is not specified in condition 55. Please revise the evaluation to explain why such a period is needed, and add any conditions necessary to minimize operation without full PM10 emission controls being in operation. EPA also notes that the ATC does not include any source test requirements that reflect these two different operating scenarios. Please revise the ATC to include a source test requirement for both modes of operation.

District Response to EPA Comment #3:

The permit conditions have been modified to further clarify that the electrostatic precipitator emission control system may only be bypassed for 144 hours per calendar year for routine maintenance and that the 0.71 lb-PM10/ton of glass produced limit only applies during the bypass of the emission control system for routine maintenance.

The 0.71 lb-PM10/ton of glass produced limit that the District used to characterize uncontrolled emissions from the glass furnace battery during emission bypass periods was derived from PM source tests that Gallo Glass Company conducted on their furnaces prior to installing PM emission controls. The current bypass stack configuration is not conducive to source testing and this limit only applies during the 144 hour exemption during routine maintenance. Therefore, additional testing requirements have not been added to the permit.

Comment 4: (AIP and Clean Unit Determination)

The District's evaluation relies on BACT Guideline 1.5.9 for Container Glass Production Furnaces as the basis for determining that the current furnace is a clean emissions unit. We note that the Guideline has not been updated since June 2006 and appears out of date given that lower emission rates have been achieved in practice. The District evaluation does not discuss or consider if any lower emission limits represent BACT for this source category. For example, Saint Gobain's Furnace #2 has been operating with a limit of 1.3 lb/ton (24 hour block) emission limit since 2007, making this emission limit "achieved in practice" for container glass (Assuming Saint Gobain has been meeting this emission limit). In addition, the Gallo Glass plant under evaluation has reported NOx and PM10 emission rates of 0.93 and 0.18 lbs/ton of glass pulled, respectively (See pgs 14 & 15 of the evaluation). Accordingly, the District's BACT Guideline 1.5.9 must be updated to reflect at least the 1.3 lb/ton emission rate for which there has been an enforceable emission limit. In addition, the District must consider whether a lower emission rate has been achieved in practice for all pollutants subject to BACT and update BACT Guideline 1.5.9 as needed.

The fact that a 1.3 lb/ton of glass pulled emission rate has been achieved in practice since 2007 means that the District's determination that the existing emission rate of 1.4 lb/ton of glass pulled qualifies the furnace as a Clean Emissions Unit for NOx (see page 12) is not correct. The same may be true for PM10 emissions, depending on the District's evaluation of the PM10 achieved in practice emission rate. Please re-evaluate whether the existing furnace qualifies as a Clean Emissions Unit and revise the evaluation as needed if it is not a Clean Emissions Unit. If necessary, please revise any other portions of the evaluation affected by a change in Baseline Emissions for these pollutants.

District Response to EPA Comment #4

The District has performed a revised BACT Analysis for Container Glass Manufacturing, included in Appendix IV of this document. As a result of performing the revised BACT Analysis, the achieved in practice emission levels for NOx and VOC were decreased. Gallo Glass Company's furnace has historically achieved emission rates that meet the revised achieved in practice emission levels; therefore, the furnace remains clean for those pollutants. The Baseline Emission and Offset calculations have been revised accordingly.

Comment 5: (Federal Major Modification and PSD Determinations)

On page 15 of the evaluation, under the header Federal Major Modification (FMM), the evaluation states "For the 10 years following the modification to the furnace, the facility projects that the actual emissions will be no more than 60% greater than the baseline actual emissions from the furnace." The definition of Projected Actual Emissions in 40 CFR 51.165(a)(xxviii)(B) requires the owner or operator of a major stationary source to "consider all relevant information, including but not limited to, historical operational data, the company's own representations, the company's expected business activity and the company's highest projections of business activity, the company's filings with the State or Federal regulatory authorities, and compliance plans under the approved plan;..." when projecting future actual emissions. Accordingly, a source wishing to calculate post-project emissions for a modification based on "projected actual emissions," rather than the potential to emit, must provide the required relevant information, as indicated in the definition of projected actual emissions, to

substantiate the actual emission projection. A source may not simply choose or guesstimate a value. Because the evaluation does not provide any discussion of the basis for the stated projected actual emissions, EPA must assume one was not provided. If a justification is not provided, then a source must use the potential to emit of the proposed project to calculate emission increases. Please either provide an appropriate justification for the projected post-project emission rate, or use the potential to emit for the project to calculate the emission increases for NOx, and PM10 and PM2.5 if necessary. We note that the PSD emission calculations also rely on the FMM calculations, therefore we are also requesting that these calculations be reviewed and updated, as necessary, in light of this comment.

