SWCAA
Southwest Clean Air Agency

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February 11, 2021

Mr. Stephen Mullinax, Environmental Engineer
Cardinal FG Company Winlock
545 Avery Road West
Winlock, WA 98596

Subject: Final Air Discharge Permit for Modification of Glass Furnace and New Emergency Generator

Dear Mr. Mullinax:

The public comment period for the preliminary determination to issue Air Discharge Permit 20-3409 (ADP 20-3409) in response to ADP Application L-706 concluded on June 22, 2020. The Southwest Clean Air Agency (SWCAA) did not receive any adverse comments from the public relative to the preliminary determination. Therefore, a final determination to issue ADP 20-3409 has been made pursuant to Section 400-110(4) of SWCAA's General Regulations for Air Pollution Sources. Electronic copies of ADP 20-3409 and the associated Technical Support Document are available for public review in the permit section of SWCAA's internet home page (http://www.swcleanair.org/permits/adpfinal.asp).. Original copies are enclosed for your files.

This Air Discharge Permit may be appealed directly to the Pollution Control Hearings Board (PCHB) at P.O. Box 40903, Olympia, Washington 98504-0903 within 30 days of receipt as provided in RCW 43.21B.

If you have any comments, or desire additional information, please contact me or Wess Safford at (360) 574-3058, extension 126.

Sincerely,

Uri Papish
Executive Director

UP:wls
Attachment

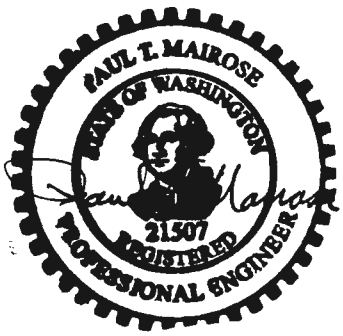
SWCAA
Southwest Clean Air Agency

AIR DISCHARGE PERMIT
20-3409

Final Date: February 11, 2021

Facility Name: Cardinal FG Company Winlock
Physical Location: 545 Avery Road West
Winlock, WA 98596

SWCAA ID: 2175



REVIEWED BY: _____
Paul T. Mairose, Chief Engineer

APPROVED BY: _____
Uri Papish, Executive Director

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1. Equipment/Activity Identification

ID No.	Generating Equipment/Activity	# of Units	Control Measure/Equipment	# of Units
1	Glass Furnace / Annealing Lehr	1	Selective Catalytic Reduction, Spray Dryer Electrostatic Precipitator Low Sulfur Fuel (Nat Gas)	1
2	Glass Cutting Operations	N/A	Restriction on Material Type and Use	N/A
3	Cullet Return System #1	N/A	Process Enclosure, Fabric Filtration (Donaldson – 41,500 acfm)	1
4	Cullet Return System #2	N/A	Process Enclosure, Fabric Filtration (Carothers/Son – 25,000 acfm)	1
5	EP Dust Collection System – BH #1	N/A	Process Enclosure, Fabric Filtration (Nol-Tec – 1,500 acfm)	1
6	EP Dust Collection System – BH #2	N/A	Process Enclosure, Fabric Filtration (Nol-Tec – 1,500 acfm)	1
7	Emergency Generator (Caterpillar – 2,885 bhp)	1	Low Sulfur Fuel (≤ 0.0015% by wt), Operating Limit (≤ 50 hr/yr)	N/A
8	Emergency Generator (Caterpillar – 1,829 bhp)	1	Low Sulfur Fuel (≤ 0.0015% by wt), Operating Limit (≤ 50 hr/yr)	N/A
9	Misc Burners/Space Heaters	67	Low Sulfur Fuel (Nat Gas)	N/A

2. Approval Conditions

The following tables detail the specific requirements of this permit. In addition to the requirements listed below, equipment at this facility may be subject to other federal, state, and local regulations. The permit requirement number is identified in the left-hand column. The text of the permit requirement is contained in the middle column. The emission unit, equipment, or activity to which the permit requirement applies is listed in the right-hand column.

This Permit supersedes Air Discharge Permit 04-2568R2 in its entirety.

