

ENGINEERING EVALUATION SUMMARY
AUTHORITY TO CONSTRUCT

Facility Name:	Advanced Environmental Group, Inc
Application Number:	APCD2024-APP-008116
Equipment Type:	Soil vapor extraction system with a carbon adsorber
Facility ID:	APCD2024-SITE-04466
Equipment Address:	160 – 162 South Rancho Santa Fe Rd Encinitas, CA 92024
Facility Contact:	Matt Michaelian
Contact Phone:	(949) 679-9500
Permit Engineer:	John Lee
Date Application Received:	<u>2/7/2024</u>
Date A/C Evaluation Completed:	_____
Date Evaluation Modified:	_____
Senior Engineer Approval:	_____

1.0 BACKGROUND

- 1.1 Type of Application – This application is for a soil remediation project using soil vapor extraction with carbon adsorbers for a former dry-cleaning site.
- 1.2 Permit History – N/A
- 1.3 Facility Description – Former dry-cleaning site.
- 1.4 Other Background Information (where pertinent) – None.

2.0 PROCESS DESCRIPTION

2.1 Equipment –

Soil remediation process consisting of:

soil vapor extraction wells vented to a liquid/vapor separator, a blower (156 scfm maximum), various vacuum relief/air dilution valves, an air flow meter, two (2) carbon adsorbers, a vertical exhaust stack with a tee-cap, and all associated piping, controls, valves, sampling ports, and safety features;

- 2.2 Process –The applicant has applied for the installation of the carbon adsorption system to remove contamination of dry cleaning solvents (tetrachloroethylene) from the site. The vapor extraction/remediation system

is expected to run 24 hours/day, 365 days/year until the concentrations of the contaminants in the soil reach acceptable levels required by RWQCB. Note: RWQCB has not specified the “acceptable levels”.

- 2.3 Emissions Controls – Carbon adsorbers are used to control emissions from the soil remediation system.
- 2.4 Attachments – Application submittals.

3.0 EMISSIONS

- 3.1 Emission Estimate Summary – The emission increase was estimated for the process. A summary of the emissions is below in Table 3.1a.

Emission Increase Data –

Table 3.1a			
Post Project Potential Emissions			
Compound	Hourly (lbs)	Daily (lbs)	Annual (lbs)
VOCs	4.4E-03	1.1E-01	3.8E+01

- 3.2 Emission Estimate Assumptions –Based on the information provided in the pilot SVE test the primary contaminant of concern for the facility is contaminants from dry cleaning Perchloroethylene (tetrachloroethylene) which is VOC exempt in District Rule 2. The worst case outlet concentration is 20 ppmv as perchloroethyle. The maximum flow rate through the new system is 156 scfm. It is assumed that the adsorber has 90% control. Using these assumptions it was estimated that 1407 lbs of perchloroethylene was emitted from the process with that estimate the Rule 1200 cancer risk was 58.1 in one million. To lower the risk to 1 in one million the perc emissions from the process will be limited to 24 lbs per year.

- 3.3 Emission Calculations – Amount of Organic Carbon (OC) emissions per day based on initial emission estimates prior to the Rule 1200 evaluation:

$$400E-06 \text{ moles perc} * (165.83 \text{ g perc}/1 \text{ mole perc}) * (1 \text{ mole air} / 29 \text{ g air}) * (1200 \text{ g air}/ 1 \text{ m}^3) * (1 \text{ m}^3/35.5 \text{ ft}^3) * (1 \text{ lbs}/453 \text{ g}) = 0.000170679 \text{ lb}/\text{ft}^3$$

$$156 \text{ ft}^3/\text{min} * 0.000170679 \text{ lb}/\text{ft}^3 = 0.027 \text{ (lbs}/\text{min)}$$

$$0.027 \text{ (lbs}/\text{min}) * 60 \text{ (min}/\text{hr}) * 24 \text{ (hr}/\text{day}) * (1-.90) = 3.9 \text{ (lbs}/\text{day}) \text{ of perc}$$

- 3.4 Emission Calculation References – APCD2024-APP-008116_PERC Calc and APCD2024-APP-008116_otherTAC_Calc

4.0 APPLICABLE RULES

- 4.1 Prohibitory Rules – Rule 51 (Nuisance) - Rule 51 –

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. The provisions of this rule do not apply to odors emanating from agricultural operations in the growing of crops or raising of fowls or animals.

-Equipment is expected to comply with the Nuisance Rule as specified in Rule 51. This will be verified during the start-up inspection. A condition is recommended to ensure compliance with the rule.

4.2 Rule 20.2 - New Source Review (NSR) – Non Major Stationary Sources.

Rule 20.2(a) - Applicability: This rule applies to any new or modified stationary source, to any new or modified emission unit and to any relocated emission unit being moved from a stationary source provided that after completion of the project, the stationary source is not a major stationary source.

- This section has been included to distinguish this source from a major source. This source is well below the thresholds defined in 20.1(c)(35), and therefore is classified as a non-major stationary source. Therefore, Rule 20.2 applies.

