TECHNICAL SUPPORT DOCUMENT

Air Discharge Permit 25-3699
Air Discharge Permit Application CL-3295

Issued: April 9, 2025

Hidden River Roasters

SWCAA ID – 2693

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ABBREVIATIONS

List of Acronyms

ADP ..... Air Discharge Permit
BACT..... Best Available Control Technology
BART ..... Best Available Retrofit Technology
CAM ..... Compliance Assurance Monitoring
CAS#..... Chemical Abstracts Service registry number
CFR..... Code of Federal Regulations
EPA..... U.S. Environmental Protection Agency
EU ..... Emission Unit
LAER..... Lowest achievable emission rate
MACT..... Maximum Achievable Control Technologies
NESHAP..... National Emission Standards for Hazardous Air Pollutants
NOV..... Notice of Violation
NSPS..... New Source Performance Standard
PSD ..... Prevention of Significant Deterioration
RACT..... Reasonably Available Control Technology
RCW ..... Revised Code of Washington
SQER ..... Small Quantity Emission Rate listed in WAC 173-460
Standard ..... Standard conditions at a temperature of 68°F (20°C) and a pressure of 29.92 in Hg (760 mm Hg)
SWCAA ..... Southwest Clean Air Agency
T-BACT ..... Best Available Control Technology for toxic air pollutants
WAC ..... Washington Administrative Code

List of Units and Measures

lb/ ..... Pounds per
lb/hr..... Pounds per hour
lb/yr..... Pounds per year
MMBtu/hr.....Millions of British thermal units per hour
tpy.....Tons per year

List of Chemical Symbols, Formulas, and Pollutants

CH_4..... Methane
CO..... Carbon monoxide
CO_2..... Carbon dioxide
CO_2e..... Carbon dioxide equivalent
HAP ..... Hazardous air pollutant listed pursuant to Section 112 of the Federal Clean Air Act
N_2O ..... Nitrous oxide
NO_2 ..... Nitrogen dioxide
NO_X..... Nitrogen oxides
O_2 ..... Oxygen
O_3 ..... Ozone
PM .....Particulate Matter with an aerodynamic diameter 100 µm or less
PM_{10}.....PM with an aerodynamic diameter 10 µm or less
$PM_{2.5}$ .....PM with an aerodynamic diameter 2.5 µm or less
SO_2.....Sulfur dioxide
SO_X .....Sulfur oxides
TAP.....Toxic air pollutant pursuant to Chapter 173-460 WAC
VOC.....Volatile organic compound

Terms not otherwise defined have the meaning assigned to them in the referenced regulations or the dictionary definition, as appropriate.

1. FACILITY IDENTIFICATION

Applicant Name:	Hidden River Roasters, LLC
Applicant Address:	536 NE 5th Ave., Camas, WA 98607
Facility Name:	Hidden River Roasters
Facility Address:	39813 SE 37th St., Washougal, WA 98671
SWCAA Identification:	2693
Contact Person:	Brandon Pasa
Primary Process:	Coffee Roasting
SIC/NAICS Code:	2095: Food and kindred products 311920: Coffee and tea manufacturing
Facility Latitude and Longitude:	45°35'38.81"N 122°15'47.27"W
Facility Classification:	Natural Minor

2. FACILITY DESCRIPTION

This facility will roast coffee beans using a 24 kilogram batch roaster. Emissions of odors, smoke (particulate matter), volatile organic compounds, and carbon monoxide will be controlled by a catalytic oxidizer.

3. CURRENT PERMITTING ACTION

This permitting action is in response to Air Discharge Permit (ADP) application number CL-3295 received March 20, 2025. ADP application CL-3295 was submitted for relocation of an existing coffee roaster to the address above.

ADP 25-3699 will supersede ADP 20-3422 in its entirety.

