

AIR QUALITY MANAGEMENT DISTRICT

AUTHORITY TO CONSTRUCT EVALUATION

APPLICATION NO.: A/C 25229 & 25230

REVIEW STARTING DATE: 03/21/17

ISSUING ENGINEER: Matt Baldwin

I. PROJECT DESCRIPTION:

FACILITY NAME: Phillips 66 Company

LOCATION: 76 Broadway, Sacramento, CA 95818

PROPOSAL: Modification of Permit to Operate P/O 23446 for a loading rack and Authority to Construct and Permit to Operate a new vapor control unit.

INTRODUCTION: Phillips 66 Company is a petroleum marketer. Phillips 66 Company is seeking an Authority to Construct and a Permit to Operate to modify their current loading rack (P/O 23446) and install a vapor control unit at their facility located at 76 Broadway, in Sacramento. Loading rack emissions are currently permitted under P/O 23446 and vapors from that loading rack are being routed to Chevron's vapor processing unit (P/O 20328). The additional fugitive components being added as part of the loading rack modification (light liquid valves and light liquid fittings) were included under Application No. 25042, which covers the facility-wide fugitive emission components. Offsets were necessary to complete Application No. 25042, and as a result public noticing was required under Rule 217. The preliminary decision for this application was noticed on June 2, 2017 and the Authority to Construct was issued on July 5, 2017.

EQUIPMENT DESCRIPTION: Loading Rack

A/C 25229 – Loading Rack

- A. FOUR GASOLINE LOADING ARMS.
- B. FOUR DIESEL LOADING ARMS.
- C. TWO GASOLINE PUMPS, 40 HP EACH.
- D. TWO GASOLINE PUMPS, 50 HP EACH.
- E. TWO ETHANOL PUMPS, 20 HP EACH.
- F. ONE DIESEL PUMP, 50 HP.

PROCESS RATE/FUEL USAGE:

| Fuel Type | Maximum Allowable Fuel Loading (A) | | |
|-----------------------|------------------------------------|-----------------|--------------|
| | gallons/day | gallons/quarter | gallons/year |
| Gasoline and transmix | 630,000 | 57,960,000 | 229,950,000 |
| Ethanol | 69,300 | 6,375,600 | 25,294,500 |
| Diesel | 252,000 | 23,184,000 | 91,980,000 |

(A) Maximum allowable fuel loading is based on a daily limit of 630,000 gallons of gasoline, 69,300

gallons of ethanol, and 252,000 gallons of diesel, and operating 92 days per quarter and 365 days per year.

OPERATING SCHEDULE: The potential to emit, as defined in Rule 202, Section 238, is the maximum physical and operational design capacity to emit a pollutant. The loading rack has the physical and operational design capacity to operate 24 hours per day, 365 days per year. Therefore VOC, NOx, SOx, and CO emissions will be evaluated assuming 24 hours per day, 365 hours per year.

CONTROL EQUIPMENT EVALUATION: Loading rack vapors are collected using vapor balance, where vapors are first sent from the tank trucks through a vapor return line to a vapor bladder tank (Tank #2784) with a capacity of 9,800 cubic feet. Once a sufficient quantity of vapors are collected, they are combusted in a vapor combustion unit with the following specifications:

| | |
|--|--|
| <u>A/C 25230 – APC Vapor Collection and Control Unit</u> | |
| Flow rate | 500 scfm (max) / 80 scfm (min) |
| Heat Input: | 39.1 MMBtu/hr |
| Pilot gas: | Natural gas / propane |
| Minimum Control Efficiency: | 99.95% reduction for total hydrocarbon |

II. EMISSIONS CALCULATIONS:

1. HISTORIC POTENTIAL EMISSIONS:

A/C 25229 – Loading Rack

Fugitive vapors generated by loading rack, which include spillage and leaks allowed by permit condition are not currently quantified on Permit to Operate 23446, but rather Chevron P/O 20328 and Phillips 66 P/O 23446 share a combined throughput limit through Chevron’s vapor processor.