District Response to EPA Comment #5

Gallo Glass has recalculated the Projected Actual Emissions to better conform to the Federal PSD criteria specified in 40 CFR 52.21. For an existing emission unit for which the design capacity or PTE is being increased, 40 CFR 52.21(b)(41) defines PAE as the maximum annual rate (in tons per year) at which an existing emission unit is projected to emit a regulated NSR pollutant in any consecutive 12-month period in the ten years following the date the unit resumes regular operation after the project. USEPA further allows the exclusion, from the PAE, of projected emissions that an existing unit could have accommodated during the baseline period that are also unrelated to the particular project, including any increased utilization due to the project demand growth (i.e., demand growth exclusion).

The Federal PAE from the modified Glass Furnace #2, as summarized in the following table, updates the calculations previously presented in the original ATC application. The federal PAE in the following table was calculated from the Baseline Actual emissions for each pollutant and the ratio of projected to baseline glass production. Gallo has forecasted glass production for the glass plant for the five-year period ending in 2020 based on the planned replacement of its existing glass forming machines on Furnace #2 line with new higher capacity units to accommodate the increase in glass production capacity at Furnace #2. Gallo Glass expects an increase (based on projected market growth) in actual glass production from furnace #2 from 298 tons per day (24 months ending October 2013) to 402 tons per day (annual average, calendar days) in 2016 (i.e., the first full year of operation with the rebuilt furnace), and then to 409 tons per day (annual average, calendar days) in 2020.

The 2016 to 2020 rate of growth was extrapolated for a further five years, to yield a projected glass production rate of 417 tons per day (annual average, calendar days in 2025. All increases in glass production were conservatively assumed to be associated with the project (i.e., Gallo Glass assumed that the existing Furnace #2 had no excess capacity to accommodate additional increased production). The recalculated projected actual emissions, using the 52.21 methodology, are presented in the below table. The pertinent sections of the evaluation were updated to reflect the revised projected actual emission data.

Projected Actual Emissions (Based on 52.21 methodology, projected market growth)	
Pollutant	Projected Actual Emissions (tons per year)
CO	0.11
NOx	70.8
PM ₁₀	13.9
PM _{2.5}	9.82 ¹
SOx	77.7 ²
VOC	1.54
GHG	44,274

¹ PM_{2.5} emissions were assumed to comprise 71% of PM₁₀ emission rates based on Table 11.15-3 of AP-42 for controlled furnaces.

² PAE for SOx is equal to the post- project potential to emit for SOx.

Comment 6: (BACT Determinations)

The District's definition of Best Available Control Technology (BACT), as defined in Rule 2201 Section 3.10, includes the most stringent emission limitation or control technique which has been 1) Achieved in practice for such category and class of source; or 2) Contained in any State Implementation Plan approved by the Environmental Protection Agency for such category and class of source; or 3) Contained in an applicable federal New Source Performance Standard; or 4) Any other emission limitation or control technique, including process and equipment changes of basic or control equipment, found by the APCO to be cost effective and technologically feasible for such class or category of sources or for a specific source. EPA notes that the District's BACT Guideline 1.5.9 for Container 3 Glass Production Furnaces was last updated in 2006, more than 8 years ago. Rule 4354 - Glass Melting Furnaces, now contains emission limits lower than those found in this BACT Guideline. Also, as noted above in Comment 4, the existing Gallo Glass facility has reported actual emissions significantly below the emission rates specified in the District's BACT Guideline 1.5.9.

Based on the definition of BACT, the applicable SIP limits and reported emission rates, it appears that BACT for Glass Melting Furnaces is significantly lower than listed than the emission rates specified in Guideline 1.5.9. As part of this application review, consistent with the definition of BACT, the District must re-evaluate what level of control constitutes BACT for the glass furnace being modified. We also encourage the District to update the Glass Furnace BACT guideline based on this analysis.

District Response to EPA Comment #6

The District has performed a revised BACT Analysis for Container Glass Manufacturing – Furnaces, included in Appendix IV of this document. Please refer to the revised BACT Analysis in Appendix IV for further details. The District's BACT Clearinghouse will be updated to include this BACT determination.

Comment 7: (BACT Exemptions)

The District's evaluation states that BACT is triggered for NOx, SOX and PM10 (See pg 25). Accordingly, the ATC contains specific emission rate limits for each of these pollutants (See ATC conditions 49, 52, 53, 54 and 55) and does not specify any periods when these limits do not apply. Condition 15 provides that the emission limitations of Rule 4354 shall not apply during periods of startup, shutdown and idling, as defined by Rule 4354. EPA notes however, that all of the stated ATC emission limits are lower than those found in Rule 4354 and list the District NSR or Rule 2201 as the basis of each condition. Therefore, EPA reads the permit as not providing any relief from these NSR based emission limits during start-up, shutdown and idling operations. While the best available control technology is to be used at all times, EPA does not believe the glass furnace can meet these NSR based emission limits while operating under these specific scenarios. Please update the evaluation to include a BACT determination for these pollutants, during periods of start-up, shutdown and idling; and then include conditions as necessary to ensure compliance with the BACT determination during these operating scenarios.