Rule 20.2(d)(1)(iv) - Best Available Control Technology (BACT): Any new or modified emission unit which has any increase in its potential to emit particulate matter (PM10), oxides of nitrogen (NOx), volatile organic compounds (VOC) or oxides of sulfur (SOx) and which unit has a post-project potential to emit of 10 pounds per day or more of PM10, NOx, VOC, or SOx shall be equipped with Best Available Control Technology (BACT) for each such air contaminant.

- NOx, PM-10, SOx and VOC emissions are all estimated to be below 10 lbs/day. BACT is not required for any of these pollutants.

Rule 20.2(d)(2)(i) - Air Quality Impact Analysis (AQIA): This rule requires new/modified sources that exceed the emissions limits in the table below to perform an AQIA.

AQIA Stationary Source Trigger Levels

Compound	Lb/hr	Lb/day	Ton/yr
NOx	25	250	40
CO	100	550	100
SOx	25	250	40
PM10	N/A	100	15
Lead	N/A	3.2	0.6

- AQIA does not apply since estimated emission rates of PM₁₀, NO_x, SO_x, CO and Lead do not exceed the above trigger levels.

Rule 20.2(d)(3) - Prevention of Significant Deterioration (PSD): Rule 20.1 defines a PSD stationary source as any stationary source which has, or will have after issuance of a permit, an aggregate potential to emit one or more air contaminants in amounts equal to or greater than any of the emission rates listed below.

PSD Stationary Source Trigger Levels

Compound	Ton/yr
NO _x	250
CO	250
Sox	250
PM10	250
VOC	250

- The emissions from this project are below the PSD trigger levels therefore, this project is not PSD stationary source and is not applicable to PSD requirements.

4.3 Toxic New Source Review- Rule 1200

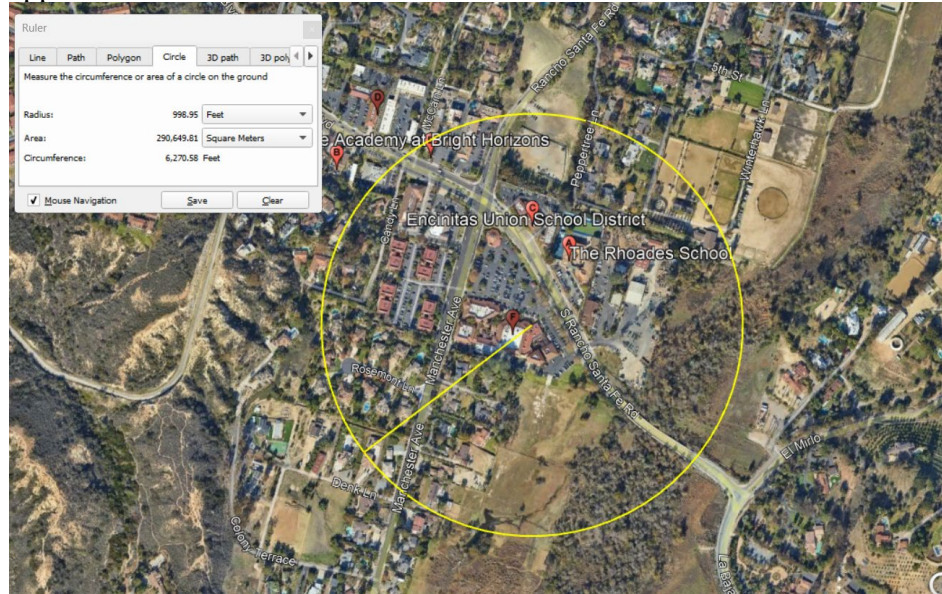
Rule 1200 applies to any new, relocated or modified emission unit which results in any increase in emissions of one or more toxic air contaminant(s), and for which an Authority to Construct or Permit to Operate is required. This rule requires health risks be reviewed to ensure the risks are below one in one million for cancer (with T-BACT installed), and that the health hazard index (HI) is less than one for non-cancer chronic and acute toxic air contaminants.

- Rule 1200 is applicable. A health risk assessment (HRA) was conducted. With the original emissions the estimated risks (cancer = 58.1 in a million, chronic < 1 and acute < 1) were ratioed (1407 lbs with 58.1 million cancer risk to 24 lbs) to estimated risks of cancer 1.0 in a million, chronic < 1 and acute < 1 which are below the Rule 1200 requirements of cancer risk <10 in a million, chronic risk <1 and acute risk <1 since the carbon adsorbers are T-BACT. Based on other installations similar to this the facility should have no issues complying with Rule 1200. The Rule 1200 HRA is attached.

4.4 AB3205-

AB3205 requires a public notice prior to issuing an Authority to Construct for equipment emitting hazardous air contaminants at a facility within 1000 feet of a school.

- The Rhoades School is within 1,000 ft of the emission source, AB3205 is applicable.



