

Engineering Evaluation
1510 Webster
1510 Webster Street, Oakland, CA 94612
Plant No. 203314
Application No. 689537

Background

On behalf of the 1510 Webster, Cornerstone Earth Group has applied for an Authority to Construct for the following equipment:

S-2 Sub-Slab Depressurization System

**Blower # 1 Make: Rotron Blower, Model: EN404/CP404,
Maximum Outflow Limited to 47 SCFM**

**Blower # 2 Make: Rotron Blower, Model: EN757/CP757,
Maximum Outflow Limited to 128 SCFM**

**Total Outflow Limit: 175 SCFM
Condition No. 100257**

The Site is located 1510 Webster Street, Oakland, CA 94612 and it composes two parcels APN 008-0625-034 and APN 008-0625-032. This is considered an Overburdened Community (OBC) as defined in Air District Regulation 2-1.

The Site was previously developed with two concrete buildings. The previous building at 1510 Webster Street had a one-level basement, approximately 12 feet below street level. In May and June 2019, Pangea Environmental Services, Inc. performed a subsurface quality investigation to evaluate environmental concerns identified in their Phase I Environmental Site Assessment. Their investigation identified elevated concentrations of tetrachloroethylene (PCE), in sub-slab and soil vapor samples beneath the Site. The investigation also detected PCE exceeding its Tier 1 environmental screening level (ESL)1 in one of the groundwater samples collected from 1510 Webster Street. No other VOCs were detected in groundwater above their respective ESL. Cornerstone performed an additional subsurface quality investigation in 2020 and PCE contamination was confirmed and this time, it was determined that the VOCs were flowing offsite.

Consequently, the Alameda County Department of Environmental Health (ACDEH) has approved a Corrective Action Plan that includes the Cornerstone Remedial Action Implementation Plan (RAIP). This plan consists of installing a Sub-Slab Depressurization (SSD) system.

The project includes two Rotron blowers with a total maximum flow capacity of 410 SCFM and an 8-inch-thick vapor permeable gravel layer extending across the building's footprint. However, the applicant has requested to limit the total outflow capacity to 175 SCFM for the two blowers combined. Blower # 1 is a model EN404/CP404 with a maximum outflow capacity of 100 SCFM but limited to 47-SCFM and blower # 2 is a model EN757/CP757 with a maximum outflow capacity of 310-SCFM but limited to 128-SCFM per the applicant's request. The two blowers will share an emission point on the roof identified as VR-2 in the application package.

The applicant has requested in writing to operate under the Air District Regulation 8-47-113: less than one pound per day emissions. Therefore, no abatement would be required as stated in Air District Regulation

8-47-301. The petition will be evaluated in accordance with the requirements in Air District Regulation 8-47.

Procedures are outlined in the conditions found below. The applicant will be required to provide written notification at the start of the operation. The applicant will be required to stay below the acute and chronic trigger levels of Regulation 2-5 and the permit conditions below.

Emission Calculations

SSD System - VOCs

Initial soil vapor data will be used to estimate precursor organic compound (POC), non-precursor organic compound (NPOC), and toxic air contaminant (TAC) emissions. It is assumed that the equipment can operate 24 hours a day, 365 days a year. The following are assumptions used to estimate emissions.

- Operating conditions: Pressure = 1 Atm; Inlet Temperature = 21°C; 1 mole occupies 24.15 Liters (or 386.8 ft³/lb-mol)
- Toxic Air Contaminants (TAC) emissions will be based on soil vapor data submitted with this application.
- The organic flow rate of 175 SCFM for the two blowers combined.
- The system will operate unabated with basis on the exemption in Air District Regulation 8-47-113.