District Response to EPA Comment #7

The permit conditions have each been revised to indicate that the emission limits do not apply during startup, shutdown, and idling. Additionally, the District has addressed startup, shutdown, and idling periods in the revised BACT Analysis in Appendix IV.

Comment 8: (Routine Maintenance)

Section 5.10 of Rule 4354 contains specific provisions for the routine maintenance of add-on emission control systems. It provides that a glass furnace is exempted from the applicable emission limits contained in Sections 5.1 through 5.4, during the routine maintenance of an add-on emission control system, if two specific conditions are met. First, routine maintenance of all add-on emission control systems may not exceed 144 hrs per calendar year, and second the routine maintenance must be conducted in a manner consistent with good air pollution control practices for minimizing emissions. EPA notes that ATC Condition 57 limits the amount of time that the furnace exhaust is not required to be fully treated by a control device to 144 hrs per calendar year and that the stated basis is both NSR and Rule 4354. The language in Condition 57 is not consistent with the provisions of Rule 4354 Section 5.10, in that it provides an unconditional exemption for up to 144 hrs/calendar year. This condition must be revised to be consistent with the provisions of Rule 4354, Section 5.10, to only exempt the furnaces from the rule's emission limits during periods of routine maintenance, not to exceed 144 hr/calendar year. An additional condition must be included to require the use of good air pollution control practices for minimizing emissions whenever the add-on emission control system is undergoing routine maintenance. EPA also notes that that the term "routine maintenance" is not defined in the rule or permit. EPA believes that this term should be defined to ensure the source does not abuse this exemption. Please revise the ATC to include conditions consistent with the provisions of Rule 4354 Section 5.10.

District Response to EPA Comment #8

The permit conditions have been modified to clarify that the 144 hour exemption applies only to the routine maintenance of the control devices, to include a brief definition of "routine maintenance", and to address the other concerns with routine maintenance requirements that were identified in EPA Comment #8.



AUTHORITY TO CONSTRUCT

PERMIT NO: N-1662-2-17

ISSUANCE DATE: 12/01/2014

LEGAL OWNER OR OPERATOR: GALLO GLASS COMPANY
MAILING ADDRESS: PO BOX 1230
MODESTO, CA 95353

LOCATION: 605 S SANTA CRUZ AVE
MODESTO, CA 95354

EQUIPMENT DESCRIPTION:

MODIFICATION OF GLASS FURNACE #2 WITH 12 GAS/OXYGEN BURNERS AND ASSOCIATED FORMING EQUIPMENT (80 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR.: TO REBRICK THE FURNACE, TO REMOVE TWO 2.5 MMBTU/HR BURNERS, TO EXPAND THE FOOTPRINT OF THE FURNACE TO 1425 SQUARE FEET, TO INCREASE THE FURNACE PRODUCTION CAPACITY TO 430 TONS OF GLASS PULLED PER DAY, TO LIMIT NOX EMISSIONS TO 1.3 LB/TON OF GLASS PULLED, TO LIMIT CO EMISSIONS TO 0.2 LB/TON OF GLASS PULLED, AND TO LIMIT VOC EMISSIONS TO 0.02 LB/TON OF GLASS PULLED. POST-PROJECT EQUIPMENT DESCRIPTION: GLASS FURNACE #2 WITH 10 MAXON GAS/OXYGEN BURNERS (OR EQUIVALENT) AND ASSOCIATED FORMING EQUIPMENT (75 MMBTU/HR MAX HEAT CAPACITY). THIS FURNACE IS DUCTED THROUGH A STACK COMMON TO PERMIT UNITS N-1662-1, N-1662-2, N-1662-3 AND N-1662-4. THE FURNACES ARE SERVED BY A SHARED SOX SCRUBBER AND AN ELECTROSTATIC PRECIPITATOR AND/OR A TRI-MER UTF460 CERAMIC FILTER TYPE DUST COLLECTOR, AND A FURNACE CHARGING AREA SERVED BY TWO DUST COLLECTORS

CONDITIONS

1. This Authority to Construct serves as a written certificate of conformity with the procedural requirements of 40 CFR 70.7 and 70.8 and with the compliance requirements of 40 CFR 70.6(c). [District Rule 2201] Federally Enforceable Through Title V Permit
2. Prior to operating with modifications authorized by this Authority to Construct, the facility shall submit an application to modify the Title V permit with an administrative amendment in accordance with District Rule 2520 Section 5.3.4. [District Rule 2520, 5.3.4] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST** NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Seyed Sadredin, Executive Director / APCO


