

Cardinal FG - Winlock

Title V Basis Statement

Southwest Clean Air Agency
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PERMIT #: SW08-14-R1

ISSUED: January 22, 2019 (FINAL)

ISSUED TO: Cardinal FG Company
545 Avery Road W
Winlock, WA 98596

PLANT SITE: Cardinal FG - Winlock
545 Avery Road W
Winlock, WA 98596

PERMIT ENGINEER: Wess Safford, Air Quality Engineer

REVIEWED BY: Paul T. Mairose, Chief Engineer

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I. GENERAL INFORMATION AND CERTIFICATION

1. **Company Name:** Cardinal FG
2. **Facility Name:** Cardinal FG - Winlock
3. **Parent Company:** Cardinal Glass Industries
4. **Responsible Official:** Steven Smith, Plant Manager
5. **Facility Contact Person:** Jonathan Renkert, Environmental Engineer
6. **UBI Number:** 602082179
7. **SIC Code / NAICS Number:** 3211 / 327211
8. **Basis for Title V Applicability:**
The facility is subject to the Title V Air Operating Permit program because it is a major source of regulated emissions as defined in WAC 173-401-200(19).
9. **Purpose of Current Permitting Action:**
The purpose of the current permitting action is to renew the Title V permit for this facility. SWCAA has not issued any New Source Review permits for this facility and no significant physical changes have been made to facility equipment since the last Title V Permit was issued.
10. **Attainment Area:**
The Cardinal FG facility in Winlock is located in an area which is in attainment for all criteria pollutants.
11. **Facility Description:**
Cardinal FG - Winlock (Cardinal FG) is a flat glass manufacturing facility located near the intersection of Avery Road and Highway 603 in Winlock, Washington. The facility is similar in design to other facilities operated by Cardinal in Wisconsin (Menomonie and Portage), Oklahoma (Durant) and North Carolina (Mooresville). All equipment at the facility operates in support of a single glass furnace. The facility uses both recycled cullet and raw minerals in its production process, and makes only clear flat glass. The facility's glass furnace has a nominal production rating of 650 tons per day and commenced operation in September 2006.

12. Facility Permitting History:

The following table lists each new source review permit issued to the facility by SWCAA and/or the Department of Ecology. Permits labeled as obsolete have expired or been superseded by more recent permitting actions, and are no longer in effect.

<u>Permit Number</u>	<u>Issue Date</u>	<u>Permitting Action</u>
<u>Active</u>		
PSD-03-03-A2	12/3/10	Modification of existing permit terms to incorporate an annual maintenance shutdown of the spray drier scrubber and electrostatic precipitator.
ADP 04-2568R2	12/16/08	ADP application L-627. Installation of two manual glass packing lines with dedicated baghouse (Cullet Return Baghouse #2). Modification of Glass Furnace visible emissions limit to approve higher values during lead fan switching events.
<u>Obsolete Orders/Permits</u>		
<i>PSD-03-03-A1</i>	<i>2/14/08</i>	<i>Administrative modification of original permit terms related to conducting all compliance tests at not less than 90% of the daily glass draw capacity of the facility. Cardinal FG proposed to establish a permit clause that would retain the 90% relationship, but allow testing at a lower operating rate in exchange for a lower operating limit. The amended permit terms allow Cardinal to return to full capacity subsequent to a successful compliance test at a higher glass draw rates provided the 90% relationship is maintained.</i>
<i>ADP 04-2568R1</i>	<i>9/26/07</i>	<i>ADP application L-597. Approval of two "EP dust" baghouses associated with the material catch reclaim system on the Glass Furnace electrostatic precipitator. The baghouses were installed during initial facility construction, but were not cited in either of the original new source review permits (PSD-03-03, ADP 04-2568). Also, revision of equipment citations and emission estimates to reflect installation of one emergency generator rather than two as approved in original permit applications.</i>
<i>PSD-03-03</i>	<i>1/13/05</i>	<i>Installation of a new flat glass manufacturing facility in Winlock, Washington.</i>
<i>ADP 04-2568</i>	<i>10/4/04</i>	<i>ADP application L-524. Installation of a new flat glass manufacturing facility in Winlock, Washington.</i>

II. EMISSION UNIT IDENTIFICATION

EU1 Glass Furnace

Melting Furnace. One site-built float furnace with a side port, regenerative configuration. The furnace fires on natural gas at a maximum rate of 200 MMBTU/hr, and has a nominal production rating of 650 tons per day (tpd). Exhaust gases from the furnace discharge to the ambient atmosphere through an 8' diameter stack at a height of 175' above ground level.

Annealing Lehr. One site-built annealing Lehr with direct SO₂ injection. The annealing Lehr does not have a dedicated exhaust stack. Exhaust streams from the Lehr are captured by a collection hood that discharges to the Glass Furnace combustion air header.

Emissions from the Glass Furnace consist of NO_x, CO, SO₂, PM/PM₁₀, VOC, HAPs, and TAPs. NO_x and CO emissions are controlled through the use of the proprietary *3R Process*. Filterable PM emissions are controlled with an ESP. SO₂ emissions are controlled with a spray dryer utilizing an aqueous sodium carbonate solution. This unit is subject to applicable requirements found in 40 CFR 60 Subpart CC *Standards of Performance for Glass Manufacturing Plants*. This emission unit is not subject to any requirements from 40 CFR Parts 61 or 63.

EU2 Glass Cutting

Computer controlled cutting wheel assemblies are used on the main production line to size and trim product by scoring the glass ribbon into lites. This operation uses mineral spirits as a cutting lubricant.

Emissions from glass cutting operations consist of VOC, HAPs and TAPs. VOC emissions are minimized through the use of good work practices. The HAP content of mineral spirits used in the process is limited by permit term. This emission unit is not subject to any requirements from 40 CFR Parts 60, 61 or 63.

EU3 Cullet Return System #1

Cullet Return System #1 conveys broken/reject lites and glass dust from the primary production line back to the cullet flat storage area at a maximum rate of 650 tpd. Cullet Return Baghouse #1 is used in conjunction with equipment enclosure to control dust emissions from the portion of the glass return system operating at the production line. The baghouse is identified as a Donaldson model 324MBWS10 baghouse rated at 41,500 cfm with a total filtration area of 5,196 ft². Filter bag material is identified as 16.0 oz/yd² polyester. This unit is equipped with a pulse-jet cleaning system.

Emissions from Cullet Return Baghouse #1 consist of PM/PM₁₀. This emission unit is not subject to any requirements from 40 CFR Parts 60, 61 or 63.

EU4 Cullet Return System #2

Cullet Return System #2 collects and conveys broken/reject glass and glass dust from the new packing lines approved in ADP 04-2568R2. Cullet Return Baghouse #2 is used in conjunction with equipment enclosure to control dust emissions from the portion of the glass return system operating at the packing lines. The baghouse is identified as a Carothers and Son model 195TR10HEI baghouse rated at 25,000 cfm with a total filtration area of 3,120 ft². Filter bag material is identified as 16 oz/yd² polyester. This unit is equipped with a reverse airjet cleaning system. Exhaust is discharged vertically through a 32" diameter stack at approximately 32' 6" above ground level.