Emission Limits

No.	Emission Limits	Equipment/ Activity
1.	Emissions from the Glass Furnace exhaust stack must not exceed the following in any consecutive 12-month period: Pollutant — Emission Limit NO_X — 245.00 tpy CO — 246.38 tpy VOC — 13.69 tpy SO_2 — 114.19 tpy PM_{10} (total) — 128.66 tpy Ammonia — 9.58 tpy Hydrogen Fluoride — 2.01 tpy Sulfuric acid — 6.98 tpy Arsenic — 165.6 lb/yr Beryllium — 0.03 lb/yr Cadmium — 216.4 lb/yr Formaldehyde — 164.2 lb/yr Nickel — 49.1 lb/yr Annual emissions of NO_X, CO and SO_2 must be calculated from continuous monitoring data. Annual emissions of PM/PM_{10}, VOC, fluorides and sulfuric acid must be calculated from recorded glass draw and the most recent emission test data. Annual emissions of all other pollutants must be calculated from recorded glass draw and applicable emission factors consistent with Section 6 of the Technical Support Document for this Permit.	1
2.	Emissions from the Glass Furnace exhaust stack must not exceed the emission rates listed below during normal furnace operation. Limits given in terms of lb/ton_g do not apply during periods of hot hold. Pollutant — Emission Limit NO_X — 101.8 lb/hr (24-hr avg) — 1.63 lb/ton_g (30-day avg) CO — 112.6 lb/hr (24-hr avg) — 1.8 lb/ton_g (30-day avg) VOC — 3.1 lb/hr (1-hr avg) — 0.1 lb/ton_g (1-hr avg) SO_2 — 25.0 lb/hr (24-hr avg) — 0.8 lb/ton_g (30-day avg) PM_{10} (filterable) — 14.1 lb/hr (1-hr avg) — 0.45 lb/ton_g (1-hr avg) PM_{10} (total) — 29.4 lb/hr (1-hr avg) — 0.94 lb/ton_g (1-hr avg)	1
3.	Emissions from the Glass Furnace exhaust stack must not exceed the emission rate listed below during periods of SCR system maintenance. Emission rates of all other pollutants must comply with limitations for normal furnace operation. Pollutant — Emission Limit NO_X — 415.6 lb/hr (24-hr avg)	1
4.	Emissions from the Glass Furnace exhaust stack must not exceed the emission rates listed below during periods of ESP/Spray Dryer maintenance. Emission rates of all other pollutants must comply with limitations for normal furnace operation. Pollutant — Emission Limit SO_2 — 103.1 lb/hr (24-hr avg) PM_{10} (filterable) — 15.6 lb/hr (1-hr avg)	1

No.	Emission Limits	Equipment/ Activity
5.	Visible emissions from the glass furnace exhaust stack must not exceed the values listed below for more than 3 minutes in any one-hour period as determined by a Certified Observer in accordance with SWCAA Method 9. Operating Condition — Opacity Limit Normal operation — 10% Hot fan transition — 20% Hot fan transition is the change in lead fan status between the two furnace hot fans. The transition period begins when a reduction in lead fan load is initiated and ends not more than 30 minutes after fan load adjustment ceases.	1
6.	Emissions from glass cutting operations must not exceed the following in any consecutive 12-month period: Pollutant — Emission Limit VOC — 43.90 tpy Annual emissions must be calculated from recorded material consumption using mass balance methodology.	2
7.	Combined emissions from Cullet Return Baghouse #1 shall not exceed the following: Pollutant — Emission Limit PM/PM_{10} (filterable) — 0.005 gr/dscf, 1.9 lb/hr, 8.32 tpy Annual emissions shall be calculated from rated/tested airflow, actual hours of operation and the most recent emission test data consistent with Section 6 of the Technical Support Document for this Permit.	3
8.	Combined emissions from Cullet Return Baghouse #2 shall not exceed the following: Pollutant — Emission Limit PM/PM_{10} (filterable) — 0.005 gr/dscf, 1.07 lb/hr, 4.69 tpy Annual emissions shall be calculated from rated/tested airflow, actual hours of operation and the most recent emission test data consistent with Section 6 of the Technical Support Document for this Permit.	4
9.	Combined emissions from EP Dust Baghouses #1 and #2 shall not exceed the following: Pollutant — Emission Limit PM/PM_{10} (filterable) — 0.005 gr/dscf, 0.13 lb/hr, 0.56 tpy Annual emissions shall be calculated from rated airflow, actual hours of operation, and maximum emission concentration consistent with the methodology in Section 6 of the Technical Support Document for this Permit.	5-6
10.	Visible emissions from approved dust collectors shall not exceed 0% for more than 3 minutes in any one-hour period as determined in accordance with SWCAA Method 9 (Appendix A of SWCAA 400).	3-6

No.	Emission Limits	Equipment/ Activity
11.	Emissions from Emergency Generator #1 shall not exceed the following: Pollutant — Emission Limit NO_X — 40.6 lb/hr, 1.01 tpy CO — 4.2 lb/hr, 0.10 tpy VOC — 1.1 lb/hr, 0.03 tpy PM_{10} — 0.9 lb/hr, 0.02 tpy Annual emissions shall be calculated from actual hours of operation and applicable emission factors consistent with the methodology found in Section 6 of the Technical Support Document for this Permit.	7
12.	Emissions from Emergency Generator #2 shall not exceed the following: Pollutant — Emission Limit NO_X — 24.9 lb/hr, 0.62 tpy CO — 0.5 lb/hr, 0.01 tpy VOC — 0.2 lb/hr, 0.01 tpy PM_{10} — 0.05 lb/hr, 0.01 tpy Annual emissions shall be calculated from actual hours of operation and applicable emission factors consistent with the methodology found in Section 6 of the Technical Support Document for this Permit.	8
13.	Visible emissions from diesel engine exhaust shall not exceed 10% opacity for more than 3 minutes in any one-hour period as determined by a Certified Observer in accordance with SWCAA Method 9 (SWCAA 400, Appendix A). This limit does not apply during periods of cold start-up.	7-8
14.	Combined emissions from operation of Miscellaneous Burners and Space Heaters must not exceed the following: Pollutant — Emission Limit NO_X — 1.9 lb/hr, 3.00 tpy CO — 1.6 lb/hr, 2.51 tpy PM_{10} — 0.14 lb/hr, 0.23 tpy Annual emissions shall be calculated from actual fuel consumption and applicable emission factors consistent with the methodology found in Section 6 of the Technical Support Document for this Permit.	9
15.	Visible emissions from Miscellaneous Burners and Space Heaters must not exceed 0% opacity for more than 3 minutes in any one-hour period as determined by a Certified Observer in accordance with SWCAA Method 9 (SWCAA 400, Appendix A).	9