Arnaud Marjollet, Director of Permit Services

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3. Prior to operating equipment under this Authority to Construct, permittee shall surrender NOx emission reduction credits for the following quantity of emissions (not including the offset ratio): 1st quarter - 9,114 lb, 2nd quarter - 9,215 lb, 3rd quarter - 9,317 lb, and 4th quarter - 9,317 lb. Offsets shall be provided at a distance offset ratio 1.5 to 1. [District Rule 2201] Federally Enforceable Through Title V Permit
4. Prior to operating equipment under this Authority to Construct, permittee shall surrender SOx emission reduction credits for the following quantity of emissions (not including the offset ratio): 1st quarter - 6,941 lb, 2nd quarter - 7,018 lb, 3rd quarter - 7,095 lb, and 4th quarter - 7,096 lb. Offsets shall be provided at the applicable offset ratio specified in District Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
5. Prior to operating equipment under this Authority to Construct, permittee shall surrender PM10 emission reduction credits for the following quantity of emissions (not including the offset ratio): 1st quarter - 3,185 lb, 2nd quarter - 3,220 lb, 3rd quarter - 3,255 lb, and 4th quarter - 3,256 lb. Offsets shall be provided at the applicable offset ratio specified in District Rule 2201 (as amended 4/21/11). [District Rule 2201] Federally Enforceable Through Title V Permit
6. Prior to operating equipment under this Authority to Construct, permittee shall surrender VOC emission reduction credits for the following quantity of emissions (not including the offset ratio): 1st quarter - 140 lb, 2nd quarter - 142 lb, 3rd quarter - 143 lb, and 4th quarter - 143 lb. Offsets shall be provided at a distance offset ratio of 1.5 to 1. [District Rule 2201] Federally Enforceable Through Title V Permit
7. ERC certificates S-4126-1, N-768-2, N-900-2, S-4214-5, S-4215-5, C-1280-5, C-1281-5, and N-161-4 (or a certificate split from these certificates) shall be used to supply the required offsets, unless a revised offsetting proposal is received and approved by the District, upon which this Authority to Construct shall be reissued, administratively specifying the new offsetting proposal. Original public noticing requirements, if any, shall be duplicated prior to reissuance of this Authority to Construct. [District Rule 2201] Federally Enforceable Through Title V Permit
8. No air contaminants shall be discharged into the atmosphere for a period or periods aggregating more than 3 minutes in any one hour which is as dark or darker than Ringelmann #1 or equivalent to 20% opacity and greater, unless specifically exempted by District Rule 4101 (02/17/05). If the equipment or operation is subject to a more stringent visible emission standard as prescribed in a permit condition, the more stringent visible emission limit shall supersede this condition. [District Rule 4101, and County Rules 401 (in all eight counties in the San Joaquin Valley)] Federally Enforceable Through Title V Permit
9. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
10. Particulate matter emissions shall not exceed 0.1 grain/dscf in concentration. [District Rule 4201 and Stanislaus County Rule 404] Federally Enforceable Through Title V Permit
11. The furnace shall be fired on natural gas and LPG only. [District NSR Rule] Federally Enforceable Through Title V Permit
12. The furnace shall have continuous monitoring systems for NOx and SOx. The monitoring devices shall have continuous recording devices, and all records shall be kept on site. [District Rules 1080 and 4354, §5.9] Federally Enforceable Through Title V Permit
13. One continuous emissions monitoring (CEM) system may be used for monitoring oxy-fuel fired furnaces #1, #2, #3, and #4 provided all of the exhaust gases of each of these furnaces are ducted to a common stack, and monitored down stream of the common stack. The CEMS shall comply with the requirements of 40 Code of Federal Regulations (CFR) Part 51, 40 CFR Parts 60.7 and 60.13, 40 CFR Part 60 Appendix B (Performance Specifications) and Appendix F (Quality Assurance Procedures) and the applicable sections of Rule 1080 (Stack Monitoring). [District Rule 4354, 5.9 and 6.6.1] Federally Enforceable Through Title V Permit
14. The facility shall install and maintain equipment, facilities, and systems compatible with the District's CEM data polling software system and shall make CEM data available to the District's automated polling system on a daily basis. [District Rule 1080] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