For purposes of historic potential emissions, Chevron and Phillips 66 share common daily and quarterly throughput limits and the emissions are counted towards Chevron’s potential to emit. Chevron is not reducing their quarterly potential to emit as part of this project. Thus, the historic daily and quarterly potential emissions are zero.

The Historic Potential Emissions are as follows (Rule 202, §225):

| HISTORIC POTENTIAL EMISSIONS | | |
|-------------------------------------|---|---|
| Pollutant | Daily Historic Potential Emissions | Quarterly Historic Potential Emissions |
| VOC | 0 lb/day | 0 lb/qtr |
| NOx | 0 lb/day | 0 lb/qtr |
| SOx | 0 lb/day | 0 lb/qtr |
| PM10 | 0 lb/day | 0 lb/qtr |
| PM2.5 | 0 lb/day | 0 lb/qtr |
| CO | 0 lb/day | 0 lb/qtr |

A/C 25230 – APC Vapor Collection and Control Unit

Vapors collected from the organic liquid loading operation (Loading Rack Permit to Operate 23446) are currently transferred to Chevron’s vapor control unit, and the associated emissions are counted towards Chevron’s facility emissions. The proposed vapor control unit is considered new. Therefore, the equipment is being evaluated as a new emission unit and their Historic Potential Emissions are as follows (Rule 202, §225):

| HISTORIC POTENTIAL EMISSIONS | | |
|-------------------------------------|---|---|
| Pollutant | Daily Historic Potential Emissions | Quarterly Historic Potential Emissions |
| VOC | 0 lb/day | 0 lb/qtr |
| NOx | 0 lb/day | 0 lb/qtr |
| SOx | 0 lb/day | 0 lb/qtr |
| PM10 | 0 lb/day | 0 lb/qtr |
| PM2.5 | 0 lb/day | 0 lb/qtr |
| CO | 0 lb/day | 0 lb/qtr |

- 2. PROPOSED POTENTIAL TO EMIT:** This application is for a loading rack with a vapor control unit. During operation, the loading rack and vapor combustion unit can operate for up to 24 hr/day, continuously. Therefore, the potential to emit for VOC, NOx, SOx, PM10, PM2.5, and CO will be calculated assuming the loading rack and vapor control unit operate (i) 24 hours per day, (ii) 2,208 hours per calendar quarter, and (iii) 8,760 hours per year.

Fugitive and Combustion emissions are calculated using the following equation:

$$PTE = EF \times (TP_{\text{gasoline}} + TP_{\text{ethanol}} + (12.7\% \times TP_{\text{diesel}}))$$

Where

- PTE = Potential to Emit (lb/day, lb/qtr, lb/yr)
- EF = Emission Factor (lb/1,000 gallons throughput)
- TP = Maximum allowable throughput of gasoline and ethanol and 12.7% cross loading of diesel (gal/day, gal/qtr, gal/yr)

A/C 25229 – Loading Rack Emissions:

| Pollutant | Emission Factor (A) (lb/1000 gallons throughput) | Potential to Emit (B) | |
|------------------|---|------------------------------|----------------|
| | | lb/day | lb/year |
| VOC | 0.02 | 14.6 | 5,339 |
| GHG | N/A | 0.0 tons/day | 0 tons/year |

(A) Emission factor for VOC is from San Diego APCD calculation procedure R01 – Bulk Gasoline Rack Emissions, Reformulated Gasoline (4/25/08). The emission factor was developed by the SDAPCD Vapor Recovery Section and is primarily associated with pressure relief valve leaks and releases that occur during loading.

(B) Emissions are based on operating at a maximum daily throughput of 630,000 gallons of gasoline, 69,300 gallons of ethanol, and 12.7% cross loading of 252,000 gallons of diesel, and operating 365 days per year. All emission limits are in English units.

| Pollutant | Emission Factor (A) (lb/1000 gallons throughput) | Potential to Emit (B) (lb/quarter) | | | |
|-----------|---|---------------------------------------|------------------------|-------------------------|------------------------|
| | | Quarter 1 (Jan-Mar) | Quarter 2 (Apr-Jun) | Quarter 3 (Jul-Sept) | Quarter 4 (Oct-Dec) |
| VOC | 0.02 | 1,316 | 1,331 | 1,346 | 1,346 |
| GHG | 28.7 | 0 tons/quarter | 0 tons/quarter | 0 tons/quarter | 0 tons/quarter |

(A) Emission factor for VOC is from San Diego APCD calculation procedure R01 – Bulk Gasoline Rack Emissions, Reformulated Gasoline (4/25/08). The emission factor was developed by the SDAPCD Vapor Recovery Section and is primarily associated with pressure relief valve leaks and releases that occur during loading.

