

**Engineering Evaluation**  
**CalClean, Inc.**  
**4280 Foothill Blvd., Oakland, CA 94601**  
**Plant No. 12568 (Site No. B2568)**  
**Application No. 31653**

**Project Description: Public Notice for Portable Soil-Vapor Extraction System**

**Background**

CalClean Inc has requested a Change of Condition to an existing Permit to Operate for a portable soil vapor extraction (SVE) unit to allow the equipment to be operated at 4280 Foothill Blvd., Oakland, CA 94601 (Plant #12568) which is within 1,000 feet of a K-12 school. The equipment associated with this project is described below:

- S-3 Portable Soil Vapor Extraction System: Vacuum Blower (Make: CalClean; Model: 500; Max. Operating Rate: 500 scfm; abated by A-1: Thermal/Catalytic Oxidizer**
- A-1 Thermal/Catalytic Oxidizer (Make: Solleco, Model: 500, Max. Operating Rate: 400,000 BTU/hr)**

At the direction of the Alameda County Department of Environmental Health (ACDEH), the purpose of the proposed project is to remediate petroleum hydrocarbons from the soil and groundwater beneath the former BP service station #11109, located at 4280 Foothill Blvd. in Oakland, CA.

This portable soil vapor extraction unit consists of a vacuum blower (S-3) with a maximum capacity of 500 scfm. Extracted soil vapors will be directed to a thermal/catalytic oxidizer (A-1) for treatment prior to discharge to the atmosphere. Thermal/Catalytic oxidation will be conducted by a Solleco LLC, Model 500 (certified by SCAQMD) and will be fueled by liquefied petroleum gas (LPG) with a 400,000 BTU/hr maximum and 100% excess air capacity.

The thermal/catalytic oxidizer will be equipped with continuous temperature monitoring to ensure that Best Available Control Technology (BACT) destruction efficiencies are met. Emissions monitoring for operation of the equipment will be conducted according to established Source Test methodology. Procedures are outlined in the conditions.

**Table 1 - Previous Applications for S-3 – Plant #12568**

<b>Application Number</b>	<b>Project Title</b>	<b>Project Description</b>
13287	Portable Equipment	Permit to Operate/Authority to Construct
16470	Portable Equipment	Modification to Authority to Construct/Public Notice
28010	Soil Vapor Extraction	Change of Conditions/Public Notice
29611	Thermal/Catalytic Oxidizer	Change of Conditions/Public Notice
31106	Remediation/Groundwater Extracting Soil Vapor	Change of Conditions/Public Notice

### **Emission Calculations**

Emissions were calculated and accounted for when the source was issued an Authority to Construct and a Permit to Operate (Application #13287)

### **Cumulative Increase**

There is no increase in emissions from this application. A summary of S-3 and Plant #12568 cumulative emissions is summarized in Tables 2 and 3 below.

<b>Table 2. Cumulative Increase – S-3 – Portable Soil Vapor Extraction</b>			
<b>Pollutant</b>	<b>Current Permitted Emissions (ton/yr)</b>	<b>Application New Emissions Increase (ton/yr)</b>	<b>New S-3 Total (ton/yr)</b>
POC	3.050	0.000	3.050
NO <sub>x</sub>	0.000	0.000	0.000
SO <sub>2</sub>	0.000	0.000	0.000
CO	0.000	0.000	0.000
PM	0.000	0.000	0.000

<b>Table 3. Cumulative Increase – Plant #12568</b>			
<b>Pollutant</b>	<b>Current Permitted Emissions, Post 4/5/1991 (ton/yr)</b>	<b>Application New Emissions Increase (ton/yr)</b>	<b>New Cumulative Increase (ton/yr)</b>
POC	8.059	0.000	8.059
NO <sub>x</sub>	0.350	0.000	0.350
SO <sub>2</sub>	0.001	0.000	0.001
CO	1.402	0.000	1.402
PM	0.013	0.000	0.013

### **Toxic Risk Screening**

This project will not result in an increase in toxic air contaminant (TAC) emissions. A health risk screening analysis is not required because previous applications have determined that S-3 complies with Regulation 2, Rule 5.