15. The common exhaust stack shall be equipped with permanent provisions to allow collection of stack gas samples consistent with EPA test methods and shall be equipped with safe permanent provisions to sample stack gases with a portable NO_x, CO, and O₂ analyzer during District inspections. The sampling ports shall be located in accordance with the CARB regulation titled California Air Resources Board Air Monitoring Quality Assurance Volume VI, Standard Operating Procedures for Stationary Source Emission Monitoring and Testing. [District Rule 1081] Federally Enforceable Through Title V Permit
16. The permittee shall notify the District at least 24 hours prior to initiating idling, shutdown, or startup of the glass furnace and this notification shall include: The date and time of the start of the exempt operation, reason for performing the operation, and an estimated completion date. The permittee shall notify the District by telephone within 24 hours after completion of the operation and shall maintain operating records and/or support documentation necessary to claim exemption. [District Rule 4354] Federally Enforceable Through Title V Permit
17. During startups, the permittee shall comply with the requirements of section 5.5 of District Rule 4354. [District Rule 4354, §5.5] Federally Enforceable Through Title V Permit
18. The startup exemption time period shall not exceed 18 days, beginning from the time of primary combustion system activation. [District Rule 4354] Federally Enforceable Through Title V Permit
19. During start-up period, the stoichiometric ratio of the primary furnace combustion system shall not exceed 5% excess oxygen, as calculated from the actual fuel and oxidant flow measurements for combustion in the furnace, except during the time when the oxidant stream for an oxy-fuel fired furnace contains at least 50% oxygen. [District Rule 4354] Federally Enforceable Through Title V Permit
20. The emission control systems shall be in operation whenever conditions are consistent with equipment manufacturer's specifications during startup, idling and shutdown periods. [District Rule 4354] Federally Enforceable Through Title V Permit
21. The duration of a furnace shutdown shall not exceed 20 days, measured from the time furnace operations drop below the idle threshold specified in Section 3.17 of District Rule 4354 to when all emissions from the furnace cease. [District Rule 4354] Federally Enforceable Through Title V Permit
22. NO_x, CO, VOC, SO_x, and PM₁₀ emissions during idling shall not exceed the amount as calculated using the following equation: NO_x, CO, VOC, SO_x, or PM₁₀ (lb/day) = Applicable emission limit (lb/ton) x Furnace permitted production capacity (tons/day). [District Rule 4354] Federally Enforceable Through Title V Permit
23. The oxygen to fuel ratio shall be maintained within the range shown by the most recent source test to result in compliance with the CO and VOC limits of this permit. The acceptable range of the oxygen to fuel ratio shall be established during the initial source test and during each subsequent annual source test. [District Rule 4354] Federally Enforceable Through Title V Permit
24. Particulate matter emissions shall not exceed the hourly rate as calculated in District Rule 4202 using the equation $E=3.59P^{0.62}$ ($P < 30$ tph) or $E=17.31P^{0.16}$ ($P > 30$ tph). [District Rule 4202] Federally Enforceable Through Title V Permit
25. Sulfur compound emissions shall not exceed 0.2% by volume, 2000 ppmv, on a dry basis averaged over 15 consecutive minutes. [Stanislaus County Rule 407 and District Rule 4801] Federally Enforceable Through Title V Permit
26. Source testing to demonstrate compliance with permit conditions and all rules and regulations for both natural gas and LPG shall be conducted within 60 days after the end of the start-up exemption, and at least once every calendar year thereafter. NO_x and CO testing shall be performed using CARB Method 100. VOC testing shall be performed using EPA method 25A. PM₁₀ testing shall be performed using EPA methods 201 and 202, EPA methods 201a and 202, or CARB methods 501 and 5. SO_x testing shall be performed using EPA Method 8 and CARB Method 1-100. [District Rules 1081, 2201, 2520, §9.3.2; and 4354, 6.4 and 6.5] Federally Enforceable Through Title V Permit
27. Source testing when firing on LPG fuel need not be performed if the LPG fuel usage for this furnace does not exceed 100 hours during any one calendar year. A source test shall be performed within 90 days after this furnace exceeds 100 hours of operation, on LPG, on an annual basis. [District Rule 1081] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