Emissions from Cullet Return Baghouse #2 consist of PM/PM₁₀. This emission unit is not subject to any requirements from 40 CFR Parts 60, 61 or 63.

EU5 EP Dust Baghouse #1

A pneumatic transfer system is used to convey material catch from the Glass Furnace ESP to the raw material storage silos. EP Dust Baghouse #1 controls emissions from the transfer system and an associated surge tank. The baghouse is identified as a Nol-Tec model 238-84NT25 baghouse rated at 1,500 cfm with a total filtration area of 263 ft². Filter bag material is identified as 16 oz/yd² polyester. This unit is equipped with a pulse-jet cleaning system. Unit exhaust discharges vertically through an 8" diameter outlet at ~100' above ground level.

Emissions from EP Dust Baghouse #1 consist of PM/PM₁₀. This emission unit is not subject to any requirements from 40 CFR Parts 60, 61 or 63.

EU6 EP Dust Baghouse #2

A pneumatic transfer system is used to convey material catch from the Glass Furnace ESP to the raw material storage silos. EP Dust Baghouse #2 controls emissions from the transfer system and an associated surge tank. The baghouse is identified as a Nol-Tec model 238-84NT25 baghouse rated at 1,500 cfm with a total filtration area of 263 ft². Filter bag material is identified as 16 oz/yd² polyester. This unit is equipped with a pulse-jet cleaning system. Unit exhaust discharges vertically through an 8" diameter outlet at ~100' above ground level.

Emissions from EP Dust Baghouse #2 consist of PM/PM₁₀. This emission unit is not subject to any requirements from 40 CFR Parts 60, 61 or 63.

EU7 Emergency Generator

Cardinal's original PSD permit application proposed to install two emergency generators at the Winlock facility. The proposal was later changed to install only one generator equipped with SCR emission controls. The equipment change resulted in the generator being considered a 'de minimis' unit for purposes of the PSD permit, and SWCAA permitted the unit under ADP 04-2568R2.

The Emergency Generator is a Caterpillar package generator (s/n 1HN00940) rated at 2,000 kW, powered by a Caterpillar model D3516 diesel engine (s/n GZS00700) rated at 2,885 horsepower (mfg'd 2005). The diesel engine has a specified fuel consumption of 146.6 gal/hr at 100% load.

Emissions from the Emergency Generator consist of NO_x, CO, SO₂, PM, and VOC. NO_x emissions are controlled with a Johnson Matthey model SCR-CG selective catalytic reduction (SCR) system. SO₂ emissions are minimized through the use of low sulfur diesel fuel. This unit

is subject to applicable requirements found in 40 CFR 63 Subpart ZZZZ with a compliance date of May 3, 2013. This emission unit is not subject to any requirements from 40 CFR Parts 60 or 61.

Obsolete Emission Units. The units described below were listed as emission units in the facility's previous permit, but have subsequently been removed from service. All requirements applicable to these units have been removed from this permit.

Raw Materials Elevator Dust Collector (Top). One (1) JBD model DF110R cartridge collector rated at 324 cfm with a total filtration area of 108 ft². Filter cartridge material is identified as 8 oz/yd² spun bond polyester. The unit is equipped with a pulse-jet cleaning system. The top dust collector is used in conjunction with equipment enclosure to control dust emissions from raw material transfer between the top of the raw materials elevator and the rotary distributor for the storage silos. The raw materials elevator conveys material from the receiving pit to the top of the storage silos/bins at a maximum rate of 300 tph.

Cullet Elevator Dust Collector (Top). One (1) JBD model DF110R cartridge collector rated at 324 cfm with a total filtration area of 108 ft². Filter cartridge material is identified as 8 oz/yd² spun bond polyester. The unit is equipped with a pulse-jet cleaning system. The top dust collector is used in conjunction with equipment enclosure to control dust emissions from cullet transfer between the top of the cullet elevator and the batch house storage bins. The cullet elevator conveys cullet from the cullet storage building to the storage bins in the batch house at a maximum rate of 150 tph.

III. INSIGNIFICANT EMISSION UNIT IDENTIFICATION

Each emission unit listed as insignificant in the permit application has been reviewed by SWCAA to confirm its status. The following emission units were determined to be insignificant:

IEU1 Bottom Material Elevator Dust Collectors

The bottom material elevator dust collectors have been determined to be insignificant emission units due to the configuration of their exhaust, which discharges inside the building envelope.

IEU2 Batch House Dust Collectors

The batch house dust collectors have been determined to be insignificant emission units due to the configuration of their exhaust, which discharges inside the building envelope.

IV. EXPLANATION OF SELECTED PERMIT PROVISIONS AND GENERAL TERMS AND CONDITIONS

P13. Excess Emissions

SWCAA 400-107

SWCAA 400-107 establishes criteria and procedures for determining when excess emissions are considered unavoidable. Emissions that meet the requirements to be classified as unavoidable are still considered excess emissions and are reportable but are excused and not subject to penalty. Notification of excess emissions is required as soon as possible and shall occur by the next business day following the excess emissions event. Excess emissions due to startup or shutdown conditions are considered unavoidable if the permittee adequately demonstrates the excess emissions could not have been prevented through careful planning and design. Upset

excess emissions are considered unavoidable if the permittee adequately demonstrates the upset event was not caused by poor or inadequate design, operation, maintenance, or other reasonably preventable condition, and the permittee takes appropriate corrective action that minimizes emissions during the event, taking into account the total emissions impact of that corrective action.

G5. Permit Renewal WAC 173-401-710(1)

An Air Operating Permit has an effective term of 5 years from the date of final issuance. Pursuant to WAC 173-401-710(1), the Permit specifies a date by which a renewal application is required to be submitted to SWCAA.

A preliminary renewal application for this facility must be submitted no later than 12 months prior to permit expiration. A complete renewal application must be received no later than 6 months prior to permit expiration. Early submittal of a preliminary application is intended to provide SWCAA with the opportunity to review the application for completeness and allow the permittee sufficient time to amend the application, if necessary, prior to the final submission date.

WAC 173-400-117, WAC 173-400-700

WAC 173-460 (effective 8/21/98)

G8. New Source Review SWCAA 400-109, SWCAA 400-800

Construction or modification of an air pollution source is subject to review to ensure that applicable emission standards are met and appropriate control technology is employed. The program under which a new source or modification is reviewed depends on the type and quantity of potential air emissions associated with the project. New sources or modifications that meet the definition of a 'major stationary source' are subject to review under the Prevention of Significant Deterioration (PSD) program, which is administered by the Department of Ecology. Sources that are too small to be a major source (minor sources) are subject to review under SWCAA's new source review program. New sources or modifications that increase the emission of toxic air pollutants are subject to review under SWCAA's toxic air pollutant program, which implements the version of WAC 173-460 in effect on August 21, 1998.