### **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<sub>x</sub>). 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 PM<sub>10</sub>, PM<sub>2.5</sub>, or sulfur dioxide (SO<sub>2</sub>).

The facility is not expected to have a PTE greater than 10 tons per year of POC or NO<sub>x</sub>, nor is the facility a major facility of PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>. 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<sub>x</sub>), carbon monoxide (CO), sulfur dioxides (SO<sub>2</sub>), particulate matter less than 10 micrometer (PM<sub>10</sub>) and particulate matter less than 2.5 micrometer (PM<sub>2.5</sub>).

S-3 for this project is not a new or modified source. Therefore, BACT requirements do not apply.

### **California Environmental Quality Act (CEQA)**

This project is classified as ministerial under the District Regulation 2-1-311, because the engineering review for this project requires only the application of standard emission factors and established formulas as specified in Chapter 9.2 of the District's Permit Handbook. This project does not trigger BACT or TBACT and is not subject to the health risk assessment requirements of Regulation 2, Rule 5. This review follows objective procedures and applies standard permit conditions; and therefore, the review of this project is not discretionary as defined by CEQA. Since this project is ministerial, it is not subject to CEQA review requirement of Regulation 2-1-310, and no further CEQA analysis is required.

### **Compliance**

#### **Regulation 2, Rule 1: School Public Notice Requirements**

Since this equipment will be located within 1,000 feet of Fremont High School (Grades 9-12) and Oakland Charter Academy (Grades 6-8), the project is subject to the public notification requirements of regulation 2-1-412 due to the increase in toxic emissions from the project within 1,000 feet of the schools. A public notice will be sent to all parents/guardians of students of the above-mentioned schools and all residents and businesses within 1,000 feet of the proposed new location. There will be a 30-day public comment period.

#### **Regulation 8, Rule 47: Air Stripping and Soil Vapor Extraction Operations**

Regulation 8-47-301 requires any air stripping and soil vapor extraction operations which emit benzene, vinyl chloride, perchloroethylene, methylene chloride and/or trichloroethylene to be vented to a control device which reduces emissions to the atmosphere by at least 90 percent by weight. The proposed thermal/catalytic oxidizer will reduce emissions by at least 90 percent by weight.

Regulation 8-47-501 requires that any person subject to the requirements of this Rule shall keep records of any vapor monitoring results that have been collected to monitor the performance of a control device. Such records shall be retained for a minimum of two years from the date of entry and be made available to District staff upon request. Recordkeeping requirements will be placed on the permit to ensure compliance.

### **Permit Conditions**

#### **Permit Condition #22646**

Condition #22646 setting out the operating and recordkeeping requirements for the operation at source S-3 shall be made a part of the source's Permit to Operate.

OLD CONDITION #22646

This condition, as initially adopted in New Source Review (NSR) Application #13287 on November 21, 2005, was further amended in NSR Applications #16470 on December 13, 2007, #28010 on October 24, 2016, and #29611 on September 23, 2021. This condition is further amended in NSR Application #31106.

1. The operator of this source shall provide written notification to the Engineering Division at least 3 days prior to start-up of operation at any new location. The notification shall include:
  - a. Application Number (1138, 4918, 13287, 16470, 16676, 23777, 28010, 29611, & 31106) and Plant Number (12568).
  - b. Street address, including zip code, for the location where the equipment will be operated.
  - c. The name and telephone number of a contact person where the equipment will be operated.
  - d. The date of initial start-up and estimated duration of operations at that location.
  - e. The distance from the source to the outer boundary of the nearest K-12 school, or indication that the distance is greater than 1500 feet.