Operating Limits and Requirements

No.	Operating Limits and Requirements	Equipment/ Activity
16.	Reasonable precautions must be taken at all times to prevent and minimize fugitive emissions from plant operations.	Facilitywide

No.	Operating Limits and Requirements	Equipment/ Activity
17.	The permittee must use recognized good practice and procedures to reduce odors to a reasonable minimum.	Facilitywide
18.	Each pollution control device/measure must be in use whenever the associated production equipment is in operation. Control devices must be operated and maintained in accordance with the manufacturer's specifications and operated in a manner that minimizes emissions.	1-9
19.	Emission units identified in this Permit must be maintained and operated in total and continuous conformity with the conditions identified in this Permit. SWCAA reserves the right to take any and all appropriate action to maintain the conditions of this Permit, including directing the facility to cease operations until corrective action can be completed.	1-9
20.	The Glass Furnace must fire only natural gas as defined in 40 CFR 60.41b.	1
21.	Glass Furnace glass draw rate (24-hour avg) must not be greater than 1.11 times the lowest glass draw rate during the most recent emission test in which all criteria pollutants cited in Appendix A were tested.	1
22.	The Glass Furnace must be equipped with an ESP and Spray Dryer for control of SO_2 and PM emissions. The ESP/Spray Dryer combination must be operated during normal Glass Furnace operation.	1
23.	The Glass Furnace must be equipped with a selective catalytic reduction (SCR) system guaranteed by the manufacturer to achieve a minimum NO_X emission control efficiency of 80%. The SCR system must be certified and operated during normal Glass Furnace operation.	1
24.	The Glass Furnace ESP, Spray Dryer and SCR system may each be shut down for up to five days annually for routine maintenance. Maintenance of each system may be done independently. Process emissions may by-pass the affected control system during the maintenance period. SCR system equipment maintenance must only occur during the period from May to October.	1
25.	SO_2 use in the annealing lehr must not exceed 0.25 lb/ton_g, averaged monthly.	1
26.	Circulation air must be drawn through the hood located between the tin bath and lehr at all times of glass production. Air collected in the hood must be routed to the Glass Furnace combustion air header and exhausted through the associated emission control system.	1
27.	Lubricant used in glass cutting operations must meet the specifications given in ASTM D-235 for Type 3C mineral spirits. Alternative lubricants may be used if approved in advance by SWCAA.	2
28.	Lubricant used for glass cutting must contain less than 1% benzene by weight.	2
29.	All containers for VOC containing materials shall be kept securely closed with a lid in place except when in active use. Open containers for storage, transfer or disposal of VOC containing materials are prohibited. In addition, all VOC containing materials used to clean and/or flush handling equipment or distribution lines during clean up shall be collected and stored in a closed container.	2

No.	Operating Limits and Requirements	Equipment/ Activity
30.	The permittee must provide safe access and sampling ports for source testing of each exhaust stack after the final pollution control device. Safe access will consist of permanently constructed platforms on the stacks. The sampling ports will meet the requirements of 40 CFR, Part 60, Appendix A Method 1. Other arrangements may be acceptable if approved by SWCAA prior to installation.	1, 3-4
31.	The permittee shall install and maintain a pressure gauge capable of continuously monitoring the differential pressure across the filtration media in each approved dust collector.	4-6
32.	Emergency generator diesel engines shall be fired on #2 diesel or better. Maximum fuel sulfur content shall not exceed 0.0015% by weight. Any fuel other than #2 diesel shall be approved by SWCAA in writing prior to use.	7-8
33.	Emergency generator diesel engines shall be equipped with a non-resettable hour meter to record hours of operation.	7-8
34.	Emergency generator operation for the purpose of maintenance and testing shall not exceed 50 hr/yr. This limit does not apply to periods of emergency service.	7-8
35.	The permittee must test only one emergency generator at any given time.	7-8
36.	Emergency generator testing must not occur during any glass furnace control equipment maintenance period.	7-8
37.	Exhaust gases from process equipment must be discharged vertically at the minimum height listed below for each unit. Rain caps that inhibit vertical discharge are prohibited. Emission Unit — Minimum Height Glass Furnace — 175' above ground level Cullet Return Baghouse #1 — 100' above ground level Cullet Return Baghouse #2 — 32.5' above ground level Emergency Generator #1 — 58' above ground level Emergency Generator #2 — 58' above ground level	1, 3-4, 7-8

Monitoring and Recordkeeping Requirements

No.	Monitoring and Recordkeeping Requirements	Equipment/ Activity
38.	With the exception of data logged by a computerized data acquisition system, each record required by this Permit must include the date and the name of the person making the record entry. If a control device or process is not operating during a specific time period, a record must be made to that effect.	1-9
39.	All records required by this Permit must be kept for a minimum period of no less than five years and must be maintained in a form readily available for inspection by SWCAA representatives.	1-9
40.	Excess emissions and upset conditions must be recorded for each occurrence.	1-9