G9. Portable Sources SWCAA 400-036, SWCAA 400-110(6)

SWCAA 400-110(6) establishes procedures for approving the operation of portable sources of air emissions that locate temporarily at project sites. These requirements are general standards, and apply to all portable sources of air contaminants. Equipment commonly subject to these conditions include emergency generators, engine-powered pumps, rock crushers, concrete batch plants, and hot mix asphalt plants that operate for a short time period at a site to fulfill the needs of a specific contract. Portable sources exempt from registration under SWCAA 400-101 are also exempt from SWCAA 400-110 and not subject to the portable sources requirements.

G16. Chemical Accident Prevention Provisions 40 CFR 68

None of the processes at the facility currently store or handle affected substances in quantities large enough to trigger applicability of the provisions in 40 CFR 68. The primary material of concern at this facility is bulk aqueous ammonia, which is stored onsite for use in the turbine's SCR system. The existing storage tank has a physical capacity less than the applicable threshold for <20% aqueous ammonia so the regulation does not apply. However, the regulation has been included in the general terms of the permit in order to address future operations that may store or handle substances that are subject to the regulation.

G17. Reporting of Emission of Greenhouse Gases WAC 173-441 (state only)

WAC 173-441 requires owners and operators to quantify and report emissions of greenhouse gases from applicable source categories if actual emissions from their facility are ten thousand metric tons CO₂e or more per year. Annual greenhouse gas emissions from this facility are greater than ten thousand tons so the facility is subject to the reporting program. The reporting program is administered by Ecology, and all required reports are to be submitted directly to that agency. SWCAA generally receives copies of each report, but report review and approval of calculation methodology is performed by Ecology.

V. EXPLANATION OF OPERATING TERMS AND CONDITIONS**Reqs 1-8****General Standards for Maximum Emissions SWCAA 400-040**

SWCAA 400-040 establishes maximum emission standards for various air contaminants. These standards apply to all emission units at the source, both EU and IEU. Pursuant to WAC 401-530(2)(c), the permit does not contain any testing, monitoring, recordkeeping, or reporting requirements for affected IEUs except those specifically identified by the underlying requirements. General monitoring provisions have been created under 'gap-filling' to provide reasonable compliance assurance for general standards that do not specify a monitoring regime.

Req 9**Emission Standards for Combustion and Incineration Units SWCAA 400-050**

SWCAA 400-050 establishes maximum emission standards for selected emissions from combustion and incineration units. These requirements apply to all combustion and incineration units at the source, both EUs and IEUs.

Req 10**Emission Standards for General Process Units SWCAA 400-060**

SWCAA 400-060 establishes maximum particulate matter emission standards for general process units. These requirements apply to all general process units at the source, both EUs and IEUs.

Req 11**Emission Standards for Certain Source Categories Abrasive Blasting SWCAA 400-070(8)**

SWCAA 400-070 establishes emission standards for specific source categories. SWCAA 400-070(8) establishes general limitations and work practice requirements for abrasive blasting operations.

Reqs 12-34, 38-39, 41-42, 57-58**Dept Ecology PSD Permit PSD-03-03-A2**

PSD-03-03-A2 is the active PSD permit (major NSR) for the Winlock facility. It establishes emission limits and operational requirements that are intended to protect general air quality, maintain compliance with applicable NAAQS, and implement BACT.

PSD-03-03-A2 contains monitoring requirements for most of the applicable requirements contained in the permit. The specified monitoring requirements are generally sufficient to assure compliance and have been incorporated into the air operating permit. In cases where PSD-03-03-A2 does not

specify monitoring, monitoring provisions have been developed under 'gap-filling' to provide reasonable compliance assurance. For applicable requirements that apply to fundamental equipment design or general operating practice, SWCAA has relied upon certification by the responsible official to provide compliance assurance.

Req 13 limits the maximum glass draw rate of the Glass Furnace based on the draw rate during the most recent compliance test. The intent of the requirement is to prohibit production at levels that are significantly more emissive than the conditions at which the source last demonstrated compliance. The draw rate limit has the potential to change depending on the production levels at which the permittee conducts compliance testing.

Reqs 14 and 18-19 contain provisions specific to burnout maintenance in the Glass Furnace. Requirement 14 limits the timing and duration of each burnout maintenance period. Requirements 18 and 19 provide alternate NO_x emission limits applicable during burnout maintenance periods.

Reqs 12, 15-17, 20-28, 31-34 contains BACT emission limits specific to the Glass Furnace. The emission limits apply to emissions of criteria pollutants and VOC. For affected pollutants, emission limits are generally given in terms of both mass emission rate (lb/hr) and production-based emission rate (lb/T_G). Emission limits are applicable to regular operation of the Glass Furnace. Separate emission limits are established for burnout maintenance periods and spray dryer/ESP maintenance periods.

Reqs 29-30 contain provisions specific to maintenance periods for the Glass Furnace spray dryer and ESP. The spray dryer and ESP must be taken offline once per year for inspection and cleaning. Requirement 29 limits the duration of each maintenance period and waives the emission limits in Requirements 23-28. Requirement 30 provides an alternate SO₂ emission limit applicable during spray dryer/ESP maintenance periods.

Reqs 38-39 contain BACT throughput limits and material content restrictions specific to glass cutting operations on the main production line. Throughput limits are meant to limit emissions of VOC. Material content limits are intended to minimize HAP emissions (benzene).

Reqs 41-42 contain BACT emission limits specific to material handling dust collectors approved under PSD-03-03-A2 (Cullet Return Baghouse #1, raw materials elevator top, cullet elevator top). The emission limits apply to emissions of PM/PM₁₀ in terms of both mass emission rate (lb/hr) and concentration (gr/dscf). Since issuance of PSD-03-03-A2, the raw materials elevator top and cullet elevator top dust collectors have been removed from service.

Req 57 is a general permit term requiring Cardinal FG to compile and maintain an operation and maintenance (O&M) manual for approved emission units at the Winlock facility. Cardinal has compiled an O&M manual that complies with the requirement, and maintains a copy of the document in the environmental office at the facility.

Req 58 is a general permit term requiring Cardinal FG to provide access and sampling ports for the purposes of source testing applicable emission units. All of the emission units with testing requirements have exhaust stacks that are equipped with sampling ports and appropriate access.

Reqs 35-37, 40, 43-51**SWCAA Air Discharge Permit****ADP 04-2568R2**

ADP 04-2568R2 is the active ADP (minor NSR) for the Winlock facility. ADP 04-2568R2 was issued on December 16, 2008 in response to air discharge permit application L-627. It establishes emission limits and operational requirements for emission units/pollutants that are not addressed in PSD-03-03-A2 (Cullet Return Baghouse #2, EP Dust Baghouses, Emergency Generator). ADP 04-2568R2 supersedes all previously issued air discharge permits as described in the obsolete regulation section of this document. At the time of approval, emission limits and operational restrictions imposed by the permit were representative of BACT.