In the event that the start-up is delayed less than 5 days, the operator may provide telephone notice of said change to the assigned Plant Engineer in the Engineering Division. If the start-up is delayed more than 5 days, written notification must be resubmitted. [basis: Reg. 1-523]

2. This equipment shall not remain at any single location for a period in excess of 12 consecutive months, following the date of initial operation except as allowed under Section 2-1-413.7. If this portable equipment remains at any fixed location for more than 12 months, the portable permit will automatically revert to a conventional permanent location permit and will lose its portability. [basis: Reg. 2-1-413]
3. This portable equipment, S-3, shall operate at all times in conformance with the eligibility requirements set forth in Regulation 2-1-413 for portable equipment. [basis: Reg. 2-1-413]
4. This equipment is not to be operated within 1000 feet of the outer boundary of any K-12 school, unless the applicable requirements of the California Health and Safety Code Section 42301.6 have been met. This will require the submittal of an application for a revised permit to operate. These notification requirements have been satisfied for operation at 2500 Laurel Street in Napa, CA (94558), 793 South Van Ness Avenue in San Francisco, CA (94110), 7225 Bancroft Avenue, Oakland, CA (94605), and 6407 Telegraph Avenue in Oakland, CA (94609). [basis: Reg. 2-1-413.3]
5. This equipment shall be used exclusively for the removal of non-chlorinated volatile organic compounds associated with petroleum products from extracted soil vapor. This shall be demonstrated by onsite sampling required in condition 10 below. [basis: Reg. 2-5]
6. Precursor Organic Compound (POC) emissions from S-3 shall be abated by abatement device A-1, thermal/catalytic oxidizer during all periods of operation. Soil vapor flow rate shall not exceed 500 scfm. [basis: Reg. 8-47-301.1.2 and Cumulative Increase]
7. The POC abatement efficiency of abatement device A-1 shall be maintained at a minimum of 98.5% by weight for inlet POC concentrations greater than or equal to 2000 ppmv (measured as C6). For inlet concentrations below 2000 ppmv and greater than or equal to 200 ppmv, a minimum abatement efficiency of 97% shall be maintained. For inlet concentrations below 200 ppmv, a minimum abatement efficiency of 90% shall be maintained. The minimum abatement efficiency shall be waived if outlet POC concentrations are shown to be less than 10 ppmv (measured as C6). In no event shall benzene emissions to the atmosphere exceed 0.060 pounds per hour or 0.0079 pounds per day. Annual emissions of benzene shall not exceed 2.9 pounds per year. [basis: BACT; Reg. 2-5-110]

8. While operating as a thermal oxidizer, the minimum operating temperature of A-1 shall not be less than 1400 degrees Fahrenheit. While operating as a catalytic oxidizer, the minimum operating temperature of A-1 shall not be less than 600 degrees Fahrenheit. [basis: BACT]
9. To determine compliance with Condition Number 8, the thermal/catalytic oxidizer shall be equipped with continuous measuring and temperature recording instrumentation. The temperature data collected from the temperature recorder shall be maintained in a file which shall be available for District inspection for a period of at least 2 years following the date on which such data are recorded. [basis Reg. 1-523]
10. To determine compliance with Condition 7, within 24 hours after start-up of the thermal/catalytic oxidizer at any new location, the operator of this source shall:
  - a. Analyze the inlet gas stream to determine the vapor flow rate and concentration of POC present.
  - b. Analyze exhaust gas to determine the flow rate, and the concentration of benzene and POC present.
  - c. Calculate the benzene emission rate in pounds per day based on the exhaust gas analysis and the operating exhaust flow rate. The soil vapor flow rate shall be decreased, if necessary, to demonstrate compliance with Condition 7.
  - d. Calculate the POC abatement efficiency based on the inlet and exhaust gas sampling analysis. For the purpose of determining compliance with condition 7, the POC concentration shall be reported as hexane.
  - e. Submit to the District's Engineering Division the test results and emission calculations within one month from the testing date. Samples shall be analyzed according to modified EPA test methods 8015 and 8021 or their equivalent to determine the concentrations of POC and benzene.[basis: Reg. 1-523]
11. Within 30 days from the completion of each treatment operation at a given location, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division with a summary showing the following information:
  - a. The dates and total number of days that the equipment was at that location and the dates, and total number of days that the equipment was operated at that location.
  - b. A summary of the abatement efficiency and benzene emission rate as determined and reported in the start-up sampling report required by condition 10e above.
  - c. The results of any additionally performed emission test, analysis, or monitoring result logged in for the day of operation they were taken.
  - d. The total throughput of contaminated soil vapor processed by S-3 at that location (indicated in cubic feet).
  - e. The total emissions of benzene at that location based on the sampling results required by condition 10 above.[basis: Reg. 1-523]
12. Within 30 days after the end of every calendar year, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division a year-end summary showing the following information:
  - a. The location(s) at which the equipment was operated including the dates operated at each location.
  - b. The total throughput of contaminated soil vapor for the previous four quarters (indicated in cubic feet).
  - c. The total benzene emissions for the previous four quarters (indicated in pounds).