Table 1. SSD System Unabated Emissions for S-2						
Pollutant	CAS #	Unabated Emissions				
		Inlet Conc. (ug/m3)	Hourly Emission Rate (lb/hr)	Daily Emission Rate (lb/day)	Annual Emission Rate (lb/yr)	Annual Emission Rate (ton/yr)
tert-Butanol	75-65-0	6.3	4.1E-06	9.9E-05	3.6E-02	0.0000
PCE	127-18-4	1447	9.5E-04	2.3E-02	8.3E+00	0.0042
Acetone	67-64-1	14	9.2E-06	2.2E-04	8.0E-02	0.0000
2-Butanone	78-93-3	2	1.3E-06	3.1E-05	1.1E-02	0.0000
2-Hexanone	591-78-6	2.3	1.5E-06	3.6E-05	1.3E-02	0.0000
Toluene	108-88-3	13	8.5E-06	2.0E-04	7.5E-02	0.0000

Notes:

1. Influent data for all compounds was obtained from Torrent Laboratory, Inc analysis. This data will be used as the concentration to the atmosphere.
2. It is assumed that equipment will operate 24 hours a day, 365 days a year.
3. Per Regulation 1-234 and 40 CFR 51.100(s)(1), PCE and acetone are considered Non-Precursor Organic Compounds (NPOC).

Table 2 summarizes organic compounds emissions based on the data in Table 1.

Table 2. Organic Emissions Review for S-2					
Pollutant	Effluent Volumetric Concentration (ppmv)	Hourly Emission Rate (lb/hr)	Daily Emission Rate (lb/day)	Annual Emission Rate (lb/yr)	Annual Emission Rate (ton/yr)
POC	0.04	1.5E-05	3.7E-04	2.0E-01	0.0001
NPOC	2.20	9.6E-04	2.3E-02	8.4E+00	0.0042
Total	2.24	1.5E-05	3.7E-04	1.4E-01	0.0001

The annual emissions rates will be used to set up the limits in the condition of this application, as follows: 0.2 lb/yr for POC and 8.4 lb/yr for NPOC.

Cumulative Increase

Table 3 summarizes the emissions from this application and application number 688052 for an emergency standby diesel generator identified as S-1.

Table 3. Cumulative Increase			
Pollutant	Current Permitted Emissions, Post 4/5/1991 (ton/yr)	Application New Emissions Increase (ton/yr)	New Cumulative Increase (ton/yr)
NO _x	0.0916	0.0000	0.0916
POC	0.0051	0.0001	0.0052
CO	0.0687	0.0000	0.0687
PM _{2.5/10}	0.0041	0.0000	0.0041
SO ₂	0.0002	0.0000	0.0002

Toxic Risk Screening

At the given rates in Table 4 and 5, the emissions from S-2 do not exceed the Acute or Chronic Trigger Levels in Regulation 2-5, Table 2-5-1. However, there is an existing related project identified as application number 688052 for S-1. Emissions from S-1 exceed the Chronic Trigger Levels in Regulation 2-5, Table 2-5-1 for diesel particulate matter. All PM₁₀ emissions are considered diesel exhaust particulate emissions (DPM).

Therefore, a refined Health Risk Assessment (HRA) is required.

Table 4. Project Acute Emissions Review - Regulation 2-5				
Pollutant	CAS #	Hourly Emission Rate (lb/hr)	Acute Trigger Level (lb/hr)	Exceeds Acute Trigger Level?
AN 689537 – S-2				
PCE	127-18-4	9.2E-04	8.8E+00	No
2-Butanone	78-93-3	1.3E-06	5.8E+00	No
Toluene	108-88-3	8.5E-06	2.2E+00	No
AN 688052 – S-1				
DPM		1.6E-01	N/A	N/A

Table 6. Project Chronic Emissions Review - Regulation 2-5				
Pollutant	CAS #	Annual Emission Rate (lb/yr)	Chronic Trigger Level (lb/yr)	Exceeds Chronic Trigger Level?
AN 689537 – S-2				
PCE	127-18-4	8.0E+00	1.4+E01	No
2-Butanone	78-93-3	1.1E-02	N/A	No
Toluene	108-88-3	7.5E-02	1.6E+04	No
AN 688052 – S-1				
DPM		8.1E+00	2.6E-01	YES

Results from the HRA indicate that the project cancer risk is 5.9 in a million, the project chronic hazard index (HI) is 0.0016, and the project acute HI is 0.00011. In accordance with the District's Regulation 2-5-301, S-2 does not require Best Available Control Technology for Toxics (TBACT) because the estimated

source risk is 0.016 in a million and is below the 1.0 in a million threshold, additionally the chronic hazard index does not exceed 0.20 as presented in Table 7.