ADP 04-2568R2 contains monitoring requirements for most of the applicable requirements cited in this section. Those monitoring requirements are generally sufficient to assure compliance and have been incorporated into the air operating permit. In cases where ADP 04-2568R2 does not specify monitoring, monitoring provisions have been developed under 'gap-filling' to provide reasonable compliance assurance. For applicable requirements that apply to fundamental equipment design or general operating practice, SWCAA has relied upon certification by the responsible official to provide compliance assurance.

Req 35 establishes federally enforceable emission limits for fluorides and sulfuric acid from the Glass Furnace. These emission limits were voluntarily taken by the permittee in order to avoid PSD applicability for these pollutants.

Req 36 contains visible emissions limits for the Glass Furnace. The opacity limits reflect the operating scheme proposed by the permittee. Two visible emission limits are identified for the Glass Furnace. A limit of 10% opacity is applicable to routine operating periods. A higher limit of 20% opacity is allowed during periods of hot fan transition due to the potential for elevated opacity as shifting air flows disturb fine particulate deposited in the exhaust ductwork. The permittee has changed the way the hot fans are operated since this requirement was established. A lead/lag operating scheme is no longer in use for the Glass Furnace. Current practice is to operate the hot fans at equal capacity. Consequently, the allowance for hot fan transition periods is rarely used.

Reqs 37, 40 contain work practice requirements and process material restrictions specific to glass cutting operations on the main production line. The work practices and material restrictions are intended to minimize VOC emissions.

Reqs 43-44, 46 contain emission limits specific to Cullet Return Baghouse #2 and the EP dust baghouses (PM and opacity). The emission limits were representative of BACT at the time of unit approval.

Req 45 requires the permittee to install and maintain a gauge to measure differential pressure across the filtration media in each affected dust collector. The purpose of the gauge is to provide a continuous operational parameter indicative of performance.

Reqs 47-48 contain BACT emission limits specific to the Emergency Generator. The criteria pollutant emission limits (NO_x, CO, PM₁₀) are based on manufacturer's estimates of maximum hourly emissions. They are combined with approved annual operation to establish annual potential to emit limits for each affected pollutant. The limits reflect limited operation for the purposes of testing and emergency use only, consistent with the operating scheme proposed in the original

permit application. The visible emissions limit for the Emergency Generator allows an exception during startup periods due to the operating limitations of the generator's diesel engine.

Reqs 49-50 contain operational restrictions specific to the Emergency Generator. The maximum fuel sulfur content of engine fuel is limited. The permittee is also required to install and operate an SCR system to reduce NO_x emissions. The restrictions form part of the basis for the Emergency Generator's BACT determination at the time of original approval.

Req 51 limits annual operation of the unit to a maximum of 200 hr/yr of operation for the purposes of testing and routine maintenance. Emergency service is not counted toward the allowed operating hours. The operational restriction was established as part of the original new source review approval for the unit. However, the operating limit is less stringent than the 100 hr/yr maintenance and testing allowance found in MACT Subpart ZZZZ (40 CFR 63.6640(f)), and it will be effectively superseded when the MACT provision becomes effective in May 3, 2013.

Reqs 26, 29

Standards of Performance for Glass Manufacturing Plants 40 CFR 60, Subpart CC
40 CFR 60, Subpart CC establishes emission standards for each glass melting furnace that commences construction or modification after June 15, 1979. The Glass Furnace at the Winlock facility is subject to this regulation.

Req 26 contains a PM/PM₁₀ BACT emission limit for the Glass Furnace that is taken from PSD-03-03-A2. The emission limit is in the same units as, and is more stringent than, the PM emission limit specified in 40 CFR 60.292(a) and Subpart CC, Table CC-1. Therefore, no separate emission limit was necessary to achieve compliance with the terms of the Subpart CC.

Req 29 allows the permittee to periodically bypass the Glass Furnace spray dryer and ESP for the purposes of routine maintenance. The language of Req 29 is taken from PSD-03-03-A2, Condition 9.1. The allowance is similar in form, but slightly more restrictive than the allowance found in 40 CFR 60.292(e).

Reqs 52-56

National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines 40 CFR 63, Subpart ZZZZ
40 CFR 63, Subpart ZZZZ establishes standards for stationary reciprocating internal combustion engines (RICE). Under the provisions of Subpart ZZZZ, the diesel engine power unit of the Emergency Generator is classified as an existing stationary RICE, and is subject to the regulation effective May 3, 2013.

Req 52 implements an operational limit from 40 CFR 63.6625. The diesel engine must be equipped with a non-resettable hour meter as a means of determining compliance with applicable limits

Req 53 limits the annual operation of the Emergency Generator's diesel engine consistent with the provisions of 40 CFR 63.6640(f). The limit for maintenance checks and readiness testing (≤100 hr/yr) is more stringent than the limit established pursuant to BACT in ADP 04-2568R2.

Req 54 implements operational requirements taken from 40 CFR 63.6625. The permittee is required to minimize idle time and startup periods for the diesel engine.

Reqs 55-56 implements Subpart ZZZZ maintenance requirements applicable to the Emergency Generator's diesel engine. As provided for in 40 CFR 63.6625(e), the permittee has opted to implement a facility specific maintenance plan that provides for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. The maintenance plan requires annual inspection and/or replacement of critical engine components.

Req 59**40 CFR 60.11(d)****Compliance with Standards and Maintenance Requirements****SWCAA 400-115**

Requirement 59 is taken from 40 CFR 60.11(d), which requires the permittee to maintain and operate affected equipment in a manner that is consistent with good air pollution control practices to minimize emissions. 40 CFR 60.11(d) is a general requirement that applies to emission unit EU1, which is the only unit at the facility subject to a 40 CFR Part 60 performance standard. SWCAA has relied upon compliance certification by the responsible official to provide compliance assurance with this requirement.

VI. EXPLANATION OF OBSOLETE AND FUTURE REQUIREMENTS**OBSOLETE REQUIREMENTS:****1. Glass Furnace – Notification for NSPS Subpart CC****40 CFR 60.7**

The Glass Furnace is subject to an NSPS regulation (40 CFR 60, Subpart CC), and must provide notification as provided in 40 CFR 60.7. These requirements have been met as described below.

Notification of construction:	Submitted via letter dated December 12, 2005
Notification of anticipated startup:	Submitted via letter dated August 1, 2006
Notification of actual startup:	Submitted via letter dated August 31, 2006

2. Glass Furnace – Initial Performance Test for NSPS Subpart CC**40 CFR 60.8**

The Glass Furnace is subject to the PM standard described in 40 CFR 60.292(a). Therefore, the unit is also subject to the initial performance testing requirements of 40 CFR 60.8. These requirements have been met as described below.

Initial performance test:	Performed March 12, 2007
Source test report:	Submitted May 1, 2007

3. Obsolete PSD Permits

The Department of Ecology has issued a total of three PSD permits for the Winlock facility since it was initially proposed. As identified in Section I above, the facility's current permit is PSD-03-03-A2. The previous two permits have been superseded as described below.