28. Source testing shall be conducted by a CARB-certified source testing contractor. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to source testing. The results of each source test shall be submitted to the District within 60 days after the source test date. [District Rule 1081] Federally Enforceable Through Title V Permit
29. Source test conditions shall be representative of operations equal to or greater than 60 percent of the fuel use capacity for each furnace as stated in the Permit to Operate. [District Rule 4354, §6.4.2] Federally Enforceable Through Title V Permit
30. For source testing purposes, the arithmetic average of three 30-consecutive-minute test runs shall be used to determine compliance with NO_x, CO, VOC, and SO_x emission limits. [District Rule 4354] Federally Enforceable Through Title V Permit
31. For source testing purposes, the arithmetic average of three 60-consecutive-minute test runs shall be used to determine compliance with PM₁₀ emission limits. [District Rule 4354] Federally Enforceable Through Title V Permit
32. For source testing purposes, if two of the three runs individually demonstrate emissions above the applicable limit, the test cannot be used to demonstrate compliance for the furnace, even if the averaged emissions of all three test runs is less than the applicable limit. [District Rule 4354] Federally Enforceable Through Title V Permit
33. PM and PM₁₀ source testing shall be conducted downstream of the electrostatic precipitator and the ceramic filter dust collector in the common stack. Furnaces #1, #2, #3, and #4 must operate simultaneously during source testing unless prior approval is obtained from the District. [District Rule 1081] Federally Enforceable Through Title V Permit
34. An annual Relative Accuracy Test Audit (RATA) shall be performed on the continuous monitoring system as outlined in 40 CFR Part 60 Appendix B. [District Rule 1080] Federally Enforceable Through Title V Permit
35. The owner/operator shall perform a relative accuracy test audit (RATA) as specified by 40 CFR Part 60, Appendix F (CGAs and RATAs) and if applicable 40 CFR Part 75, Appendix B (linearity and RATAs) at least once every four calendar quarters and annually within 30 days of the anniversary date of the initial test. The permittee shall comply with the applicable requirements for quality assurance testing and maintenance of the continuous emission monitor equipment in accordance with the procedures and guidance specified in 40 CFR Part 60, Appendix F. [District Rule 1080] Federally Enforceable Through Title V Permit
36. An exceedance of a NO_x or SO_x emission limit as indicated by the CEMS shall be reported by the operator to the APCO within 24 hours. The notification shall include 1) name and location of the facility, 2) identification of furnace(s) causing the exceedances, 3) calculation of actual NO_x, CO and VOC emissions, and 4) corrective actions and schedules to complete the work. [District Rule 1080 and Stanislaus County Rule 1080] Federally Enforceable Through Title V Permit
37. The owner or operator shall, upon written notice from the APCO, provide a summary of the data obtained from the CEM systems. This summary of data shall be in the form and the manner prescribed by the APCO. [District Rule 1080, 7.1] Federally Enforceable Through Title V Permit
38. Records shall be maintained and shall include: the occurrence and duration of any start-up, shutdown or malfunction, performance testing, evaluations, calibrations, checks, adjustments, any periods during which a continuous monitoring system or monitoring device is inoperative, maintenance of any CEMS that have been installed pursuant to District Rule 1080, and emission measurements. [District Rule 1080] Federally Enforceable Through Title V Permit
39. The operator shall notify the APCO no later than one hour after the detection of a breakdown of the CEMS. The operator shall inform the APCO of the intent to shut down the CEMS at least 24 hours prior to the event. [District Rule 1100] Federally Enforceable Through Title V Permit
40. The permittee shall submit a written report including copies of any Equipment Breakdown reports and/or pertinent variance decisions to the APCO for each calendar quarter, within 30 days of the end of the quarter, including: time intervals, data and magnitude of excess emissions, nature and cause of excess emissions (if known), corrective actions taken and preventive measures adopted; averaging period used for data reporting shall correspond to the averaging period for each respective emission standard; applicable time and date of each period during which the CEM was inoperative (except for zero and span checks) and the nature of system repairs and adjustments; and a negative declaration when no excess emissions occurred. [District Rule 1080] Federally Enforceable Through Title V Permit

CONDITIONS CONTINUE ON NEXT PAGE

41. Upon notice by the District that the facility's CEM system is not providing polling data, the facility may continue to operate without providing automated data for a maximum of 30 days per calendar year provided the CEM data is sent to the District by a District-approved alternative method. [District Rule 1080] Federally Enforceable Through Title V Permit
42. Results of continuous emissions monitoring shall be reduced according to the procedure established in 40 CFR, Part 51, Appendix P, paragraphs 5.0 through 5.3.3, or by other methods deemed equivalent by mutual agreement with the District, the ARB, and the EPA. [District Rule 1080] Federally Enforceable Through Title V Permit
43. Cylinder gas audits (GGAs) of continuous emission monitors shall be conducted quarterly, except during quarters in which relative accuracy and total accuracy testing is performed, in accordance with EPA guidelines. The District shall be notified prior to completion of the audits. Audit reports shall be submitted along with quarterly compliance reports to the District. [District Rule 1080] Federally Enforceable Through Title V Permit
44. Compliance with the conditions in the permit requirements for this unit shall be deemed compliance with District Rule 4201, Stanislaus County Rule 404, District Rule 4202 and Stanislaus County Rule 405. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
45. Compliance with the conditions in the permit requirements for this unit shall be deemed compliance with District Rule 4801 and Stanislaus County Rule 407. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
46. The requirements of District Rule 4301 and Stanislaus County Rule 408 were determined to not apply to this unit because the unit does not utilize indirect heat transfer. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
47. The requirements of 40 CFR Part 61, Subpart N were determined to not apply to this unit because the unit does not use commercial arsenic. A permit shield is granted from these requirements. [District Rule 2520, §13.2] Federally Enforceable Through Title V Permit
48. Any glass melting furnace located at an Area Source of hazardous air pollutants shall comply with 40 CFR Part 63 Subpart SSSSSS (National Emission Standards for Hazardous Air Pollutants for Glass Manufacturing Area Sources). [40 CFR Part 63 Subpart SSSSSS] Federally Enforceable Through Title V Permit
49. The quantity of glass produced shall not exceed 430 tons during any one day. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
50. Except during periods of startup, shutdown, and idling, NOx emissions shall not exceed 1.3 pounds per ton of glass produced (over a rolling 30-day average). This performance based limit is to enforce the NOx emission reductions granted by certificate number N-54-2. Any CEM measurement greater than 1.3 lb-NOx/ton of glass produced for each 30-day rolling average constitutes a violation of this emission limit. [District Rule 2201] Federally Enforceable Through Title V Permit
51. Except during periods of startup, shutdown, and idling, CO emissions shall not exceed 0.2 pounds per ton of glass produced. [District NSR Rule] Federally Enforceable Through Title V Permit
52. Except during periods of startup, shutdown, and idling, VOC emissions shall not exceed 0.02 pounds per ton of glass produced. [District Rule 2201] Federally Enforceable Through Title V Permit
53. Except during periods of startup, shutdown, and idling, the combined SOx emissions from permit units N-1662-1, N-1662-2, N-1662-3 and N-1662-4, while producing glass with equal to or greater than 25% by weight mixed color cullet, shall not exceed 0.99 lb/ton of glass produced (over a rolling 30 day average). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
54. Except during periods of startup, shutdown, and idling, the combined SOx emissions from permit units N-1662-1, N-1662-2, N-1662-3 and N-1662-4, while producing glass with less than 25% by weight mixed color cullet, shall not exceed 0.81 lb/ton of glass produced (over a rolling 30 day average). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
55. Except during periods of startup, shutdown, idling, and during full or partial emission control system bypass episodes, PM10 emissions shall not exceed 0.45 lb/ton of glass produced. [District NSR Rules 2201 and 4354] Federally Enforceable Through Title V Permit