4. PROCESS DESCRIPTION

The coffee roasting process consists of direct-fire roasting of clean, green coffee beans until the beans reach the desired color. During the process, moisture is driven off, the beans swell, and chemical changes take place to give the roasted beans their typical color and aroma. At a point about halfway into the roast, the beans reach the first "crack" which is the point where the skin or hull cracks. After the first crack, the roasting beans give off smoke and odors. The beans continue roasting until they reach their desired color. After the roast is completed, the beans are dumped into a cooling tray, air is drawn through the beans, and the beans are stirred with a mechanical arm. All

air from the roaster is directed to a catalytic oxidizer. Air from the cooling tray is directed to a separate filtered exhaust. After the beans are cooled, they are "de-stoned" to remove unwanted debris and then sent for packaging.

5. EQUIPMENT/ACTIVITY IDENTIFICATION

5.a. Coffee Roaster with Catalytic Oxidizer (*relocated*). The coffee roaster includes the roaster itself and the associated cooling tray. The following equipment details were provided.

Roaster Make / Model:	Mill City Roasters / MCR-20
Roaster Capacity:	24 kg/batch (maximum)
Roaster Fuel:	Natural gas
Roaster Heat Capacity:	102,300 Btu/hr
Exhaust Flow Rate:	Not provided
Catalytic Oxidizer Make / Model:	Clean Stream Afterburners / CSA-400-CAT
Cat. Oxidizer Burner Make / Model:	Midco / EC-300
Catalytic Oxidizer Fuel Capacity:	300,000 Btu/hr max during operation – burner capable of 800,000 Btu/hr
Cat. Oxidizer Operating Temperature:	600 °F (minimum) to 1,000 °F (maximum) downstream of catalyst bed.
Cat. Oxidizer Destruction Efficiency:	Manufacturer claims "will remove >95% of smoke, odor and VOC at 600 °F"
Stack Description:	~10" diameter stack exhausted ~30 feet off the ground, ~4.5' above adjacent roof peak with an inverted cone-style cap. Worst case is 400 scfm, temperature cooling from oxidizer temperature of 600 °F. The cooling tray may be discharged through a separate stack.

The minimum cycle time of the roaster is approximately 24 minutes at full capacity (24 kg). Actual roasting times could be significantly different depending on product specifications and batch size. The exhaust from the cooling tray will be discharged separately from the roaster through a particulate collector followed by a metal screen and additional filtration as necessary to control smoke and odor.

5.b. Equipment/Activity Summary.

ID No.	Equipment/Activity	Control Equipment/Measure
1	Mill City Roasters Coffee Roaster and cooling tray (24 kg / batch)	Clean Stream catalytic oxidizer on roaster, filtration on cooling tray

6. EMISSIONS DETERMINATION

Unless otherwise specified by SWCAA, actual emissions must be determined using the specified input parameter listed for each emission unit and the following hierarchy of methodologies:

(a) Continuous emissions monitoring system (CEMS) data;
(b) Source emissions test data (EPA reference method). When source emissions test data conflicts with CEMS data for the time period of a source test, source test data must be used;
(c) Source emissions test data (other test method); and
(d) Emission factors or methodology provided in this TSD.

Nothing precludes the use, including the exclusive use of any credible evidence or information relevant to identifying or quantifying emissions if methods identified above, in the ADP, or elsewhere in this TSD have not provided adequate quantification of actual emissions.

6.a. Roasting Emissions. Emissions from the coffee roaster and catalytic oxidizer consist of volatile organic compounds and particulate matter from the roasting of the coffee, and products of natural gas combustion. Maximum potential emissions were calculated with the assumption that the roaster is operated 7,000 hours per year at the maximum rate of 24 kg/batch (52.9 lb/batch) with a cycle time of 24 minutes per batch.