PSD-03-03-A1 issued February 14, 2008	Superseded by PSD-03-03-A2
PSD-03-03 issued January 13, 2005	Superseded by PSD-03-03-A1

4. Obsolete Air Discharge Permits

SWCAA has issued a total of three air discharge permits for the Winlock facility since it was initially proposed. As identified in Section I above, only the latest permit is still active (ADP 04-2568R2). Approval conditions in the previous two permits have been superseded or have become obsolete as described below.

ADP 04-2568R1 issued September 26, 2007

Superseded by ADP 04-2568R2

ADP 04-2568 issued October 4, 2004

Superseded by ADP 04-2568R1

FUTURE REQUIREMENTS:

No future requirements have been identified.

VII. EXPLANATION OF MONITORING TERMS AND CONDITIONS

The monitoring terms listed below incorporate formal monitoring taken from applicable regulations as well as 'gap-fill' monitoring designed to assure compliance for requirements that do not contain formal monitoring.

For applicable requirements that have one-time applicability or apply primarily to equipment design or installation, SWCAA relies upon compliance certification by the responsible official to provide compliance assurance.

General

M1. Visible Emissions Monitoring

Reqs 1, 36, 44, 48

The applicable requirements cited in this monitoring section are requirements drawn from SWCAA 400-040 and ADP 04-2568R2. These requirements limit visible emissions, but do not directly establish any specific regime of monitoring or recordkeeping. SWCAA has implemented monitoring requirements under the "gap filling" provisions of WAC 173-401-615.

The inspection scheme specified by this requirement is designed to provide periodic assurance of compliance, and identify potential visible emission violations in a timely fashion, prompting corrective action when necessary. A monthly inspection frequency is considered adequate to assure compliance with applicable opacity requirements because this monitoring is applicable only to minor units at the facility, which have a good history of compliance. This monitoring is not applicable to the Glass Furnace, which is subject to separate monitoring requirements in M9.

General

M2. Fugitive Emissions/Particulate Matter Monitoring

Reqs 2-4, 8-11

The applicable requirements cited in this monitoring section are general requirements drawn from SWCAA 400-040, SWCAA 400-070, and ADP 04-2568R2. These requirements do not establish a specific regime of monitoring or recordkeeping. SWCAA has implemented monitoring requirements under the "gap filling" provisions of WAC 173-401-615.

These requirements require the permittee to limit particulate emissions, prevent particulate matter fallout and minimize fugitive emissions. This monitoring requirement is designed to assure compliance through periodic visual inspections of the facility and prompt corrective action. A lack

of visual emissions or material accumulation is considered indicative of compliance with the applicable provisions and work practices.

General

M3. Complaint Monitoring

Reqs 2, 4-5

The applicable requirements cited in this monitoring section are general requirements drawn from SWCAA 400-040 and ADP 04-2568R2. These requirements do not directly establish any specific regime of monitoring or recordkeeping. SWCAA has implemented monitoring requirements under the "gap filling" provisions of WAC 173-401-615.

The affected applicable requirements prohibit unacceptable impacts on neighboring properties and/or surrounding populations. While many of the prohibited impacts might be observed from the facility itself, compliance with all provisions can not be assured by onsite observations alone (e.g., offsite odor impact). Therefore, this monitoring scheme relies on input from affected parties. The monitoring is designed to ensure compliance through prompt complaint response and corrective action.

General

M4. Compliance Certification

Reqs 7, 12, 20, 40, 57-59

The applicable requirements cited in this monitoring section are drawn from SWCAA 400-040, PSD-03-03-A2, and ADP 04-2568R2. These requirements do not directly establish any specific regime of monitoring or recordkeeping. SWCAA has implemented monitoring requirements under the "gap filling" provisions of WAC 173-401-615. Applicable requirements are divided into two broad categories; equipment configuration/operation restrictions and general work practice requirements.

The equipment restrictions are aimed at fundamental operating modes (no masking, fuel type, use of control technology, sampling port access, etc.) that do not change significantly once established. Hence, periodic certification that no changes have been made to equipment function or design is an appropriate means of assuring compliance for these requirements.

The general work practice requirements (maintain O&M manual, closed VOC containers, operate to minimize emissions, etc.) are primarily a function of worker training and workplace management. Compliance with these requirements is best ensured through active oversight by facility managers. The due diligence associated with periodic compliance certification will serve to confirm compliance.

Glass Furnace

M5. Operations Monitoring

Reqs 13, 16, 19, 22, 24, 26, 28, 32-33

The applicable requirements cited in this monitoring section are drawn from unit specific provisions of PSD-03-03-A2 and ADP 04-2568R2. Monitoring provisions require the permittee to record primary operational parameters (glass draw, startup/shutdown, maintenance activities, etc.). Calibration/audit activities related to the CEMS are also recorded under this monitoring provision.

Glass Furnace

M6. Burnout Maintenance Monitoring

Reqs 14, 18-19

This monitoring section is drawn from PSD-03-03-A2, Condition 4.9. The permittee is required to collect operational information and emission data sufficient to demonstrate compliance with permit terms specific to periods of Glass Furnace burnout maintenance. Burnout maintenance is a routine

maintenance activity that is periodically conducted for the purpose of removing sulfate deposition in the heat regenerators of the Glass Furnace. The process produces NO_x emissions that are significantly higher than during normal operation, and the Glass Furnace is subject to alternate emission limits for NO_x while conducting the maintenance. The duration and timing of each burnout maintenance period is restricted in order to limit the ambient impact of associated emissions.

Glass Furnace

M7. NO_x, CO and SO₂ Emission Monitoring Reqs 6, 15-19, 21-24, 30

The provisions of this monitoring section are drawn from multiple sections of PSD-03-03-A2, that require the permittee to use continuous emission monitoring systems to monitor NO_x, CO, and SO₂ emissions from the Glass Furnace.

As written, the terms of PSD-03-03-A2 specify the calculation of mass emissions based on monitored emission concentrations and recorded Glass Furnace fuel consumption via EPA Method 19. Cardinal FG subsequently submitted information indicating that use of Method 19 would not provide accurate emission estimates due to unavoidable process interferences. In lieu of using Method 19, Cardinal FG proposed to install and maintain an exhaust stack flowmeter and operate each CEMS as a CERMS. Approval of 'an equivalent mass emission rate calculation method' is expressly allowed by the CEMS provisions in PSD-03-03-A2, and the Department of Ecology approved the proposal in a memo dated March 13, 2006.

Pollutant emission rates are calculated hourly based on recorded emission concentration and monitored exhaust flow. All CERMS (NO_x, CO, SO₂) are to be operated in accordance with 40 CFR 60, Appendix B – Performance Specification 6 and 40 CFR 60, Appendix F.

