Engineering Evaluation
Union Pacific Rail Road
37105 Mission Blvd.
Fremont, CA 94536
Plant # 23464; Application Number 27805

1. Background:

CH2M Hill consultants for Union Pacific Railroad has applied for an Authority to Construct/Permit to Operate the following Soil Vapor Extraction System (SVE) system located at 37105 Mission Blvd., Fremont, CA 94536.

S-1: Soil Vapor Extraction System Consisting of a Blower 150 SCFM Maximum Capacity, Made by Mako, Model 150 Abated by A-1
A-1: Thermal Oxidizer 150 SCFM All Electric Made by Mako Model Makocat 150,

The SVE system will be operated within 1000 feet of the following School and thus a Public Notice is required.

Nile Elementary School
37141 2nd Street
Fremont, CA

2. Emission Calculations

Emissions of Precursor Organics:
S-1 Soil Vapor Extraction System – 150 scfm vacuum blower
For a conservative estimate of yearly emissions, we shall assume that the system is operated for an entire year within an inlet concentration corresponding to the initial maximum soil concentration level.
Generalized assumptions are as follows:

Operating conditions: Pressure = 1 Atm; Inlet Temperature = 21oC; 1 mole occupies 24.15L
Molecular weight of Total Petroleum Hydrocarbon (TPH_g) = 100 g/mole (value for "weathered gasoline").
Molecular weight of Benzene = 78 g/mole.
Influent values based on operational parameters of equipment and applicant supplied soil vapor test results: influent rate 150 scfm throughout; maximum influent concentration = 20,000 ppmv POC, 310 ppmv benzene; destruction efficiency = 98.5% throughout.

POC emissions =

20000 E-6 * 150 ft3/min * 1440 min/day * 28.32L * 1 mole_ * 100g/24.15L mole * 1 lb/454g_ * (1 - 0.985) = 16.74 lb/day or 6110.1 lb/y or 3.055 t/y

Benzene emission =

310 E-6 * 150 ft3/min * 1440 min/day * 28.32L * 1 mole_ * 78.1 g/24.15L mole * 1 lb/454g * (1 - 0.985) = 0.2 lb/day or 73.96 lb/yr or 0.037 t/y

3. Cumulative Increase- tons/year

Table 2 presents the Plant Cumulative Increase. Precursor Organic Compound (POC) emission is 3.055 tons per year.

Table 21Plant Cumulative Increase (ton/y)

Pollutant	Current	This Application (t/y)	Total (t/y)
POC	0	3.055	3.055

4. Compliance Statements:

Toxics
At Source S-1, benzene emission after abatement is 0.2 pound per day or 77.96 pound per year. Thus benzene emission after abatement is above the chronic toxic trigger level of 3.8 pound per year listed in Regulation 2-5, Table 2-5-1. Therefore, benzene emission is considered significant to warrant a risk screen analysis. Further, the following school is within 1000 feet of the source S-1. Thus Public Notification is triggered in accordance with Regulation 2-1-412.

Nile Elementary School
37141 2nd Street
Fremont, CA

Best Available Control Technology (BACT)
In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per day of POC, NPOC, NO_X, CO, SO_2 or PM_{10}.

This proposed project will not emit over 10 pounds per day of POC, NPOC, NO_X, CO, SO_2 or PM_{10}. Thus BACT is not triggered. The source is equipped with a carbon system that will abate the emissions further reducing the TAC emissions to the atmosphere.

Offsets
Offsets must be provided for any new or modified source at a facility that emits more than 10 tons per year of POC or NO_X per Regulation 2-2-302. Table 2 above summarizes increases in criteria pollutant emissions at the plant.
Offsets are not applicable to this application, since the emissions do not exceed 10 tons/yr. Thus this facility is not subject to Regulation 2-2-302.

California Environmental Quality Act (CEQA)
The project is considered to be ministerial under the Districts proposed CEQA Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors and therefore is not discretionary as defined by CEQA. This project is in compliance with Chapter 9.2 of the permit handbook.

District Regulations
Based on the information submitted, this operation is expected to be in compliance with Regulation 8-47-301, and 8-47-302 since the POC and NPOC emissions are vented through a carbon adsorption system at all times of operation.

Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAPS) are not triggered.

5. Condition
6.

Condition # 26290

1. Precursor Organic Compound (POC) emissions from Source S-1 shall be abated by abatement device A-1, electric catalytic oxidizer during all periods of operation. Soil vapor flow rate shall not exceed 150 scfm. [Basis: Reg. 8-47-301.1,2]

2. 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 C_6). 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 C_6). [Basis: BACT; Regulation 2-5]

To determine compliance with part 2 of the condition, the owner/operator of this source shall monitor with a photo-ionization detector (PID), flame-ionization detector (FID), or other method approved in writing by the Air Pollution Control Officer at the following locations:

a. At the inlet to A-1 electric catalytic or thermal oxidizer
b. At the outlet from A-1 electric catalytic or thermal oxidizer

[Basis: Cumulative Increase, Regulation 2-5, TBACT]

3. The owner/operator shall not operate A-1 electric catalytic oxidizer, below a minimum operating temperature of 600 degrees Fahrenheit. The owner/operator may elect to use a thermal oxidizer, and the owner/operator shall not operate the thermal oxidizer below a minimum operating temperature of less than 1400 degrees Fahrenheit.
[Basis: Cumulative Increase, Regulation 2-5, TBACT]

4. To determine compliance part 4 of the condition, the thermal/electric 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: Regulation 2-1-403]

5. The owner/operator of this source shall maintain the following records for each month of operation of the source:
    a. Days and hours of operation.
    b. Each monitor reading or analysis result for the day of operation they are taken.

    Such records shall be retained and made available for inspection by the District for at least two years following the date that data is recorded.
    [Basis: Regulation 1-523]

6. The owner/operator shall report any non-compliance with parts 2 to the Director of the Compliance & 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 at the time of occurrence in the submittal. [Basis: Cumulative Increase, Regulation 2-5, TBACT]

7. Upon final completion of the remediation project, the owner/operator of Source S-1 shall notify the Engineering Division within two weeks of decommissioning the operation. [Basis: Cumulative Increase, Regulation 2-5, TBACT]

7. Recommendation

The 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 subject to Condition 26290. However, the proposed source will be located within 1000 feet of a school, which triggers the public notification requirements of District Regulation 2-1-412.6.

After the comments are received from the public and reviewed, the District will make a final determination on the permit. I recommend that the District initiate a public notice and consider any comments received prior to taking any final action on issuance of a Permit to Operate for the following source:

S-1: Soil Vapor Extraction System Consisting of a Blower 150 SCFM Maximum Capacity Made by Mako, Model 150 Abated by A-1
A-1: Thermal Oxidizer 150 SCFM All Electric Made by Mako, Model Makocat 150,

by_____ August 23, 2016
Hari Doss