(B) Emissions are based on operating at a maximum daily throughput of 630,000 gallons of gasoline, 69,300 gallons of ethanol, and 12.7% cross loading of 252,000 gallons of diesel, and operating 90 days for the first quarter, 91 days for the second quarter, and 92 days each for the third and fourth quarters. All emission limits are in English units.

A/C 25230 – APC Vapor Collection and Control Unit Emissions:

| Pollutant | Emission Factor (A) (lb/1000 gallons throughput) | Potential to Emit (B) | |
|-----------|---|-----------------------|-----------------|
| | | lb/day | lb/year |
| VOC | 0.02 | 14.6 | 5,339 |
| NOx | 0.034 | 24.9 | 9,075 |
| SOx | 1.2E-04 | 0.1 | 32 |
| PM10 | 1.6E-03 | 1.2 | 427 |
| PM2.5 | 1.6E-03 | 1.2 | 427 |
| CO | 0.05 | 36.6 | 13,346 |
| Lead | N/A | 0.0 | 0 |
| GHG | 28.7 | 10.5 tons/day | 3,827 tons/year |

(A) Emission factors for SOx, PM10, and PM2.5 are from AP-42, Table 1.5.1 (07/08) and have been adjusted from a liquid basis to an equivalent amount of vapor assuming an uncontrolled emission factor of 8.4 lb of vapor as propane per 1000 gallons loaded and heating values of 24,548 Btu/lb of propane and 91,500 Btu/gallon of liquid propane. Emission factors for VOC and NOx are based on BACT emission limits. Emission factor for CO is based on the manufacture's guarantee. GHG emission factor is expressed as CO2e and is from EPA's Mandatory Reporting of Greenhouse Gases Rule (78 FR 71948, Nov. 29, 2013), Tables C-1 & C-2.

(B) Emissions are based on operating at a maximum daily throughput of 630,000 gallons of gasoline, 69,300 gallons of ethanol, and 12.7% cross loading of 252,000 gallons of diesel, and operating 365 days per year. All emission limits are in English units.

| Pollutant | Emission Factor (A) (lb/1000 gallons throughput) | Potential to Emit (B) (lb/quarter) | | | |
|-----------|---|---------------------------------------|------------------------|-------------------------|------------------------|
| | | Quarter 1 (Jan-Mar) | Quarter 2 (Apr-Jun) | Quarter 3 (Jul-Sept) | Quarter 4 (Oct-Dec) |
| VOC | 0.02 | 1,316 | 1,331 | 1,346 | 1,346 |
| NOx | 0.034 | 2,238 | 2,263 | 2,288 | 2,288 |
| SOx | 1.2E-04 | 8 | 8 | 8 | 8 |
| PM10 | 1.6E-03 | 105 | 106 | 108 | 108 |
| PM2.5 | 1.6E-03 | 105 | 106 | 108 | 108 |
| CO | 0.05 | 3,291 | 3,327 | 3,364 | 3,364 |
| Lead | N/A | 0 | 0 | 0 | 0 |
| GHG | 28.7 | 944 tons/quarter | 954 tons/quarter | 965 tons/quarter | 965 tons/quarter |

(A) Emission factors for SOx, PM10, and PM2.5 are from AP-42, Table 1.5.1 (07/08) and have been adjusted from a liquid basis to an equivalent amount of vapor assuming an uncontrolled emission factor of 8.4 lb of vapor as propane per 1000 gallons loaded and heating values of 24,548 Btu/lb of propane and 91,500 Btu/gallon of liquid propane. Emission factors for VOC and NOx are based on BACT emission limits. Emission factor for CO is based on the manufacture's guarantee. GHG emission factor is expressed as CO2e and is from EPA's Mandatory Reporting of Greenhouse Gases Rule (78 FR 71948, Nov. 29, 2013), Tables C-1 & C-2.