Monitoring provisions require the permittee to record CEMS data for each hour of Glass Furnace operation. Pollutant emissions are then calculated and recorded for specified averaging periods using CEMS data, monitored flowrate, and recorded glass draw

Glass Furnace

M8. Opacity Monitoring Req 36

The applicable requirement cited in this monitoring section is taken from ADP 04-2568R2, Req 2, which establishes visible emission limits specific to the Glass Furnace. ADP 04-2568R2 does not contain any mandated monitoring to assure compliance with this requirement so SWCAA has implemented monitoring requirements under the "gap filling" provisions of WAC 173-401-615.

Cardinal has proposed to implement a regime of regular visible emission monitoring in order to assure compliance with the terms of Requirement 36. SWCAA has reviewed the proposal and determined that it is acceptable as a basic means of compliance assurance. Cardinal will perform a manual monitoring of opacity using SWCAA Method 9 on a monthly basis. In the past, the permittee has voluntarily operated a COMS to monitor visible emissions from the Glass Furnace. If the COMS is in operation during a given month, data from the unit may be used in lieu of manual monitoring.

Glass Furnace

M9. Filterable PM Compliance Assurance Monitoring Reqs 25-26

The applicable requirements cited in this monitoring section are emission limits drawn from PSD-03-03-A2. Relevant language in PSD-03-03-A2 contains requirements for periodic emission

testing, but does not establish any type of continuous compliance monitoring. Filterable PM emissions from the Glass Furnace are therefore subject to the provisions of CAM (40 CFR 64) because there is a pollutant specific emission limitation, the unit uses a control device (ESP) to achieve compliance with the emission limitation, the unit has potential pre-control device emissions of greater than 100 tpy, and the unit is not equipped with a CEMS/CERMS for the affected pollutant. This monitoring requirement is intended to serve as a CAM plan for filterable PM emissions from the Glass Furnace.

The permittee has identified total ESP field power as an indicator of compliance consistent with 40 CFR 64.3. As specified in 40 CFR 64(b)(ii), the permittee is required to collect four or more data values equally spaced over each hour and average the values. The permittee has established a minimum value for total ESP field power (20 kW) that provides a reasonable assurance of ongoing compliance with the applicable filterable PM emission limits. The identified minimum value was derived from the results of multiple filterable PM emission tests (EPA Method 5) using a variety of field power levels and operating conditions. The test results indicate compliance with the applicable filterable PM emission limits by a significant margin at the identified value. The test results also demonstrated that as long as minimum total field power was maintained, compliance was achieved with only three of four ESP fields in operation. Consequently, operation of the ESP with one field out of service is not necessarily considered to be an excursion.

Glass Furnace

M10. Emission Testing

Reqs 9-10, 25-28, 31-32, 35

This monitoring section is drawn from ADP 04-2568R2, Requirement 24 and PSD-03-03-A2, Conditions 7.8 and 7.9. The purpose of this testing is to establish emission factors for total fluoride and sulfuric acid emissions, and periodically quantify emissions of PM/PM₁₀ and VOC from the Glass Furnace. Periodic testing of PM/PM₁₀ and VOC emissions is necessary to demonstrate compliance with applicable limits in PSD-03-03-A2 and 40 CFR 60, Subpart CC.

Emission testing may be conducted at any glass draw rate selected by the permittee, but low draw rates have the potential to limit subsequent production pursuant to Req-13 of this permit. Initial emission testing for all affected pollutants was conducted on March 13-14, 2007.

Annual emissions of PM/PM₁₀, VOC, total fluoride, and sulfuric acid shall be calculated from recorded glass draw and the most recent emission test data.

Glass Furnace

M11. Spray Dryer/ESP Emission Monitoring

Reqs 29-30

This monitoring section is drawn from PSD-03-03-A2, Conditions 9.3 and 9.4. The monitoring is intended to assure compliance with the emission limits and operational restrictions applicable to spray dryer/ESP maintenance periods.

Emissions of SO₂ and PM are inherently higher during spray dryer/ESP maintenance periods than during normal operations. Consequently, the terms of PSD-03-03-A2 limit the number and duration of maintenance periods on an annual basis. Regular SO₂ and PM emission limits are not applicable during these maintenance periods, but associated emissions of both pollutants must be counted in the facility's annual emission inventory.

The permittee is required to record the date and duration of each maintenance period, and measure associated emissions of SO₂ and PM. SO₂ emissions will be quantified using the installed CERMS.

PM emissions will be estimated based on facility estimates of uncontrolled emission rate, or using an alternative emission factor approved by the Department of Ecology.

Glass Furnace

M12. Lehr Emission Monitoring

Reqs 33-34

This monitoring section is drawn from PSD-03-03-A2, Conditions 10.3 and 10.6. The section is intended to assure compliance with emission limits and operational restrictions applicable to the Glass Furnace Lehr.

The permittee is required to monitor SO₂ consumption in the Lehr by recording the beginning and ending weight of each SO₂ gas cylinder used in the process. Compliance with the applicable emission limit is determined by dividing monitored SO₂ consumption by the contemporaneous weight of glass draw.

The Lehr hood is required to continuously exhaust to the Glass Furnace combustion air header and from there into the spray dryer ESP control system. Compliance with this requirement is assured by monitoring operating status, and recording any instance during which the Lehr hood does not exhaust to the combustion air header.

Glass Cutting

M13. Emission Monitoring

Reqs 37-39

This monitoring section is primarily drawn from PSD-03-03-A2, Conditions 12.3 and 12.5. A portion of the monitoring has been implemented under the "gap filling" provisions of WAC 173-401-615 for purposes of assuring compliance with ADP 04-2568R2, Req-12 because ADP 04-2568R2 does not contain any mandated monitoring to assure compliance with that requirement. The section is intended to assure compliance with applicable consumption limits and material specifications for glass lubricant used in glass cutting operations at the facility.

The permittee is required to maintain vendor certification and material content data for each type of glass cutting lubricant in use, and record monthly lubricant consumption. For emission inventory purposes, VOC, HAP, and TAP emissions are calculated from recorded material consumption using mass balance methodology.

Cullet Return Baghouse #1

M14. Emission Monitoring/Testing

Reqs 10, 41-42

This monitoring section is drawn from PSD-03-03-A2, Condition 11.6. The section is intended to assure compliance with PM emission limits applicable to Cullet Return Baghouse #1.

Periodic emission testing using EPA reference methods is required to confirm compliance with the applicable PM/PM₁₀ emission concentration limit. PSD-03-03-A2, Condition 11.6.3 specifies the use of EPA Methods 5/201 and 202 for compliance demonstration. Initial emission testing of Cullet Return Baghouse #1 was conducted on March 15, 2007.

After initial testing, Cardinal FG proposed to waive the use of Method 202 due to the physical characteristics of the system serviced by Cullet Return Baghouse #1 and the lack of demonstrated condensable PM emissions. Cullet Return Baghouse #1 operates at ambient temperatures and does not draw from any combustion sources so the amount of potential condensable PM likely to be captured by a Method 202 test is minimal. The Department of Ecology reviewed the request, and

agreed with Cardinal FG's proposal. The Department of Ecology issued a provisional waiver via email dated February 24, 2009, and a formal waiver via letter dated December 8, 2011.