No.	Monitoring and Recordkeeping Requirements	Equipment/ Activity
41.	The permittee shall monitor and record the following information for the Glass Furnace: (a) Hours of operation; (b) Hourly glass draw (tons); (c) Hourly fuel consumption (MMBtu); (d) Hourly exhaust stack flowrate (scfm); (e) Hourly CEMS data for NO_X, CO, and SO_2 (lbs); (f) Emission rate of NO_X, CO and SO_2 on a production basis (lb/ton_g) for each 24-hour period; (g) Monthly emission rate of VOC and PM (tons); (h) Monthly visible emission observations/data; (i) CEMS calibration and audit results; (j) Excess emissions, deviations from permit conditions, CAM excursions, and upset conditions; (k) Date and time of each hot fan transition; (l) Date and duration of each ESP/Spray Dryer maintenance period; (m) Date and duration of each SCR system maintenance period; (n) Date and time of each startup, shutdown and hot hold period; and (o) Maintenance and repair activities.	1
42.	The permittee shall monitor and record the following information for the Annealing Lehr: (a) Beginning and ending weights of each SO_2 gas cylinder (lbs); (b) Monthly net consumption of SO_2 in the annealing lehr (lbs); (c) Monthly consumption of SO_2 in the annealing lehr on a production basis (lb/ton_g); and (d) Date and duration of each instance when the air circulation hood was not exhausted to the glass furnace combustion air header.	1
43.	The permittee shall monitor and record the following information for glass cutting operations: (a) Type and ASTM classification of each glass cutting lubricant used; (b) Vendor certification of composition for each type of glass cutting lubricant used; (c) Benzene content of each type of glass cutting lubricant used; and (d) Monthly consumption of each type of glass cutting lubricant (lbs).	2
44.	The permittee shall monitor and record the following information for each material handling dust collector: (a) Monthly hours of operation; (b) Pressure drop across filtration media recorded weekly; and (c) Each occurrence of maintenance and repair activity.	3-6
45.	The permittee shall monitor and record the following information for each emergency generator: (a) Monthly hours of nonemergency engine operation; (b) Monthly hours of emergency engine operation; (c) Certification of fuel sulfur content for each fuel shipment; and (d) Each occurrence of maintenance and repair activity.	7-8

No.	Monitoring and Recordkeeping Requirements	Equipment/ Activity
46.	The permittee shall monitor and record the following information for burner and space heater operation: (a) Combined monthly fuel consumption (MMBtu); and (b) Each maintenance and repair activity.	9

Emission Monitoring and Testing Requirements

No.	Emission Monitoring and Testing Requirements	Equipment/ Activity
47.	The permittee must conduct periodic emission testing of the Glass Furnace as described in Appendix A of this Permit.	1
48.	The permittee shall install and maintain a CEMS to measure the emission rate of NO_X, CO and SO_2 from the Glass Furnace exhaust stack. Each CEMS shall be maintained and certified in accordance with Appendix B of this Permit. Hourly emission rates shall be calculated based on monitored emission concentration and exhaust flowrate. Hourly emission averages shall be based on discrete clock hours (block average). 24-hr average emission concentrations shall be defined as the average emission concentration during each of the most recent 24 operating hours excluding startup/shutdown periods. Production basis emission rates shall be determined by dividing the mass of monitored emissions by the monitored weight of glass draw.	1
49.	On a monthly basis, the permittee shall monitor and record visible emissions from the exhaust stack of the Glass Furnace in accordance with SWCAA Method 9. Visible emissions data shall be collected for a minimum of 20 minutes. If any individual opacity reading is in excess of applicable limits, visible emissions data must be collected for an additional 20 minutes. A maximum of 60 minutes is required by this requirement. A continuous monitoring method may be used in lieu of Method 9 observations.	1
50.	The permittee must conduct periodic emission testing of Cullet Return Baghouse #1 as described in Appendix C of this Permit.	3
51.	The permittee must conduct periodic emission testing of Cullet Return Baghouse #2 as described in Appendix D of this Permit.	4
52.	If SWCAA issues a Notice of Violation for excess visible emissions from an EP Dust baghouse, the affected baghouse may subsequently be required to perform an emission test and/or periodic emission testing. If such emission testing is required, the affected baghouse shall be emission tested no later than 60 days following the source's receipt of the Notice of Violation. Under this provision, routine periodic emission testing of the affected baghouse is limited to a maximum frequency of once every 60 months. All emission testing shall be conducted in accordance with Appendix E of this Permit. Nothing in this requirement restricts SWCAA's authority under SWCAA 400-106 to order or conduct emission testing.	5-6