Roasting Emissions

Heat Rate for Control System =	0.300	MMBtu/hr maximum - Midco EC-300 burner
Heat Rate for Roaster =	0.1023	MMBtu/hr
Gas Heat Content =	1,020	Btu/scf for AP-42 emission factors
Natural Gas Heat Value =	1,026	Btu/scf for 40 CFR 98 GHG emission factors
Fuel Consumption =	3.9E-04	MMscf/hr
Fuel Consumption =	2.76	MMscf/yr
Maximum Roasting Rate =	52.9	lb/batch (24 kilograms)
Minimum Batch Time =	0.40	hours (roasting + loading, unloading) at full capacity
Annual Operation =	7,000	hours
Maximum Roasting =	463.0	tons per year

Pollutant	Emission Factor lb/ton beans	Emissions lb/hr	Annual Emissions lb/yr	Annual Emissions tons per year	Emission Factor Source
NO_X	0.596	0.039	276	0.14	AP-42 Sec. 1.4 (7/98) 100 lb/MMscf
CO	0.550	0.036	255	0.13	AP-42 Sec. 9.13 (9/95)
VOC	0.047	0.0031	22	0.011	AP-42 Sec. 9.13 (9/95)
SO_X as SO_2	0.0036	0.00024	1.7	0.00083	0.6 lb SO_2 / MMscf natural gas
Total PM	0.179	0.0118	83	0.041	AP-42 Sec. 9.13 (9/95)
PM_{10}	0.179	0.0118	83	0.041	AP-42 Sec. 9.13 (9/95)
$PM_{2.5}$	0.179	0.0118	83	0.041	AP-42 Sec. 9.13 (9/95)
Formaldehyde	0.039	0.00258	18	0.0090	PSCAA factor
Acetaldehyde	0.0070	0.00046	3.2	0.0016	PSCAA factor
Acrolein	0.0070	0.00046	3.2	0.0016	PSCAA factor

Greenhouse Gases	kg/MMBtu	GWP	CO_2e lb/MMBtu	CO_2e lb/MMscf	CO_2e tpy	Emission Factor Source
CO_2	53.06	1	116.98	120,019	164.7	40 CFR 98
CH_4	0.001	25	0.055	56.55	0.078	40 CFR 98
N_2O	0.0001	298	0.066	67.41	0.093	40 CFR 98
Total GHG - CO_2e			117.098	120,143	165	

6.b. Emissions Summary

Air Pollutant	Facility-wide Potential to Emit (tpy)	Project Impact (tpy)
NO_X	0.14	0.14
CO	0.13	0.13
VOC	0.011	0.011
SO_2	0.00083	0.00083
PM	0.041	0.041
PM_{10}	0.041	0.041
$PM_{2.5}$	0.041	0.041
TAP	0.012	0.012
HAP	0.012	0.012
CO_2/CO_2e	165	165

Pollutant	CAS Number	Pollutant Category	Potential Emissions (lbs/hr)	Potential Emissions (lb/yr)	1998 WAC 173-460 SQER (lbs/yr)	2019 WAC 173-460 SQER
Formaldehyde	50-00-0	HAP/TAP A	0.0026	18	20	27 lb/yr
Acetaldehyde	75-07-0	HAP/TAP A	0.00046	3.2	50	60 lb/yr
Acrolein	107-02-8	HAP/TAP B	0.00046	3.2	175	0.026 lb/hr

7. REGULATIONS AND EMISSION STANDARDS

Regulations have been established for the control of emissions of air pollutants to the ambient air. Regulations applicable to the proposed facility that have been used to evaluate the acceptability of the proposed facility and establish emission limits and control requirements include, but are not limited to, the following regulations, codes, or requirements. These items establish maximum emissions limits that could be allowed and are not to be exceeded for new or existing facilities. More stringent limits are established in this Permit consistent with implementation of Best Available Control Technology (BACT):

7.a. Revised Code of Washington (RCW) 70A.15.2040 empowers any activated air pollution control authority to prepare and develop a comprehensive plan or plans for the prevention, abatement and control of air pollution within its jurisdiction. An air pollution control authority may issue such orders as may be necessary to effectuate the purposes of the Washington Clean Air Act (RCW 70A.15) and enforce the same by all appropriate

administrative and judicial proceedings subject to the rights of appeal as provided in Chapter 62, Laws of 1970 ex. sess. This law applies to the facility.

7.b. RCW 70A.15.2210 provides for the inclusion of conditions of operation as are reasonably necessary to assure the maintenance of compliance with the applicable ordinances, resolutions, rules and regulations when issuing an ADP for installation and establishment of an air contaminant source. This law applies to the facility.