The hourly PM/PM₁₀ emission rate is calculated from the exhaust flowrate and tested emission concentration. Annual PM/PM₁₀ emissions are calculated from the most recently tested hourly emission rate and recorded hours of operation.

Cullet Return Baghouse #2

M15. Emission Monitoring/Testing

Reqs 10, 43, 45

This monitoring section is drawn from ADP 04-2568R2, Requirements 14, 22, and 25. The section is intended to assure compliance with PM/PM₁₀ emission limits applicable to Cullet Return Baghouse #2.

Periodic emission testing using EPA reference methods is required to confirm compliance with the applicable PM/PM₁₀ emission concentration limit. Initial emission testing of Cullet Return Baghouse #2 was conducted on March 5, 2009.

Annual PM/PM₁₀ emissions are calculated from recorded hours of operation, exhaust flowrate, and the most recently tested emission concentration.

EP Dust Baghouses

M16. Emission Monitoring/Testing

Reqs 10, 45-46

This monitoring section is drawn from ADP 04-2568R2, Requirements 14, 22, and 26. The section is intended to assure compliance with PM emission limits applicable to the EP dust baghouses.

Pursuant to ADP 04-2568R2, Requirement 26, emission testing using an EPA reference method (Method 5/17) is not required unless a Notice of Violation is issued for excessive visible emissions. Similar to the material elevator dust collectors, a lack of visible emissions serves as an indicator of compliance with applicable limits. The monthly visible survey found in monitoring requirement M1 serves to assure compliance on an ongoing basis. To date, no visible emissions have been observed from the EP dust baghouses and no citation has been issued.

Annual PM/PM₁₀ emissions are calculated from recorded hours of operation, nominal exhaust flowrate, and the maximum allowable emission concentration.

Emergency Generator

M17. Emission Monitoring

Reqs 6, 47, 49-56

This monitoring section is drawn from 40 CFR 63, Subpart ZZZZ and ADP 04-2568R2, Requirement 23. The section is intended to assure compliance with applicable emission limits, fuel standards, maintenance requirements and operational restrictions applicable to the Emergency Generator.

The permittee is required to record hours of operation and the nature of each operating period. These records are the basis for assuring compliance with the various use restrictions applicable to the unit's diesel engine. Operation of the diesel engine's SCR system varies depending on the length of each operating period, but will be recorded as appropriate. Periodic emission testing is not required for this unit due to its status as an existing, emergency use compression ignition engine. Vendor fuel certifications have been deemed sufficient to demonstrate compliance with applicable fuel sulfur content limitations.

Annual emissions are calculated from recorded hours of operation and emission factors provided by the manufacturers of the Emergency Generator's diesel engine and catalytic control system.

VIII. EXPLANATION OF RECORDKEEPING TERMS AND CONDITIONS

K1. General Recordkeeping

The requirements cited in this recordkeeping section are drawn from provisions in WAC 173-401-615(2) and ADP 04-2568R2. Recordkeeping requirements have been separated into sub-categories for easier reference.

K2. Continuous Emission Data Recordkeeping

The requirements cited in this recordkeeping section are taken from applicable sections of PSD-03-03-A2 and ADP 04-2568R2. Pertinent records must be maintained for at least 5 years from the date of the record pursuant to the general recordkeeping provisions of WAC 173-401-615(2)(c).

IX. EXPLANATION OF REPORTING TERMS AND CONDITIONS

R1. Deviations from Permit Conditions

The permittee is required to promptly report all deviations from permit conditions pursuant to WAC 173-401-615(3), SWCAA 400-107, and ADP 04-2568R2. Reporting timelines vary depending on the type of deviation involved.

The general timeline for deviation reporting (within 30 days following the end of the month of discovery) is cited in WAC 173-401-615(3) and ADP 04-2568R2, Condition 28. The timeline for reporting if the permittee wishes to claim excess emissions as unavoidable (within 48 hours of discovery) is defined in SWCAA 400-107(1) and ADP 04-2568R2, Condition 28. The timeline for deviations that pose a potential threat to human health and safety (within 12 hours of discovery) is taken directly from WAC 173-401-615(3) and ADP 04-2568R2, Condition 28.

Excursions, as described in condition M9, are considered to be deviations for the purpose of reporting under this section.

In all cases, SWCAA may request a full written report of any deviation if determined to be necessary. All permit deviations are also to be identified in the subsequent quarterly report.

R2. Complaint Reports

The permittee is required to report all complaints to SWCAA within three business days of receipt. This reporting section is based on WAC 173-401-615(3), and SWCAA's definition of "prompt" for reporting of complaints. The intent is to ensure a timely and effective response to complaints by either the facility or SWCAA.

Glass Furnace

R3. Spray Dryer/ESP Maintenance Report

The permittee is required to report the proposed date and schedule of each Glass Furnace spray dryer/ESP maintenance in accordance with 40 CFR 60.292(e). The intent of the notification is to

allow the permitting authority to track the frequency and duration of proposed maintenance events, and ensure that reasonable steps are being taken to minimize associated emissions.

Glass Furnace

R4. Burnout Maintenance Report

The permittee is required to notify the permitting authority prior to initiating Glass Furnace burnout maintenance pursuant to PSD-03-03-A2, Conditions 4.8.6 and 4.9.6 and ADP 04-2568R2, Condition 33. The intent of the notification is to allow the permitting authority to confirm compliance with the date and duration restrictions applicable to burnout maintenance.

R5. Quarterly Reports

The permittee is required to submit specified monitoring records and certification of monitoring records on a quarterly basis pursuant to PSD-03-03-A2, Condition 15.3.3 and ADP 04-2568R2, Conditions 32, 34 and 36. The intent of this requirement is to provide timely information to the permitting authority regarding facility operations and compliance status. The type of data to be reported is specified by data element in the reporting requirement.

R6. Semi-Annual Reports

The permittee is required to provide a report on the status of all monitoring records and provide certification of all submitted reports on a semi-annual basis consistent with WAC 173-401-615(3). The permittee must submit a list of all deviations from permit conditions that have occurred in the preceding semi-annual period. A Responsible Official must certify all reports previously submitted during the preceding semi-annual period if they have not otherwise been certified.

No semi-annual report is necessary if all required information has been included in corresponding quarterly reports.

R7. Emission Inventory Reports

The permittee is required to report a complete inventory of emissions from the source to SWCAA by March 15th for the previous calendar year pursuant to SWCAA 400-105 and ADP 04-2568R2, Condition 27. A complete emissions inventory includes quantification of emissions from all emission units at the facility. SWCAA's Executive Director may extend the submittal date by up to 60 days, pursuant to SWCAA 400-105(1).

R8. Annual Compliance Certification

The permittee is required to report and certify compliance with all permit terms and conditions on an annual basis pursuant to SWCAA 401-630(5). The permittee is required by 40 CFR 60.11(g) to consider credible evidence when submitting compliance certifications to NSPS affected units (Glass Furnace). Any reports of deviations from permit conditions or certifications of intermittent compliance need to be accompanied by an explanation.