Reporting Requirements

No.	Reporting Requirements	Equipment/ Activity
53.	All air quality related complaints received by the permittee must be reported to SWCAA within three days of receipt. Complaint reports shall include the following information: (a) Date and time of the complaint; (b) Name of the complainant; (c) Nature of the complaint; and (d) Description of corrective action taken in response to complaint (if any).	Facilitywide
54.	Excess emissions and all other deviations from permit requirements shall be reported to SWCAA as follows: • As soon as possible, but no later than 12 hours after discovery for emissions that represent a potential threat to human health or safety; • As soon as possible, but no later than 48 hours after discovery for emissions which the permittee wishes to claim as unavoidable pursuant to SWCAA 400-107(1); and • No later than 30 days after the end of the month of discovery for all other excess emissions.	1-9
55.	The permittee shall notify SWCAA at least seven days in advance of the use of any new material, which results in the emission of toxic or hazardous air pollutants not previously emitted. In response to the notification, SWCAA may require that a written report be submitted with the following: (a) A description of the proposed change(s) in materials with an MSDS for each new material, (b) The date the change(s) is (are) to be made, (c) The change(s) in emissions of VOCs, HAPs and TAPs occurring as a result of the change, and (d) A summary of any applicable requirement(s) that would apply as a result of the change(s). If the proposed emission rate of a new TAP exceeds the applicable SQER and/or other emission limits established by this Permit or otherwise circumvents an applicable requirement, New Source Review may be required prior to making the proposed change.	1-9
56.	The permittee shall provide written notification to SWCAA at least 10 calendar days prior to by-passing the Glass Furnace SCR system or ESP/Spray Dryer for purposes of routine maintenance. Notification shall, at a minimum, include the following information: (a) Date maintenance is to commence; (b) Schedule of planned maintenance activity; and (c) List of measures employed to minimize emissions.	1
57.	The initial start-up of approved emission units shall be reported to SWCAA in writing within 10 days of commencing operation.	8
58.	Emission test results shall be reported to SWCAA in writing within 45 days of test completion.	1, 3-6

No.	Reporting Requirements	Equipment/ Activity
59.	An annual emissions inventory report shall be submitted in accordance with SWCAA 400-105(1). In addition to the emissions information required under SWCAA 400-105(1), each annual report shall include an estimate of annual emission quantities for each TAP compound listed in the Technical Support Document for this Permit.	Facilitywide
60.	The permittee must report the information listed below to SWCAA no later than 30 days after the end of each calendar quarter. The respective reporting period is the previous calendar quarter. (a) Hours of operation for each emission unit; (b) Hourly Glass Furnace fuel consumption (MMBtu); (c) Hourly glass draw (tons); (d) Hourly emissions data from each CEMS (lbs, lb/ton_g); (e) Glass Furnace visible emission observations/data; (f) Results of all CEMS calibrations and audits conducted during the reporting period; (g) Identification of any periods during which required CEMS or CAM data is not available and an explanation of why the data is missing. (h) Monthly SO_2 consumption in the Annealing Lehr (lbs, lb/ton_g). (i) Monthly consumption of each type of glass cutting lubricant (lbs). (j) Monthly hours of nonemergency engine operation; (k) Monthly hours of emergency engine operation; (l) Monthly fuel consumption by miscellaneous burners and space heaters (MMBtu); and (m) A summary of air emissions from each emission unit in terms consistent with applicable emission limits.	

3. General Provisions

No.	General Provisions
A.	For the purpose of ensuring compliance with this Permit, duly authorized representatives of the Southwest Clean Air Agency must be permitted access to the permittee's premises and the facilities being constructed, owned, operated and/or maintained by the permittee for the purpose of inspecting said facilities. These inspections are required to determine the status of compliance with this Permit and applicable regulations and to perform or require such tests as may be deemed necessary.
B.	The provisions, terms and conditions of this Permit bind the permittee, its officers, directors, agents, servants, employees, successors and assigns, and all persons, firms, and corporations acting under or for the permittee.
C.	The requirements of this Permit survive any transfer of ownership of the source or any portion thereof.
D.	This Permit must be posted conspicuously at or be readily available near the source.
E.	This Permit will be invalid if construction has not commenced within eighteen (18) months from date of issuance, if construction is discontinued for a period of eighteen (18) months or more, or if construction is not completed within a reasonable time.

No.	General Provisions
F.	This Permit does not supersede requirements of other Agencies with jurisdiction and further, this Permit does not relieve the permittee of any requirements of any other governmental Agency. In addition to this Permit, the permittee may be required to obtain permits or approvals from other agencies with jurisdiction.
G.	Compliance with the terms of this Permit does not relieve the permittee from the responsibility of compliance with SWCAA General Regulations for Air Pollution Sources, previously issued Regulatory Orders, RCW 70A.15, Title 173 WAC or any other applicable emission control requirements, nor from the resulting liabilities and/or legal remedies for failure to comply.
H.	If any provision of this Permit is held to be invalid, all unaffected provisions of the Permit will remain in effect and be enforceable.
I.	No change in this Permit will be made or be effective except as may be specifically set forth by written order of the Southwest Clean Air Agency upon written application by the permittee for the relief sought.
J.	The Southwest Clean Air Agency may, in accordance with RCW 70A.15 impose such conditions as are reasonably necessary to assure the maintenance of compliance with the terms of this Permit, the Washington Clean Air Act, and the applicable rules and regulations adopted under the Washington Clean Air Act.

Air Discharge Permit 20-3409 - Appendix A
Emission Testing Requirements
Glass Furnace / Annealing Lehr

1. **Introduction:**
The purpose of this testing is to quantify emissions of PM, VOC, and TAPs from the glass furnace exhaust stack and to demonstrate compliance with the requirements of this permit.