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56. The PM10 emissions, during full or partial emission control system bypass episodes for routine maintenance, shall not exceed 0.71 lb/ton of glass produced. [District Rule 2201] Federally Enforceable Through Title V Permit
57. PM emissions from the glass furnace shall not exceed 1 lb of particulate matter per ton of glass produced. [40 CFR 60.293(b)(1)] Federally Enforceable Through Title V Permit
58. The SOx and PM10 emission limits of this permit shall not apply during routine maintenance of the respective add-on control systems. The routine maintenance in each calendar year shall not exceed 144 hours total for all add-on controls and routine maintenance shall be conducted in a manner consistent with good air pollution control practices for minimizing air emissions. Routine maintenance includes, but is not limited to: 1) Calibration and scheduled parts replacement of CEMS equipment per manufacturer's recommendations, 2) Cleaning of particulate control devices and stack ductwork to ensure optimal performance, and 3) Necessary repairs to ensure optimal performance of all parts of the system. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
59. The PM10 emissions shall not exceed 18,712 pounds during the first calendar quarter, 18,919 pounds during the second calendar quarter, 19,127 pounds during the third calendar quarter and 19,128 pounds during the fourth calendar quarter. These limits are to enforce the PM10 emission reductions granted by certificate number N-161-4. [District NSR Rule] Federally Enforceable Through Title V Permit
60. The facility shall not use commercial arsenic as a raw material in the production process. [40 CFR Part 61 Subpart N] Federally Enforceable Through Title V Permit
61. Each dust collector shall be maintained and operated in the range that optimizes control efficiency as recommended by the manufacturer. [District Rule 2201] Federally Enforceable Through Title V Permit
62. Each dust collectors cleaning frequency and duration shall be adjusted to optimize the control efficiency. [District Rule 2201] Federally Enforceable Through Title V Permit
63. Material removed from each dust collector shall be disposed of in a manner preventing entrainment into the atmosphere. [District Rule 2201] Federally Enforceable Through Title V Permit
64. Replacement filters numbering at least 10% of the total number of filters in the largest dust collector, and for each type of filter, shall be maintained on the premises. [District Rule 2201] Federally Enforceable Through Title V Permit
65. Devices to measure the primary and secondary voltage and current of the electrostatic precipitator shall be maintained in accordance with the manufacturer's specifications. [District Rule 4354, 40 CFR 60.293(d) and 40 CFR Part 64] Federally Enforceable Through Title V Permit
66. The specific power of the electrostatic precipitator shall be at least 70 milliwatts/acfm except during the bypass episodes allowed by this permit. [District Rule 2520, §9.3.2, 40 CFR 60.293(d), and 40 CFR Part 64] Federally Enforceable Through Title V Permit
67. The ceramic filter dust collector shall be equipped with a pressure differential gauge to indicate the pressure drop across the filters. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
68. Each of the furnace dust collectors shall be equipped with a pressure differential gauge to indicate the pressure drop across the filters. The gauge shall be maintained in good working condition at all times and shall be located in an easily accessible location. [District Rule 2201] Federally Enforceable Through Title V Permit
69. During operation of the ceramic filter dust collector, the pressure differential gauge reading shall be 5 to 10 inches of water column. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
70. During operation of the furnace charger dust collectors, the pressure differential gauge reading for each dust collector shall be 2 to 8 inches of water column. [District Rule 2201] Federally Enforceable Through Title V Permit
71. The permittee shall comply with the compliance assurance monitoring operation and maintenance requirements of 40 CFR Part 64.7. [40 CFR Part 64] Federally Enforceable Through Title V Permit
72. If the District or EPA determine that a Quality Improvement Plan is required under 40 CFR Part 64.7(d)(2), the permittee shall develop and implement the Quality Improvement Plan in accordance with 40 CFR Part 64.8. [40 CFR Part 64] Federally Enforceable Through Title V Permit