(B) Emissions are based on operating at a maximum daily throughput of 630,000 gallons of gasoline, 69,300 gallons of ethanol, and 12.7% cross loading of 252,000 gallons of diesel, and operating 90 days for the first quarter, 91 days for the second quarter, and 92 days each for the third and fourth quarters. All emission limits are in English units.

III. COMPLIANCE WITH RULES AND REGULATIONS:

1. **H&S § 42301.6 (AB 3205) COMPLIANCE:** The equipment is not located within 1,000 feet from the outer boundary of a school site. Therefore the school public noticing requirements of H&S Code § 42301.6 do not apply.

2. **NSR COMPLIANCE:**

Rule 202 - New Source Review

Section 301 - Best Available Control Technology:

BACT is triggered for any pollutant for which the emission increase ($BACT_{EI}$) calculated pursuant to Rule 202, Section 411.1 exceeds the levels specified below.

BACT is triggered if:

$$BACT_{EI} > BACT_{TL}$$

Where:

$$BACT_{EI} = \text{Emissions Increase} = (DPE - DHPE)$$

$$DPE = \text{Daily Potential Emissions (from Section II.2)}$$

DHPE = Daily Historic Potential Emissions (from Section II.1)

| | | |
|----------------------|-------------------|--------------------|
| BACT _{TL} = | Pollutant | BACT _{TL} |
| | VOC | 0 lb/day |
| | NOx | 0 lb/day |
| | SOx | 0 lb/day |
| | CO | 550 lb/day |
| | PM ₁₀ | 0 lb/day |
| | PM _{2.5} | 0 lb/day |
| | Lead | 3.3 lb/day |

Determination of BACT Applicability:

A/C 25229 – Loading Rack

| Pollutant | DPE (lb/day) | DHPE | BACT _{EI} (lb/day) | BACT _{TL} (lb/day) | Is BACT Required? |
|-----------|--------------|------|-----------------------------|-----------------------------|-------------------|
| VOC | 14.6 | 0 | 0 | >0 | Yes |
| NOx | 0.0 | 0 | 0 | >0 | No |
| SOx | 0.0 | 0 | 0 | >0 | No |
| PM10 | 0.0 | 0 | 0 | >0 | No |
| PM2.5 | 0.0 | 0 | 0 | >0 | No |
| CO | 0.0 | 0 | 0 | >550 | No |
| Lead | 0.0 | 0 | 0 | >3.3 | No |

The proposed VOC emissions exceed the BACT trigger level specified in this section and are therefore subject to BACT.

A/C 25230 – Vapor Recovery Unit

| Pollutant | DPE (lb/day) | DHPE | BACT _{EI} (lb/day) | BACT _{TL} (lb/day) | Is BACT Required? |
|-----------|--------------|------|-----------------------------|-----------------------------|-------------------|
| VOC | 14.6 | 0 | 15 | >0 | Yes |
| NOx | 24.9 | 0 | 25 | >0 | Yes |
| SOx | 0.1 | 0 | 0 | >0 | No |
| PM10 | 1.2 | 0 | 1 | >0 | Yes |
| PM2.5 | 1.2 | 0 | 1 | >0 | Yes |
| CO | 36.6 | 0 | 37 | >550 | No |
| Lead | 0.0 | 0 | 0 | >3.3 | No |

The proposed VOC, NOx, PM10, and PM2.5 emissions exceed the BACT trigger levels specified in this section and are therefore subject to BACT.

SMAQMD's BACT Determination for a bulk gasoline terminal (BACT No. **164**) was last reviewed on **08/15/17**. Since less than two years have passed since the time of the last

BACT review and the time the application was deemed complete, and the SMAQMD is not aware of any significant changes to BACT requirements for bulk gasoline terminals, this BACT determination will be considered current and valid for this permit application.