2. **Testing Requirements:**
   a. **Test Schedule.** Emission testing shall be conducted according to the schedule below. Emission testing conducted more than three months prior to a scheduled due date will not satisfy the periodic source emission testing requirement unless prior written approval is obtained from SWCAA.

Constituent	Test Schedule
PM/PM_{10} (*total*)	Initial test conducted within 60 days of achieving maximum melt rate, but not later than 180 days after initial startup. Periodic testing conducted at least once every 12 months thereafter.
VOC	Initial test conducted within 60 days of achieving maximum melt rate, but not later than 180 days after initial startup. Periodic testing conducted at least once every 36 months thereafter.
Sulfuric acid	Initial test conducted within 60 days of achieving maximum melt rate, but not later than 180 days after initial startup. Only initial testing is required.
Total fluoride	Initial test conducted within 60 days of achieving maximum melt rate, but not later than 180 days after initial startup. Only initial testing is required.

   b. **Test Plan.** A comprehensive test plan shall be submitted to SWCAA for review and approval at least 14 calendar days prior to each test. SWCAA personnel shall be informed at least 7 calendar days prior to testing so that a representative may be present during testing.

   c. **Test Location.** Sampling must be conducted at the glass furnace exhaust stack

   d. **Test Methods.** At least three (3) test runs of the specified minimum duration shall be performed for each constituent listed below. Compliance shall be demonstrated by averaging the results of the individual sampling runs. The sampling methods identified below shall be used unless alternate methods are approved in writing by SWCAA in advance of the emission testing.

Constituent	Test Method or Equivalent	Minimum Test Duration
Stack gas velocity	EPA Methods 1 and 2	N/A
O_2 and CO_2	EPA Method 3 or 3A	N/A
Moisture	EPA Method 4	60 minutes
Filterable PM/PM_{10}	EPA Method 5 or 201A	Sample >100 dscf
Condensable PM/PM_{10}	EPA Method 202	Sample >100 dscf
VOC	EPA Method 25 or 25A or 25B	60 minutes
Sulfuric acid	EPA Method 8 or NCASI 8A	60 minutes
Total fluoride	EPA Method 26A	60 minutes

Air Discharge Permit 20-3409 - Appendix A
Emission Testing Requirements
Glass Furnace / Annealing Lehr

3. **Source Operation:**
   a. **Operating Capacity.** Source operations during the emissions test must be representative of maximum intended operating conditions.

   b. **Record of Production Parameters.** Production related parameters and equipment operating conditions shall be recorded during emissions testing to correlate operating conditions with emissions. All recorded production parameters shall be documented in the test results report. Recorded parameters shall, at a minimum, include the following:
      - Furnace heat input (MMBtu)
      - Weight of glass draw (tons)
      - Field power in each field of the glass furnace ESP (kW)
      - Contemporaneous furnace adjustments

4. **Reporting Requirements:**
   a. **Test Report.** A final emission test report must be prepared and submitted to SWCAA within 45 calendar days of test completion. Test reports must be provided in hard copy (paper) and an electronic format approved by SWCAA. Each test report shall, at a minimum, contain the following information:
      (1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
      (2) Time and date of the test and identification and qualifications of the personnel involved, including identification of SWCAA personnel who observed test,
      (3) Summary of results, reported in units and averaging periods consistent with the application emissions standard or unit,
      (4) Summary of control system or equipment operating conditions,
      (5) Summary of production related parameters,
      (6) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
      (7) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
      (8) Copies of field data and example calculations,
      (9) Chain of custody information,
      (10) Calibration documentation,
      (11) Discussion of any abnormalities associated with the results, and
      (12) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

   b. **Reported Units.** Test results shall be presented in units of parts per million by volume (ppmv – gaseous pollutants), grains per dry standard cubic feet (gr/dscf- PM), pounds per hour (lb/hr) and pounds per ton of glass draw (lb/T_G). VOC results shall be reported on an "as propane" basis. Concentration values shall be corrected to 7% excess oxygen.

5. **Changes to Testing Requirements:**
   Minor modifications to the requirements above may be requested by the permittee or their representative and must be pre-approved by SWCAA.

Air Discharge Permit 20-3409 - Appendix B
CEMS Audit Requirements
Glass Furnace / Annealing Lehr

1. **Introduction:**
   The purpose of the following requirements is to demonstrate the accuracy and proper operation of the CEMS for NO_X, CO and SO_2.

2. **Performance Requirements:**
   CEMS in use at the facility must satisfy the requirements of the performance specifications listed below. The Relative Accuracy Test Audit (RATA) required for each CEMS shall be conducted during simultaneous test periods.

   a. **NO_X.** The continuous monitoring system for the emission rate of NO_X from the exhaust stack of the glass furnace shall be installed and maintained in accordance with the requirements and specifications found in the following regulations:

      - 40 CFR 60 Appendix B, Performance Specification 6
      - 40 CFR 60 Appendix F

   b. **CO.** The continuous monitoring system for the emission rate of CO from the exhaust stack of the glass furnace shall be installed and maintained in accordance with the requirements and specifications found in the following regulations:

      - 40 CFR 60 Appendix B, Performance Specification 6
      - 40 CFR 60 Appendix F

   c. **SO_2.** The continuous monitoring system for the emission rate of SO_2 from the exhaust stack of the glass furnace shall be installed and maintained in accordance with the requirements and specifications found in the following regulations:

      - 40 CFR 60 Appendix B, Performance Specification 6
      - 40 CFR 60 Appendix F

   d. **RATA/RAA/Audit Reports.** Quarterly audit results shall be submitted to SWCAA as part of each quarterly report. RATA results shall be submitted to SWCAA within 45 days of test completion.