7.c. WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" requires BACT for toxic air pollutants (T-BACT), identification and quantification of emissions of toxic air pollutants, and demonstration of protection of human health and safety.

The facility emits TAPs; therefore, this regulation applies to the facility.

7.d. WAC 173-476 "Ambient Air Quality Standards" establishes ambient air quality standards for PM_{10}, $PM_{2.5}$, lead, SO_2, NO_X, ozone, and CO in the ambient air, which must not be exceeded. The facility emits PM_{10}, $PM_{2.5}$, SO_X, NO_X, and CO; therefore, certain sections of this regulation apply.

7.e. SWCAA 400-040 "General Standards for Maximum Emissions" requires all new and existing sources and emission units to meet certain performance standards with respect to Reasonably Available Control Technology (RACT), visible emissions, fallout, fugitive emissions, odors, emissions detrimental to persons or property, SO_2, concealment and masking, and fugitive dust. This regulation applies to the facility.

7.f. SWCAA 400-040(1) "Visible Emissions" requires that emissions of an air contaminant from any emissions unit must not exceed twenty percent opacity for more than three minutes in any one hour at the emission point, or within a reasonable distance of the emission point. This regulation applies to the facility.

7.g. SWCAA 400-040(4) "Odors" requires any source which generates odors that may unreasonably interfere with any other property owner's use and enjoyment of their property to use recognized good practice and procedures to reduce these odors to a reasonable minimum. This source must be managed properly to maintain compliance with this regulation. This regulation applies to the facility.

7.h. SWCAA 400-050 "Emission Standards for Combustion and Incineration Units" requires that all provisions of SWCAA 400-040 be met and that no person shall cause or permit the emission of particulate matter from any combustion or incineration unit in excess of 0.23 grams per dry cubic meter (0.1 grains per dry standard cubic foot) of exhaust gas at standard conditions.

7.i. SWCAA 400-070(12) "Coffee Roasters" requires that applicable coffee roasters, including all batch coffee roasters with a capacity of 10 pounds or greater of green coffee beans, install and operate an afterburner or equivalent control device that treats all roasting and cooling exhaust streams prior to discharge to the ambient air. The proposed roaster meets

these requirements by utilizing a catalytic oxidizer to control emissions from the roaster, and a filtration system to control emissions from the cooling tray.

7.j. SWCAA 400-109 "Air Discharge Permit Applications" requires that an ADP application be submitted for all new installations, modifications, changes, or alterations to process and emission control equipment consistent with the definition of "new source". Sources wishing to modify existing permit terms may submit an ADP application to request such changes. An ADP must be issued, or written confirmation of exempt status must be received, before beginning any actual construction, or implementing any other modification, change, or alteration of existing equipment, processes, or permits. This regulation applies to the facility.

7.k. SWCAA 400-110 "New Source Review" requires that SWCAA issue an ADP in response to an ADP application prior to establishment of the new source, emission unit, or modification.

7.l. SWCAA 400-113 "Requirements for New Sources in Attainment or Nonclassifiable Areas" requires that no approval to construct or alter an air contaminant source will be granted unless it is evidenced that:

(1) The equipment or technology is designed and will be installed to operate without causing a violation of the applicable emission standards;
(2) BACT will be employed for all air contaminants to be emitted by the proposed equipment;
(3) The proposed equipment will not cause any ambient air quality standard to be exceeded; and
(4) If the proposed equipment or facility will emit any toxic air pollutant regulated under WAC 173-460, the proposed equipment and control measures will meet all the requirements of that Chapter.

The facility is located in an area that is in attainment for all criteria pollutants; therefore, this regulation applies to the facility.