Receptor	Cancer Risk (in a million)	Chronic HI	Acute HI
Resident	5.9	0.0016	N/A
Worker	0.69	0.0052	N/A
Student (Redwood High School)	Negligible	Negligible	Negligible
Point of Maximum Impact (PMI) (1-hour)	N/A	N/A	0.00011

Note:

- Student risk values were calculated because there is a K-12 school within 1,000 feet of the facility.

Since the estimated project cancer risk does not exceed 6.0 in a million and hazard indices do not exceed 1.0, this project complies with the District's Regulation 2-5-302 project risk requirements, for projects located in an Overburdened Community, as defined in Regulation 2-1-243.

Offsets

Pursuant to Regulation 2-2-302, offsets must be provided for any new or modified source at a facility that emits, or is permitted to emit, more than 10 tons per year of precursor organic compounds (POCs) or nitrogen oxides (NO_x). Furthermore, pursuant to Regulation 2-2-303 offsets must be provided for any new or modified source at a major facility with a cumulative increase that exceeds 1.0 ton per year of PM₁₀, PM_{2.5}, or sulfur dioxide (SO₂).

The facility is not expected to have a Potential to Emit (PTE) greater than 10 tons per year of POC. Therefore, the requirements of Regulations 2-2-302 and 2-2-303 do not apply.

Best Available Control Technology (BACT)

In accordance with Regulation 2-2-301, Best Available Control Technology (BACT) is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxides (SO₂), particulate matter less than 10 micrometer (PM₁₀) and particulate matter less than 2.5 micrometer (PM_{2.5}).

Per Table 2 NPOC and POC emissions are expected to be below 10 lb/day for S-2. Therefore, BACT is not required.

California Environmental Quality Act (CEQA)

The City of Oakland Department of Planning and Building as Lead Agency has conducted a CEQA Review and approved this Project on September 13, 2021.

A Notice of Determination (NOD) was issued on September 24, 2021, the purpose of this NOD is to provide notice that (1) the actions contemplated in this project, described as affordable housing development, are within the development program of the already certified Land Use & Transportation Element (LUTE), Housing Element and Redevelopment Plan Amendment - Environmental Impact Report, (2) the current project CEQA Analysis Checklist adequately describes the current approval for purposes of CEQA, and (3)

no further CEQA review is required pursuant to CEQA Guidelines 15168 and 15180 and Public Resources Code Section 21094.5 and CEQA Guidelines Section 15183.3 (Qualified Infill Projects).

Separately and independently from the above Notice of Determination, the Project is also exempt from CEQA pursuant to CEQA Guideline Section 15183: Approvals consistent with a Community Plan, General Plan or Zoning.

Statement of Compliance

Regulation 2-1-243 Public Notice. Prior to approving an application for an authority to construct or permit to operate, a public notice, fully describing the potential emissions, shall be prepared for the following cases:

- (i) A new or modified source located within 1000 feet of the outer boundary of a K-12 school site and which results in the increase in emissions of any substance into the ambient air which has been identified by the California Air Resources Board or the APCO as a toxic air contaminant or a hazardous air contaminant or which is on the list required to be prepared pursuant to subdivision (a) of Section 25532 or Section 44321 subsections(a) to (f) inclusive of the Health and Safety Code.
- (ii) A new or modified source located within an Overburdened Community as defined in Section 2-1-243 and for which a Health Risk Assessment is required pursuant to Section 2-5-401

Since this project is located within an Overburdened Community, triggered a Health Risk Assessment, and is within 1,000 feet from the K-12 schools below, it is subject to the Public Notice requirements.