Air Discharge Permit 20-3409 - Appendix C
Emission Testing Requirements
Cullet Return Baghouse #1

1. **Introduction:**
   The purpose of this testing is to quantify emissions from Cullet Return Baghouse #1 and demonstrate compliance with the requirements of this permit.

2. **Testing Requirements:**
   a. **Test Schedule.** Cullet Return Baghouse #1 shall be emission tested no later than March 2022. Periodic testing shall be conducted every 36 months thereafter, no later than the end of March. Emission testing conducted more than three months prior to a scheduled due date will not satisfy the periodic source emission testing requirement unless prior written approval is obtained from SWCAA.

   b. **Test Plan.** A comprehensive test plan shall be submitted to SWCAA for review and approval at least 14 calendar days prior to each test. SWCAA personnel shall be informed at least 7 calendar days prior to testing so that a representative may be present during testing.

   c. **Test Location.** Sampling must be conducted at the exhaust stack of Cullet Return Baghouse #1.

   c. **Test Methods.** A minimum of 3 test runs shall be performed for each constituent listed below to ensure the data are representative. Compliance shall be demonstrated by averaging the results of the individual sampling runs. The sampling methods identified below shall be used unless alternate methods are approved in writing by SWCAA in advance of the emission testing.

Constituent	Test Method or Equivalent	Minimum Test Duration
Flow rate, temperature	EPA Method 1 and 2	N/A
O_2, CO_2 content	EPA Method 3 or 3A	60 minutes
Moisture content	EPA Method 4 or ODEQ Method 4	60 minutes
Filterable PM/PM_{10}	EPA Method 5 or 201A	Sample >100 dscf

3. **Source Operation:**
   a. **Operating Capacity.** Source operations during the emissions test must be representative of maximum intended operating conditions.

   b. **Record of Production Parameters.** Production related parameters and equipment operating conditions shall be recorded during emissions testing to correlate operating conditions with emissions. All recorded production parameters shall be documented in the test results report. Recorded parameters shall, at a minimum, include the following:
      - Process startups and shutdowns
      - Differential pressure across filter media

Air Discharge Permit 20-3409 - Appendix C
Emission Testing Requirements
Cullet Return Baghouse #1

4. Reporting Requirements:

a. **Test Report**. A final emission test report must be prepared and submitted to SWCAA within 45 calendar days of test completion. Test reports must be provided in hard copy (paper) and an electronic format approved by SWCAA. The test report shall, at a minimum, contain the following information:

(1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
(2) Time and date of the test and identification and qualifications of the personnel involved, including identification of SWCAA personnel who observed test,
(3) Summary of results, reported in units and averaging periods consistent with the application emissions standard or unit,
(4) Summary of control system or equipment operating conditions,
(5) Summary of production related parameters,
(6) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
(7) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
(8) Copies of field data and example calculations,
(9) Chain of custody information,
(10) Calibration documentation,
(11) Discussion of any abnormalities associated with the results, and
(12) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

b. **Reported Units.** Test results shall be presented in units of pounds per hour (lb/hr) and grains per dry standard cubic feet (gr/dscf). No oxygen correction is required.

5. Changes to Testing Requirements:

Minor modifications to the requirements above may be requested by the permittee or their representative and must be pre-approved by SWCAA.

Air Discharge Permit 20-3409 - Appendix D
Emission Testing Requirements
Cullet Return Baghouse #2

1. **Introduction:**
   The purpose of this testing is to quantify emissions from Cullet Return Baghouse #2 and demonstrate compliance with the requirements of this permit.

2. **Testing Requirements:**
   a. **Testing Schedule.** Cullet Return Baghouse #2 shall be emission tested no later than March 2024. Periodic testing shall be conducted every 60 months thereafter, no later than the end of March. Emission testing conducted more than three months prior to a scheduled due date will not satisfy the periodic source emission testing requirement unless prior written approval is obtained from SWCAA.

   b. **Test plan.** A comprehensive test plan shall be submitted to SWCAA for review and approval at least 14 calendar days prior to each test. SWCAA personnel shall be informed at least 7 calendar days prior to testing so that a representative may be present during testing.

   c. **Test Location.** Sampling must be conducted at the exhaust stack of Cullet Return Baghouse #2.

   d. **Test Methods.** A minimum of three (3) test runs shall be performed for each constituent listed below to ensure the data are representative. Compliance shall be demonstrated by averaging the results of the individual sampling runs. The sampling methods identified below shall be used unless alternate methods are approved in writing by SWCAA in advance of the emission testing.