8. RACT/BACT/BART/LAER/PSD/CAM DETERMINATIONS

The proposed equipment and control systems incorporate BACT for the types and amounts of air contaminants emitted by the processes as described below:

New BACT Determination(s)

8.a. BACT Determination. SWCAA has determined that the use of the proposed catalytic oxidizer downstream of a chaff collector to control particulate matter, volatile organic compounds, and odorous emissions from the coffee roaster meets the requirements of BACT and T-BACT. A catalytic oxidizer is expected to provide the top level of control commercially available for coffee roasters of this size with the use of less fuel than a thermal oxidization system. Vendor literature indicates that the proposed system will remove >95% of smoke, odor, and VOC at the minimum operating temperature. Additional catalyst can be added to bring the efficiency to 98%. SWCAA does not consider

adding an additional layer of catalyst for a gain of up to 3% control efficiency a cost-effective BACT measure.

Other Determinations

8.b. Prevention of Significant Deterioration (PSD) Applicability Determination. This permitting action will not result in a potential increase in emissions equal to or greater than the PSD thresholds. Therefore, PSD review is not applicable to this action.

8.c. Compliance Assurance Monitoring (CAM) Applicability Determination. CAM is not applicable to any emission unit at this facility because it is not a major source and is not required to obtain a Part 70 (Title V) permit.

9. AMBIENT IMPACT ANALYSIS

9.a. Criteria Air Pollutant Review. Emissions of NO_X, CO, PM_{10}, $PM_{2.5}$, VOC (as a precursor to O_3), and SO_2 are emitted at levels where no adverse ambient air quality impact is anticipated.

9.b. Toxic Air Pollutant Review. Incremental increases in toxic air pollutant emissions will not exceed the applicable Small Quantity Emission Rates (SQER) listed in WAC 173-460 (as in effect August 21, 1998 or November 22, 2019); therefore, toxic impacts from these pollutants are presumed to be below regulatory significance.

Conclusions

9.c. Operation of the coffee roaster, as proposed in ADP application CL-3295 and in accordance with ADP 25-3699, will not cause the ambient air quality requirements of 40 CFR 50 "National Primary and Secondary Ambient Air Quality Standards" to be violated.

9.d. Operation of the coffee roaster, as proposed in ADP application CL-3295 and in accordance with ADP 25-3699, will not cause the requirements of WAC 173-460 "Controls for New Sources of Toxic Air Pollutants" or WAC 173-476 "Ambient Air Quality Standards" to be violated.

9.e. Operation of the coffee roaster, as proposed in ADP application CL-3295 and in accordance with ADP 25-3699, will not violate emission standards for sources as established under SWCAA General Regulations Sections 400-040 "General Standards for Maximum Emissions."

10. DISCUSSION OF APPROVAL CONDITIONS

SWCAA has made a determination to issue ADP 25-3699 in response to ADP application CL-3295. ADP 25-3699 contains approval requirements deemed necessary to assure compliance with applicable regulations and emission standards as discussed below.

10.a. Supersession of Previous Permits. ADP 25-3699 supersedes ADP 20-3422 in its entirety.

10.b. Emission Limits. Annual emission limits for the coffee roaster and catalytic oxidizer system were established at the quantity of emissions anticipated from the operation of the unit for 7,000 hours per year at full rated capacity using the emission factors supplied in Section 6. This is far in excess of expected operation, but less than full-time operation. This level was chosen because this maintains potential formaldehyde emissions below (~90% of) the SQER in the 1998 version of WAC 173-460. Corrective action is required whenever visible emissions are observed unless compliance with the visible emission limit is demonstrated using SWCAA Method 9. As indicated in Section 8, these emission levels meet the requirements of BACT for this installation.

A zero percent opacity limit was established for all equipment at the facility because any visible emissions would indicate that the unit or control equipment was malfunctioning and producing excess emissions.

10.c. Operating Limits and Requirements. The ADP requires that the catalytic oxidizer be operated in the temperature range for proper operation (600 °F to 1,000 °F) from the time the beans reach 270 °F until the beans are dropped into the cooling tray. This is the period of time during which the beans are likely to generate significant emissions (primarily odor and smoke).

To minimize the impact of odors and other emissions on ambient air, the catalytic oxidizer exhaust is required to be exhausted vertically above the levels of the roof and at a point higher than adjacent buildings and/or terrain. Any device that obstructs or prevents vertical discharge (such as a rain cap without an inverted cone) is prohibited. This is good engineering practice, is required by SWCAA 400-200(1), and is important to prevent or minimize nuisance impacts.