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73. The permittee shall comply with the record keeping and reporting requirements of 40 CFR Part 64.9. [40 CFR Part 64] Federally Enforceable Through Title V Permit
74. The specific power of the electrostatic precipitator shall be continuously monitored and recorded. [District Rules 2201 and 4354, 40 CFR 60.293(d), and 40 CFR Part 64] Federally Enforceable Through Title V Permit
75. Dust collector filters shall be inspected annually while in operation for evidence of particulate matter breakthrough and replaced as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
76. Dust collector filters shall be inspected annually while not in operation for tears, scuffs, abrasions or hole that might interfere with the PM collection efficiency and shall be replaced as needed. [District Rule 2520, 9.4.2] Federally Enforceable Through Title V Permit
77. Permittee shall keep a record of the daily hours of operation, the amount of glass pulled from the furnace (in tons), the NOx emissions (in lb/ton of glass pulled), the SOx emissions (in lb/ton of glass pulled), the weight of mixed color mix cullet used, the total amount of cullet used (by weight) and the ratio of the mixed color cullet weight to the total cullet weight (in percent). [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
78. Permittee shall maintain records of the following: 1) Source tests and source test results, 2) the acceptable range for each approved key system operating parameter, as established during source tests, 3) The operating values of the key system operating parameters at the approved recording frequency, 4) any maintenance and repair, and 5) any malfunctions. [District Rule 4354] Federally Enforceable Through Title V Permit
79. The oxygen to fuel ratio shall be continuously monitored and recorded. [District Rule 4354] Federally Enforceable Through Title V Permit
80. The permittee shall maintain daily records of the aggregated NOx emissions. [District Rules 2520, 9.3.2 and 4354, 9.6.1 and 9.7] Federally Enforceable Through Title V Permit
81. The permittee shall maintain the burner oxygen to fuel ratio records required by this permit. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
82. A record of the PM10 emissions from this unit, in pounds per calendar quarter, shall be kept. [District Rule 2201] Federally Enforceable Through Title V Permit
83. A record of the cumulative annual number of hours that the emission control system is either fully or partially bypassed shall be kept. The record shall be updated at least weekly. [District Rules 2201 and 4354] Federally Enforceable Through Title V Permit
84. The permittee shall keep a record of the cumulative annual hours of operation of the glass furnace on LPG fuel. [District Rule 2201] Federally Enforceable Through Title V Permit
85. The permittee shall maintain daily records of the specific power of the electrostatic precipitator (in milliwatts/acfm). [District Rules 2201, 4354, 40 CFR 60.293(d), and 40 CFR Part 64] Federally Enforceable Through Title V Permit
86. The operator shall monitor and record the pressure differential gauge reading of the ceramic filter dust collector at least once during each day that the unit operates. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit
87. Records of dust collector maintenance, inspections and repairs shall be maintained. The records shall include, date of inspection, change outs of filter media, corrective action taken, and identification of the individual performing the inspection. [District Rules 2201 and 2520, 9.4.2] Federally Enforceable Through Title V Permit

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88. The permittee shall maintain records of the actual NO₂, PM₁₀, and PM emissions from this unit for each 12 consecutive-month rolling period for a period of 10 years beginning on the date the unit starts operation under this permit for the purposes of demonstrating that there has not been a PSD "significant net emissions increase" above the baseline actual NO₂, PM₁₀, and PM emission levels reported under projects N-1141107 and N-1142733. The actual net emissions increase shall be calculated in accordance with 40 CFR 52.21 (June 16, 2011 version). If a significant net emissions increase for NO₂, PM₁₀, and PM emissions occurs during any 12 consecutive month period in the 10 year recordkeeping period, the permittee shall submit a permit application to modify the permit to meet the Prevention of Significant Deterioration requirements that were avoided under projects N1141107 and N-1142733, which are the public notice and modeling requirements of 40 CFR 52.21 (June 16, 2011 version). Actual PM and PM₁₀ emissions for the furnace may be calculated using source test results and the throughput of the glass furnace. [District Rule 2201] Federally Enforceable Through Title V Permit
89. All records shall be maintained and retained on-site for a period of at least 5 years and shall be made available for District inspection upon request. [District Rules 2201 and 4354 and 40 CFR Part 64] Federally Enforceable Through Title V Permit