Determination of Compliance with BACT Requirements:

| BACT Compliance | | |
|------------------------|--|--|
| Pollutant | District BACT Standard BACT No. 164 | Compliance Determination (A) |
| VOC | Bottom Loading with dry break couplers and vapor collection system venting to a vapor control unit that meets 0.02 lb/1000 gal | Bottom Loading with dry break couplers and vapor collection system venting to a vapor control unit that meets 0.02 lb/1000 gal |
| NOx | 0.034 lb/1000 gal | 0.034 lb/1000 gal |
| SOx | Natural gas or LPG fired flare | N/A – BACT not triggered |
| PM10 | 0.01 grains/scf | 0.006 grains/scf |
| PM2.5 | 0.01 grains/scf | 0.006 grains/scf |
| CO | 0.05 lb/1000 gal | N/A – BACT not triggered |
| Lead | No Standard | N/A |

(A) Based on the manufacturer's emission guarantee.

The loading rack is a bottom loading rack with dry break couplers that and a vapor collection system that vents to a Vapor Control Unit. The manufacturer's emissions data for the Vapor Control Unit demonstrate compliance with the BACT for VOC, NOx, PM10, and PM2.5 standards.

Section 302 – Offsets: Offsets are triggered for any project where the stationary source potential to emit, calculated pursuant to Rule 202, Section 411.3 exceeds the levels specified below:

| <u>Pollutant</u> | <u>lb/qtr</u> |
|------------------|---------------|
| VOC | 5,000 |
| NOx | 5,000 |
| SOx | 13,650 |
| PM10 | 7,300 |
| PM2.5 | 15 TPY |
| CO | 49,500 |

Calculation of Facility's Potential to Emit for Offset Purposes:

Emission Units Installed Before January 1st, 1977:

Likely many of the tanks and the loading rack were installed before January 1, 1977 (Union Oil has owned the property since 1909). However, since these sources only emit VOC, and are therefore not excluded from the offset trigger calculations, all emissions units are being calculated as if they were installed after January 1, 1977.

Emission Units Installed After January 1st, 1977:

All Pollutants: The facility's potential to emit from all emission units is:

$$\text{Facility's PTE} = \sum(\text{PTE}_{\text{UNIT}})$$

Where:

PTE_{UNIT} = The Potential to emit of the emissions unit (Rule 202, §238)

Note: PM2.5 is expressed in tons/year; all other pollutants are expressed in lb/quarter:

| FACILITY'S POTENTIAL TO EMIT | | | | | | | |
|---|--------------------|------------|-----------|-----------|-----------|----------------------|----------------------|
| Pre-Project Potential to Emit | | | | | | | |
| | lb/quarter (A) | | | | | tons/yr | |
| | VOC | NOx | SOx | PM10 | CO | PM2.5 ^(B) | |
| Pre-1977 Potential to Emit ^(C) | 0 | 0 | 0 | 0 | 0 | 0.00 | |
| Post-1977 Potential To Emit ^(C) | 14,774 | 153 | 0 | 15 | 162 | 0.01 | |
| Project Potential to Emit | | | | | | | |
| Permit No. | Emissions Unit | VOC | NOx | SOx | PM10 | CO | PM2.5 ^(A) |
| 25229 | Loading Rack | 1,331 | 0 | 0 | 0 | 0 | 0.00 |
| 25230 | Vapor Control Unit | 1,331 | 2,263 | 8 | 106 | 3,327 | 0.21 |
| Facility Cap | | N/A | N/A | N/A | N/A | N/A | N/A |
| Facility's Total PTE for Offset Purposes | | 17,465 | 2,441 | 8 | 121 | 3,526 | 0.22 |
| Offset Trigger Levels (≥ to) | | 5,000 | 5,000 | 13,650 | 7,300 | 49,500 | 15 |
| Are Offsets Triggered? | | Yes | No | No | No | No | No |

(A) Except for peaking power plants, determining whether offsets are required must be calculated on a quarterly basis for NOx, VOC, SOx, PM10, and CO. For purposes of demonstrating whether offsets are triggered, the highest quarter (Quarter 2) is shown in the table. For a breakdown of by quarter, see **Attachment B – Calculation of Offset Triggers**.