Constituent	Reference Test Method	Minimum Test Duration
Flow rate, temperature	EPA Method 1 and 2	N/A
O_2, CO_2	EPA Method 3 or 3A	60 minutes
Moisture	EPA Method 4 or ODEQ Method 4	60 minutes
PM/PM_{10}	EPA Method 5 or 17	60 minutes
Opacity	SWCAA Method 9	20 minutes

3. **Source Operation:**
   a. **Operating Capacity.** Source operations during the emissions test must be representative of maximum intended operating capacity.

   b. **Record of production parameters.** Production related parameters and equipment operating conditions shall be recorded during emissions testing to correlate operating conditions with emissions. All recorded production parameters shall be documented in the test results report. Recorded parameters shall, at a minimum, include the following:
      - Process startups and shutdowns
      - Differential pressure across filter media

4. **Reporting Requirements:**
   a. **Test Report.** A final emission test report must be prepared and submitted to SWCAA within 45 calendar days of test completion. Test reports must be provided in hard copy (paper) and an electronic format acceptable to SWCAA. The test report shall, at a minimum, contain the following information:

      (1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
      (2) Time and date of the test and identification and qualifications of the personnel involved, including identification of SWCAA personnel who observed test,
      (3) Summary of results, reported in units and averaging periods consistent with the application emissions standard or unit,
      (4) Summary of control system or equipment operating conditions,
      (5) Summary of production related parameters,
      (6) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
      (7) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
      (8) Copies of field data and example calculations,
      (9) Chain of custody information,
      (10) Calibration documentation,
      (11) Discussion of any abnormalities associated with the results, and
      (12) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

   b. **Reported Units.** Test results shall be presented in units of pounds per hour (lb/hr) and grains per dry standard cubic feet (gr/dscf). No oxygen correction is required.

5. **Changes to Testing Requirements:**
   Minor modifications to the requirements above may be requested by the Permittee or their representative and must be pre-approved by SWCAA.

Air Discharge Permit 20-3409 - Appendix E
Emission Testing Requirements
EP Dust Baghouses

1. **Introduction:**
   The purpose of this testing is to quantify emissions from EP Dust baghouses with identified excess visible emissions and demonstrate compliance with the requirements of this Permit.

2. **Testing Requirements:**
   a. **Testing schedule.** Each affected baghouse required by SWCAA to emission test due to excess visible emissions, shall be emission tested no later than 60 days following the source's receipt of the associated Notice of Violation. Periodic emission testing may also be required with a frequency not to exceed once every 60 months. Alternate testing schedules may be implemented if approved in writing by SWCAA in advance of the regularly scheduled test.

   b. **Test plan.** A comprehensive test plan shall be submitted to SWCAA for review and approval at least 14 calendar days prior to each test. SWCAA personnel shall be informed at least 7 calendar days prior to testing so that a representative may be present during testing.

   c. **Test Location.** Sampling must be conducted at the exhaust stack of the EP Dust Baghouse.

   d. **Test Methods.** A minimum of three (3) test runs shall be performed for each constituent listed below to ensure the data are representative. Compliance shall be demonstrated by averaging the results of the individual sampling runs. The sampling methods identified below shall be used unless alternate methods are approved in writing by SWCAA in advance of the emission testing.

Constituent	Reference Test Method	Minimum Test Run Duration
Stack gas velocity, flow rate	EPA Methods 1 and 2	N/A
O_2, CO_2	EPA Method 3 or 3A	60 minutes
Moisture	EPA Method 4 or ODEQ Method 4	60 minutes
PM/PM_{10}	EPA Method 5 or 17	60 minutes
Opacity	SWCAA Method 9	20 minutes

3. **Source Operation:**
   a. **Operating Capacity.** Source operations during the emissions test must be representative of maximum intended operating conditions.

   b. **Record of production parameters.** Production related parameters and equipment operating conditions shall be recorded during emissions testing to correlate operating conditions with emissions. All recorded production parameters shall be documented in the test results report. Recorded parameters shall, at a minimum, include the following:
      - Process startups and shutdowns

4. **Reporting Requirements:**
   a. **Test Report.** A final emission test report must be prepared and submitted to SWCAA within 45 calendar days of test completion. Test reports must be provided in hard copy (paper) and an electronic format acceptable to SWCAA. The test report shall, at a minimum, contain the following information:

      (1) Description of the source including manufacturer, model number and design capacity of the equipment, and the location of the sample ports or test locations,
      (2) Time and date of the test and identification and qualifications of the personnel involved, including identification of SWCAA personnel who observed test,
      (3) Summary of results, reported in units and averaging periods consistent with the application emissions standard or unit,
      (4) Summary of control system or equipment operating conditions,
      (5) Summary of production related parameters,
      (6) A description of the test methods or procedures used including all field data, quality assurance/quality control procedures and documentation,
      (7) A description of the analytical procedures used including all laboratory data, quality assurance/quality control procedures and documentation,
      (8) Copies of field data and example calculations,
      (9) Chain of custody information,
      (10) Calibration documentation,
      (11) Discussion of any abnormalities associated with the results, and
      (12) A statement signed by the senior management official of the testing firm certifying the validity of the source test report.

   b. All test results shall be presented in units of pounds per hour (lb/hr) and grains per dry standard cubic feet (gr/dscf). No oxygen correction is required.

5. **Changes to Testing Requirements:**
   Minor modifications to the requirements above may be requested by the Permittee or their representative and must be pre-approved by SWCAA.