[basis: Reg. 1-523]

13. The 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 conditional Permit to Operate. All measurements, records and data required to be maintained by the operator shall be retained for at least two years following the date the data is recorded. [basis: Reg. 1-523]
14. Any non-compliance with these conditions shall be reported to the Compliance and Enforcement Division at the time that it is first discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well as the time of occurrence. [basis: Reg. 1-523]

#### NEW CONDITION #22646

This condition, as initially adopted in New Source Review (NSR) Application #13287 on November 21, 2005, was further amended in NSR Applications #16470 on December 13, 2007, #28010 on October 24, 2016, #29611 on September 23, 2021, and #31106 on December 2, 2021. This condition is further amended in NSR Application #31653.

1. The operator of this source shall provide written notification to the Engineering Division at least 3 days prior to start-up of operation at any new location. The notification shall include:
  - a. Application Number (13287, 16470, 28010, 29611, 31106, & 31653) and Plant Number (12568).
  - b. Street address, including zip code, for the location where the equipment will be operated.
  - c. The name and telephone number of a contact person where the equipment will be operated.
  - d. The date of initial start-up and estimated duration of operations at that location.
  - e. The distance from the source to the outer boundary of the nearest K-12 school, or indication that the distance is greater than 1500 feet.

In the event that the start-up is delayed less than 5 days, the operator may provide telephone notice of said change to the assigned Plant Engineer in the Engineering Division. If the start-up is delayed more than 5 days, written notification must be resubmitted. [basis: Reg. 1-523]

2. This equipment shall not remain at any single location for a period in excess of 12 consecutive months, following the date of initial operation except as allowed under Section 2-1-413.7. If this portable equipment remains at any fixed location for more than 12 months, the portable permit will automatically revert to a conventional permanent location permit and will lose its portability. [basis: Reg. 2-1-413]
3. This portable equipment, S-3, shall operate at all times in conformance with the eligibility requirements set forth in Regulation 2-1-413 for portable equipment. [basis: Reg. 2-1-413]
4. This equipment is not to be operated within 1000 feet of the outer boundary of any K-12 school, unless the applicable requirements of the California Health and Safety Code Section 42301.6 have been met. This will require the submittal of an application for a revised permit to operate. These notification requirements have been satisfied for operation at 2500 Laurel Street in Napa, CA (94558), 793 South Van Ness Avenue in San Francisco, CA (94110), 7225 Bancroft Avenue, Oakland, CA (94605), 6407 Telegraph Avenue in Oakland, CA (94609), and 4280 Foothill Blvd in Oakland, CA (94601). [basis: Reg. 2-1-413.3]