(B) Unless otherwise noted, 100% of PM10 is assumed to be PM2.5. The PM2.5 PTE was assumed to be the same as PM10 PTE.

(C) See **Attachment B – Calculation of Offset Triggers**. For Pre-1977 Potential to Emit (emission units installed prior to 1/1/1977), SOx, PM10, CO, and PM2.5 are excluded from the total offset calculation (Rule 202, §411.3).

Emission offsets are not required for NOx, SOx, PM10, PM2.5 or CO because emissions are below the offset threshold.

Emission offsets are required for VOC because emissions are above the offset threshold.

Sections 302 and 303 – Offset Requirements and Offset Ratios:

CALCULATION OF EMISSION OFFSETS FOR VOC AND NOx:

Because VOC emissions are above the District’s VOC offset threshold of 5,000 lb/quarter, the facility will be required to fully offset VOC emissions from the loading rack and the vapor control unit. To meet offsetting requirements specified in Section 302 of Rule 202, the facility is proposing to surrender the remaining ERCs on ERC Certificate No. 12-01167 and lease ERCs from the District Community Bank.

ERCs on ERC Certificate No. 12-01167 were generated from the shutdown of three spray booths at 9946 Mills Station Road, Sacramento, CA 95827. A portion of the credits was used to offset the VOC increases in A/C 25042. The remaining available VOC ERCs on the certificate are shown below.

| Available ERC on ERC Certificate No. 12-01167 | Qtr 1 (lb/qtr) | Qtr 2 (lb/qtr) | Qtr 3 (lb/qtr) | Qtr 4 (lb/qtr) |
|---|----------------|----------------|----------------|----------------|
| VOC | 40.3 | 0.6 | 22.6 | 83.9 |

Pursuant to Rule 202, Section 411.4, the quantity of required offsets are determined by multiplying the sum of all increases of the potential to emit minus the Historic Potential Emissions for the emission units associated with this project by the appropriate offset ratio. The loading rack and the vapor control unit are considered new emission units; therefore, the Historic Potential Emissions are zero. The following VOC emission increases from the project require offsets:

| Source | Qtr 1 (lb/qtr) | Qtr 2 (lb/qtr) | Qtr 3 (lb/qtr) | Qtr 4 (lb/qtr) |
|--------------------------------|----------------|----------------|----------------|----------------|
| Loading Rack (A/C 25229) | 1,316 | 1,331 | 1,346 | 1,346 |
| Vapor Control Unit (A/C 25230) | 1,316 | 1,331 | 1,346 | 1,346 |
| Total | 2,632 | 2,662 | 2,692 | 2,692 |

The VOC offset ratio, as specified in Section 303 of Rule 202, depends on whether the facility is a major source, the pollutant for which the offsets are required, the distance between the facility and the location where the ERCs were generated, and whether the facility’s potential to emit for offset purposes exceeds 7,500 lb/qtr. The facility is not a major source because the facility’s total VOC emissions are capped at 24.4 tons per year, below the major source threshold of 25 tons of VOC per year. The location where the ERCs were generated is approximately 11 miles from the proposed equipment. The potential to emit for

offset purposes is greater than or equal to 7,500 lb/qtr of VOC. Therefore, the offset ratios of 1.2 (shown in the following table) will be used to determine the quantity of offsets that are required pursuant to Rule 202, Section 411.4.

| Location of Emission Offset | Emission Offset Ratio | | |
|--|--|------------|------------|
| | Volatile organic compounds or Nitrogen oxides | PM2.5 | PM10 |
| Within 15-mile radius and within Sacramento Valley Air Basin | 1.2 to 1.0 if used at non-major stationary source or non-major modifications at a major source (and the facility's potential to emit is $\geq 7,500$ lb/qtr) | 1.2 to 1.0 | 1.2 to 1.0 |