R9. Emission Test Reports

This reporting requirement is taken from applicable sections of PSD-03-03-A2 and ADP 04-2568R2, Condition 35. The permittee is required to notify SWCAA in advance of all required source testing so that SWCAA personnel may be present during testing. Emission test results and associated operational data must be reported to SWCAA within 45 days of test completion.

X. COMPLIANCE HISTORY

SWCAA has issued the following Field Notices of Correction (FNOC) and/or Field Notices of Violation (FNOV) to the Cardinal FG - Winlock facility during the last five-year period. The Field Notices are summarized as follows:

<u>Field Notice /Issue Date</u>	<u>Cited Violation</u>
Notice of Violation #6141 Issued – March 7, 2018	Excess SO ₂ emissions from the Glass Furnace on February 20, 2018. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #6139 Issued – December 21, 2017	Excess SO ₂ emissions from the Glass Furnace on December 6 and 17, 2017. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #6136 Issued – August 3, 2017	Excess SO ₂ emissions from the Glass Furnace on July 8, 2017. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #6132 Issued – November 8, 2016	Excess SO ₂ emissions from the Glass Furnace on September 19, 2016. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #6127 Issued – March 4, 2016	Excess NO _x and SO ₂ emissions from the Glass Furnace on February 8 and 17, 2016. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #6126 Issued – March 4, 2016	Excess SO ₂ emissions from the Glass Furnace on February 7, 2016. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #5919 Issued – February 3, 2016	Excess SO ₂ emissions from the Glass Furnace on January 28, 2016. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #5918 Issued – January 8, 2016	Excess visible emissions from the Glass Furnace on December 31, 2015. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #5917 Issued – December 30, 2015	Excess SO ₂ emissions from the Glass Furnace on December 17, 2015. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #5914 Issued – November 13, 2015	Excess SO ₂ emissions from the Glass Furnace on October 23, 2015. The violation was resolved with a mitigated penalty of \$625.
Notice of Violation #5908 Issued – April 23, 2015	Excess SO ₂ emissions from the Glass Furnace on April 13, 2015. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #5905 Issued – April 14, 2015	Excess visible emissions from the Glass Furnace on April 2 and 6, 2015. The emissions were determined to be unavoidable per SWCAA 400-107(2).

<u>Field Notice /Issue Date</u>	<u>Cited Violation</u>
Notice of Violation #5904 Issued – March 31, 2015	Excess SO ₂ emissions from the Glass Furnace on March 27, 2015. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #5903 Issued – March 19, 2015	Excess NO _x emissions from the Glass Furnace on March 9, 2015. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #5369 Issued – November 25, 2014	Excess SO ₂ emissions from the Glass Furnace on November 23, 2014. The violation was resolved with a correction notice.
Notice of Violation #5365 Issued – September 16, 2014	Excess SO ₂ emissions from the Glass Furnace on September 10, 2014. The violation was resolved with a correction notice.
Notice of Violation #5362 Issued – June 27, 2014	Excess SO ₂ emissions from the Glass Furnace on June 14, 2014. The violation was resolved with a correction notice.
Notice of Violation #5361 Issued – June 20, 2014	Excess SO ₂ emissions from the Glass Furnace on June 5, 2014. The violation was resolved with a correction notice.
Notice of Violation #5359 Issued – April 24, 2014	Failure to submit annual compliance certification in a timely manner. The violation was resolved with a correction notice.
Notice of Violation #5357 Issued – February 19, 2014	Excess SO ₂ emissions from the Glass Furnace on February 14, 2014. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #5351 Issued – October 3, 2013	Excess SO ₂ emissions from the Glass Furnace on September 26, 2013. The emissions were determined to be unavoidable per SWCAA 400-107(2).
Notice of Violation #4871 Issued – July 17, 2012	Excess NO _x and SO ₂ emissions from the Glass Furnace on June 20-21, 2012. The violation was resolved with a penalty of \$1,500.

XI. TITLE V PERMIT ACTIONS

1. Current Permitting Action

Renewal Permit – SW08-14-R1

Application received:	September 14, 2016
Application complete:	December 9, 2016
Application sent to EPA:	December 9, 2016
Draft permit issued:	September 27, 2018
Proposed permit issued:	November 1, 2018
Final permit issued:	January 22, 2019

2. Previous Permitting Actions

Initial Permit – SW08-14-R0

Application received:	September 9, 2008
Application complete:	September 19, 2008
Application sent to EPA:	September 24, 2008
Draft permit issued:	June 20, 2012
Proposed permit issued:	August 2, 2012
Final permit issued:	September 27, 2012

XII. APPENDICES

Appendix A Glass Furnace – Emission Testing Requirements

Appendix A contains a testing protocol to be used when emission testing the Glass Furnace. The testing protocol is a compilation of testing requirements found in PSD-03-03-A2, Conditions 7.8, 7.9 and 8.4 and ADP 04-2568R2, Appendix A *Emission Testing Requirements Glass Melting Furnace*. The reference test methods presented in the appendix are the same as those specified in the original permit sections.

Cardinal FG has recently proposed to review the appropriateness of EPA Method 8 for measuring sulfuric acid emissions from the Glass Furnace. Experience at other sites suggests that the EPA Method 8 may overestimate actual emissions. Cardinal FG believes the use of NCASI Method 8A may provide more accurate results. The use of NCASI Method 8A is currently being reviewed by the Department of Ecology and SWCAA.

Appendix B Glass Furnace – Continuous Monitoring Requirements

Appendix B contains performance specifications for the continuous monitoring systems installed on the Glass Furnace. The specifications are applicable to the CERMS for NO_x, CO, and SO₂. The performance specifications are taken directly from PSD-03-03-A2, Condition 13.

Appendix C Cullet Return Baghouse #1 – Emission Testing Requirements

Appendix C contains a protocol to be used when conducting periodic emission testing of Cullet Return Baghouse #1. The testing protocol is drawn from PSD-03-03-A2, Condition 11.6. Condition 11.6 specifies the use of both EPA Method 5/201 and 202 for testing PM/PM₁₀ emissions. As cited in the explanation for monitoring requirement M14, the Department of Ecology previously approved a request by Cardinal FG to suspend testing with Method 202. Therefore, the protocol in Appendix C only cites the use of Method 5/201 for testing PM/PM₁₀ emissions.

Appendix D Cullet Return Baghouse #2 – Emission Testing Requirements

Appendix D contains a protocol to be used when conducting periodic emission testing of Cullet Return Baghouse #2. The monitoring protocol is taken directly from ADP 04-2568R2, Appendix C *Emission Testing Requirements Cullet Return Baghouse #2*.

Appendix E EP Dust Baghouses – Emission Testing Requirements

Appendix E contains a protocol to be used when conducting periodic emission testing of the EP Dust Baghouses. The monitoring protocol is taken directly from ADP 04-2568R2, Appendix B *Emission Testing Requirements EP Dust Baghouses*.