5. This equipment shall be used exclusively for the removal of non-chlorinated volatile organic compounds associated with petroleum products from extracted soil vapor. This shall be demonstrated by onsite sampling required in condition 10 below. [basis: Reg. 2-5]
6. Precursor Organic Compound (POC) emissions from S-3 shall be abated by abatement device A-1, thermal/catalytic oxidizer during all periods of operation. Soil vapor flow rate shall not exceed 500 scfm. [basis: Reg. 8-47-301.1.2 and Cumulative Increase]
7. The POC abatement efficiency of abatement device A-1 shall be maintained at a minimum of 98.5% by weight for inlet POC concentrations greater than or equal to 2000 ppmv (measured as C6). For inlet concentrations below 2000 ppmv and greater than or equal to 200 ppmv, a minimum abatement efficiency of 97% shall be maintained. For inlet concentrations below 200 ppmv, a minimum abatement efficiency of 90% shall be maintained. The minimum abatement efficiency shall be waived if outlet POC concentrations are shown to be less than 10 ppmv (measured as C6). In no event shall benzene emissions to the atmosphere exceed 0.060 pounds per hour or 0.0079 pounds per day. Annual emissions of benzene shall not exceed 2.9 pounds per year. [basis: BACT; Reg. 2-5-110]
8. While operating as a thermal oxidizer, the minimum operating temperature of A-1 shall not be less than 1400 degrees Fahrenheit. While operating as a catalytic oxidizer, the minimum operating temperature of A-1 shall not be less than 600 degrees Fahrenheit. [basis: BACT]
9. To determine compliance with Condition Number 8, the thermal/catalytic oxidizer shall be equipped with continuous measuring and temperature recording instrumentation. The temperature data collected from the temperature recorder shall be maintained in a file which shall be available for District inspection for a period of at least 2 years following the date on which such data are recorded. [basis Reg. 1-523]
10. To determine compliance with Condition 7, within 24 hours after start-up of the thermal/catalytic oxidizer at any new location, the operator of this source shall:
  - a. Analyze the inlet gas stream to determine the vapor flow rate and concentration of POC present.
  - b. Analyze exhaust gas to determine the flow rate, and the concentration of benzene and POC present.
  - c. Calculate the benzene emission rate in pounds per day based on the exhaust gas analysis and the operating exhaust flow rate. The soil vapor flow rate shall be decreased, if necessary, to demonstrate compliance with Condition 7.
  - d. Calculate the POC abatement efficiency based on the inlet and exhaust gas sampling analysis. For the purpose of determining compliance with condition 7, the POC concentration shall be reported as hexane.
  - e. Submit to the District's Engineering Division the test results and emission calculations within one month from the testing date. Samples shall be analyzed according to modified EPA test methods 8015 and 8021 or their equivalent to determine the concentrations of POC and benzene.[basis: Reg. 1-523]
11. Within 30 days from the completion of each treatment operation at a given location, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division with a summary showing the following information:
  - a. The dates and total number of days that the equipment was at that location and the dates, and total number of days that the equipment was operated at that location.

- b. A summary of the abatement efficiency and benzene emission rate as determined and reported in the start-up sampling report required by condition 10e above.
  - c. The results of any additionally performed emission test, analysis, or monitoring result logged in for the day of operation they were taken.
  - d. The total throughput of contaminated soil vapor processed by S-3 at that location (indicated in cubic feet).
  - e. The total emissions of benzene at that location based on the sampling results required by condition 10 above.
- [basis: Reg. 1-523]
12. Within 30 days after the end of every calendar year, the operator of this source shall provide the assigned Plant Engineer in the Engineering Division a year-end summary showing the following information:
- a. The location(s) at which the equipment was operated including the dates operated at each location.
  - b. The total throughput of contaminated soil vapor for the previous four quarters (indicated in cubic feet).
  - c. The total benzene emissions for the previous four quarters (indicated in pounds).
- [basis: Reg. 1-523]
13. The 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 conditional Permit to Operate. All measurements, records and data required to be maintained by the operator shall be retained for at least two years following the date the data is recorded. [basis: Reg. 1-523]
14. Any non-compliance with these conditions shall be reported to the Compliance and Enforcement Division at the time that it is first discovered. The submittal shall detail the corrective action taken and shall include the data showing the exceedance as well as the time of occurrence. [basis: Reg. 1-523]

### **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 a revised Permit to Operate for the equipment listed below. However, the proposed source will be located within 1,000 feet of at least one school, which triggers the public notification requirements of District Regulation 2-1-412. After the comments are received 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/Permit to Operate for the following source:

- S-3 Portable Soil Vapor Extraction System: Vacuum Blower (Make: CalClean; Model: 500; Max. Operating Rate: 500 scfm; abated by A-1: Thermal/Catalytic Oxidizer**
- A-1 Thermal/Catalytic Oxidizer (Make: Solleco, Model: 500, Max. Operating Rate: 400,000 BTU/hr)**

Prepared by:





\_\_\_\_\_  
Cameron Fee  
Air Quality Engineer I

7/27/22

Date

DRAFT