10.d. Monitoring and Recordkeeping. Sufficient monitoring and recordkeeping was established to document compliance with the annual emission limits and provide for general requirements (e.g. excess emission reporting, annual emission inventory submission).

10.e. Reporting. The permit requires reporting of the annual emissions, and reporting of the data necessary to develop the annual emission inventory (fuel consumption by the coffee roaster and catalytic oxidizer system and the total amount of coffee roasted). Excess emissions must be reported as soon as possible in order to qualify for relief from monetary penalty in accordance with SWCAA 400-107. In addition, deviations from permit conditions must be reported within 30 days of discovery in accordance with the SWCAA 400-107 requirement for excess emissions.

11. START-UP AND SHUTDOWN/ALTERNATIVE OPERATING SCENARIOS/POLLUTION PREVENTION

11.a. Start-up and Shutdown Provisions. Pursuant to SWCAA 400-081 "Start-up and Shutdown", technology-based emission standards and control technology determinations must take into consideration the physical and operational ability of a source to comply with the applicable standards during start-up or shutdown. Where it is determined that a source

is not capable of achieving continuous compliance with an emission standard during start-up or shutdown, SWCAA will include appropriate emission limitations, operating parameters, or other criteria to regulate performance of the source during start-up or shutdown.

The permittee did not identify any startup and shutdown periods during which the proposed equipment is not capable of achieving continuous compliance with any applicable emission standard or approval condition. Therefore, specific startup and shutdown provisions were not included in the permit.

11.b. Alternate Operating Scenarios. SWCAA conducted a review of alternate operating scenarios applicable to equipment affected by this permitting action. The permittee did not propose or identify any applicable alternate operating scenarios. Therefore, none were included in the approval conditions.

11.c. Pollution Prevention Measures. SWCAA conducted a review of possible pollution prevention measures for the facility. No pollution prevention measures were identified by either the permittee or SWCAA separate or in addition to those measures required under BACT considerations. Therefore, none were included in the approval conditions.

12. EMISSION MONITORING AND TESTING

The Permittee proposes utilizing a catalytic oxidizer to control emissions of odor, volatile organic compounds and particulate matter. Because the catalyst will degrade with time and use, and will require periodic cleaning and eventual replacement, the permit requires the permittee to observe the exhaust stack for visible emissions at least once every two calendar months. Visible emissions are not expected to be present unless the catalytic oxidizer is not operating properly.

13. FACILITY HISTORY

This equipment was originally approved for operation at 4060 S. Grant Street, STE 108, Washougal, WA in 2020 and is being relocated to the proposed address in Washougal, WA.

13.a. Previous Permitting Actions. The following past permitting actions have been taken by SWCAA for the same equipment being moved to this new location:

Permit	Application	Date Issued	Description
20-3422	CL-3132	July 9, 2020	Approval for a 24 kilogram batch coffee roaster using a catalytic oxidizer to control smoke and odor.

Approvals in bold have been superseded or are no longer active with issuance of ADP 25-3699.

13.c. Compliance History. A search of source records on file at SWCAA did not identify any outstanding compliance issues at this facility.

14. PUBLIC INVOLVEMENT OPPORTUNITY

14.a. Public Notice for ADP Application CL-3295. Public notice for ADP application CL-3295 was published on the SWCAA website for a minimum of fifteen (15) days beginning on March 20, 2025.

14.b. Public/Applicant Comment for ADP Application CL-3295. SWCAA did not receive specific comments, a comment period request, or any other inquiry from the public or the applicant regarding ADP application CL-3295. Therefore, no public comment period was provided for this permitting action.

14.c. State Environmental Policy Act. After reviewing the SEPA Checklist for this project, SWCAA has determined that the project does not have a probable significant impact on the environment and has issued Determination of Non-Significance 25-017. An Environmental Impact Statement is not required under RCW 43.21C.030(2)(c).