- 4.5 NESHAPS AND ATCMS-
Soil vapor extraction processes are not subject to any NESHAPS or ATCMS. Not applicable.
- 4.6 Title V-
The site is not a Title V facility so Title V is not applicable.
- 4.7 Attachments – Rule 1200 report.

5.0 RECOMMENDATION

Soil remediation process is expected to be in compliance with all applicable District rules and regulations. Approval of the A/C is recommended with the below conditions which are the same or similar to conditions used for other similar soil remediation permits.

6.0 RECOMMENDED A/C CONDITIONS

The following recommended A/C conditions for the SVE system operation is similar to the current Permit to Operate (PTO 001767) and to the Districts standard set of conditions for soil vapor extraction systems. Note: the following conditions are the same conditions used on similar application with the exception of Condition 6 and 11 which is a site specific emission limit. This application is recommended for AC issuance.

1. The permittee shall install, maintain, and label a vapor sampling port at both the inlet and the exhaust of the air pollution control device associated with this soil remediation equipment. (District Rule 21)

2. There shall be no emissions of organic compounds into the atmosphere from the exhaust stack or any other portion of the vapor extraction system, the emission control device, the groundwater extraction system, the groundwater treatment system, or any material storage containers with a concentration equal to or greater than 20 ppmv as perchloroethylene. This requirement shall not apply to organic compounds released during sampling, repair, maintenance, waste disposal, and/or equipment installation activities. (District Rule 21)
3. At no time shall the subject equipment cause or contribute to a public nuisance as specified in District Rule 51. If compliance with Rule 51 cannot be demonstrated to the satisfaction of the District, the permittee will take whatever corrective action necessary to meet applicable requirements. If corrective action requires any physical change or modification to the subject equipment the permittee shall apply for and obtain an Authority to Construct for all such modifications prior to making any physical change. (District Rule 51)
4. The permittee shall install, operate, modify, and adjust the soil vapor extraction system such that any automatic air dilution valve installed in the header piping is NOT continuously open to the atmosphere. All required air flow rate measurements, inlet vapor samples, and exhaust gas vapor samples shall be taken during that portion of the vapor extraction cycle when all installed automatic air dilution valves are in the closed position. (District Rule 21)
5. The permittee shall install an air flow meter that continuously measures and displays the total air flow rate (in scfm) at the inlet of the air pollution control device associated with this soil remediation equipment. The air flow meters shall be operated, calibrated, and maintained in accordance with the manufacturer's specifications. (District Rule 21)
6. The maximum total air flow rate into the air pollution control device shall not exceed 156 scfm during that portion of the vapor extraction cycle when all installed automatic air dilution valves are in the closed position. (District Rules 21 and 1200)
7. The permittee shall measure and record the air flow rate (in scfm) into the air pollution control device associated with this soil remediation equipment at least once every 1000 operating hours. Additionally, the permittee shall also measure and record this air flow rate after any manual air dilution valve installed in the header piping is opened, closed, or otherwise adjusted. Each recorded air flow rate measurement shall be taken during that portion of the vapor extraction cycle when all installed automatic air dilution valves are in the closed position. (District Rules 21 and 1200)
8. The permittee shall sample, analyze, and record the organic compound concentration (in ppmv as perchloroethylene) of the inlet and exhaust vapors at least once every 1000 operating hours. Additionally, the permittee shall sample,

- analyze, and record the organic compound concentration (in ppmv as perchloroethylene) of the inlet and exhaust vapors after any manual air dilution valve installed in the header piping is opened, closed, or otherwise adjusted. Each inlet and exhaust vapor sample shall be collected during that portion of the vapor extraction cycle when all installed automatic air dilution valves are in the closed position. (District Rules 21 and 1200)
9. The permittee shall use EPA Methods 8260, TO-15, or a similar equivalent analytical method as approved by the District to quantify the organic compound concentration of the inlet and exhaust vapor samples. All vapor sample analytical results and records shall be retained for at least three years and made available to District personnel upon request. (District Rules 21 and 1200)
 10. The permittee shall record the corresponding date, and cumulative operating hours of the air pollution control device(s) when each vapor sample is collected and each air flow rate is recorded. These operating records shall be retained for at least three years and made available to District personnel upon request. (District Rules 21 and 1200)
 11. Emissions of Toxic Air Contaminants (TACs) from the exhaust stack of the air pollution control device associated with this soil remediation equipment shall not exceed 24 lbs. per calendar year. The permittee shall calculate and record the estimated TAC emission rate from the exhaust stack based upon the measured air flow rates (in scfm) and exhaust stack organic compound concentration results (in ppmv as perchloroethylene) at least once every 1000 operating hours. Additionally, the permittee shall calculate and record the estimated TAC emission rate (lbs/hr) from the exhaust stack after any manual air dilution valve installed in the header piping is opened, closed, or otherwise adjusted. These records and all supporting documentation shall be retained for at least three years and made available to District personnel upon request. (District Rule 1200)