Envision Academy of Arts & Technology, 1515 Webster Street, Oakland, CA
Starlite Child Development Center, 246 14th St, Oakland, CA 94612

Regulation 2-5 New Source Review of Toxics Air Contaminants. The source is not expected to exceed the chronic trigger levels in regulation 2-5, Table 1 however, a refined HRA was required due to the existence of a related project. Results from the refined HRA indicated that the project complies with the District's Regulation 2-5-302 project risk requirements, for projects located in an Overburdened Community, as defined in Regulation 2-1-243.

The operator will be required to keep emissions under the permit condition limits at all times.

Regulation 8-47-301, any soil vapor extraction operation which emits benzene, vinyl chloride, tetrachloroethene, methylene chloride, and/or trichloroethene shall be vented to a control device which reduces emissions to the atmosphere by at least 90 percent by weight.

However, the facility will operate under the exemption in Air District Regulation 8-47-113, that allows the equipment to operate without an abatement as long as daily emissions are below 1 pound. The facility is expected to comply with this requirement.

Regulation 8-47-501 Recordkeeping. The facility is required to keep the pertinent records per condition below pursuant to Regulation 8-47-501.

Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAPS) do not apply to this project.

Permit Conditions**Permit Condition #100257 for S-2**

1. The influent vapor flow rate shall not exceed 175 SCFM from two blowers of S-2.
[Basis: Cumulative Increase, Regulation 2-5].
2. In no event shall the total toxic air contaminant (TAC) emissions to the atmosphere from S-2 exceed the trigger levels listed in District Regulation 2-5, Table 2-5-1.
[Basis: Regulations 8-47-301 and 8-47-302 and Toxics].
3. The owner/operator shall not emit from S-2 more than 0.2 pounds of precursor organic compounds (POC) and 8.4 pounds of non-precursor organic compounds (NPOC) per 12-month consecutive period. [Basis: Cumulative Increase]
4. Upon initial start-up, the owner/operator shall take air samples from S-2 for laboratory analysis using EPA Method TO-15. The air samples shall be taken at the following locations:
 - a. At the outlet of the systems prior to venting to the atmosphere.
[Basis: Regulation 2-1-403, Regulation 8-47-301].
5. The owner/operator shall use the results from the laboratory report to calculate TAC emissions emitted to the atmosphere, using the maximum design flowrate of S-2. The owner/operator shall submit the laboratory report and calculated TAC emissions within 21 days of the initial startup, to demonstrate compliance with Parts 1, 4, and 5 of this condition.
[Basis: Regulation 2-1-403, Regulation 2-5].
6. The owner/operator shall report any noncompliance with these conditions to the Compliance and Enforcement Division at the time that it is first discovered. The owner/operator shall detail the corrective action taken and include the data showing the exceedance as well as the time of occurrence in the submittal.
[Basis: Regulation 2-1-403]
7. The owner/operator shall maintain a file containing all measurements, records and other data that are required to be collected pursuant to the various provisions of this condition. All measurements, records and data required to be maintained by the operator shall be retained for at least two (2) years following the date the data is recorded.
[Basis: Regulation 1-523]

Upon final completion of the remediation project, the operator shall notify the Engineering Division within two weeks of decommissioning the operation.
[Basis: Regulation 2-1-403]

Recommendation

The Air District has reviewed the material contained in the permit application for the proposed project and has made a preliminary determination that the project is expected to comply with all applicable requirements of District, state, and federal air quality-related regulations. The preliminary recommendation is to issue an Authority to Construct for the equipment listed below. However, the proposed source will be located within 1,000 feet of a K-12 school which triggers the public notification requirements of Regulation 2-1-412. After the comments are received from the public and reviewed, the Air District will make a final determination on the permit.

I recommend that the Air District initiate a public notice and consider any comments received prior to taking any final action on issuance of an Authority to Construct and/or a Permit to Operate for the following equipment:

S-2 Sub-Slab Depressurization System - Unabated
Blower # 1 Make: Rotron Blower, Model: EN404/CP404,
Maximum Outflow Limited to 47 SCFM

Blower # 2 Make: Rotron Blower, Model: EN757/CP757,
Maximum Outflow Limited to 128 SCFM

Total Outflow Limit: 175 SCFM
Condition No. 100257

By Isis Virrueta,
Air Quality Engineer II
April 2024

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