Since there are not sufficient ERCs on ERC Certificate No. 12-01167 to offset the project offset needs, the available ERCs will be used to partially offset emissions from the loading rack (A/C 25229). The following table shows the emissions from the loading rack, the offset ratio applied to the emissions, the quantity of offset required, the amount of available ERCs, and the remaining emissions that need offsets:

| | Loading Rack VOC Offsets Required | | | |
|---|-----------------------------------|----------------|----------------|----------------|
| | QTR 1 (lb/qtr) | QTR 2 (lb/qtr) | QTR 3 (lb/qtr) | QTR 4 (lb/qtr) |
| Loading Rack Emissions (A/C 25229) | 1,316 | 1,331 | 1,346 | 1,346 |
| ERC VOC Offset Ratio using private credits generated less than 15 miles from the facility (A) | 1.2 | 1.2 | 1.2 | 1.2 |
| Offsets Required (B) | 1,579.2 | 1,597.2 | 1,615.2 | 1,615.2 |
| Available ERCS on ERC Certificate No. 12-0116 | 40.3 | 0.6 | 22.6 | 83.9 |
| Remaining Offsets Required (C) | 1,538.9 | 1,596.6 | 1,592.6 | 1,531.3 |
| Remaining Emissions to be Offset (D) | 1,282.4 | 1,330.5 | 1,327.2 | 1,276.1 |

(A) Emission offset ratio is 1.2 per Section 303.1 because source of credits are within 15 miles from the facility and were generated within the Sacramento Valley Air Basin.

(B) Offset Required = Loading Rack Emissions x Offset Ratio of 1.2

(C) Remaining offset required (at 1.2 to 1.0 offset ratio) = Offsets Required – Available ERCs

(D) Remaining Emissions to be Offset = Remaining Offsets Required (at 1.2 to 1.0 offset ratio) ÷ Offset ratio of 1.2

For the remaining emissions to be offset, the facility is proposing to lease ERCs from the District Community Bank. The applicant requested to lease the ERCs for 30 years. Pursuant to Section 303.2 of Rule 202, the offset ratio for the emissions is determined by the daily emissions calculated pursuant to Section 411.3 of Rule 202, as stated in the following table.

| Emission offsets obtained from the Community Bank | |
|--|-----------------------|
| Source Type/Pollutant | Emission offset ratio |
| For use by non-major stationary sources or non-major modifications for all pollutants if the non-major modification has an increase in emissions calculated pursuant to Section 411.3 of 250 lbs/day or less of VOC, NOx, and SOx, and 80 lbs/day or less of PM10. | 1.0 to 1.0 |
| If the non-major modification has an increase in emissions calculated pursuant to Section 411.3 that is greater than 250 lbs/day of VOC, NOx, and SOx, or greater than 80 lbs/day of PM10. | 1.2 to 1.0 |

Section 411.3(c) of Rule 202 states that for VOC emissions, the emissions is the sum of the potential to emit for all emissions units at the stationary source installed after January 1, 1977 plus the sum of the potential to emit minus the Historic Potential Emissions for all emission units installed prior to January 1, 1977 and modified after January 1, 1977. As shown in the above Facility's Potential to Emit table, the facility does not have any emission units installed before 1977. The following table summarizes the daily potential to emit for all emissions units at this stationary source:

| Permit No. | Equipment | VOC PTE | |
|------------|--------------------------------|----------------|--------|
| | | lb/qtr | lb/day |
| 23443 | Tank 3876 - Ext Floating Roof | 1,381 (A) | 15 |
| 23444 | Tank 35018 - Int Floating Roof | 5,990 (A) | 67 |
| 23445 | Tank 30017 - Int Floating Roof | 3,988 (A) | 44 |
| 23449 | Tank 3875 - Ext Floating Roof | 1,978.6 (A, B) | 22 |
| 23847 | Tank 3877 - Ethanol Offload | 1,257 (A) | 14 |
| 24758 | IC Engine, Diesel | -- | 6 |
| 25042 | Component Fugitive Emissions | -- | 3 |
| 25229 | Loading Rack | -- | 15 |
| 25230 | APC - Vapor Control Unit | -- | 15 |
| Total | | | 201 |

(A) The permitted quarterly limits are shown because the associated permits established only quarterly PTE for VOCs. No permitted daily limits were established. The daily PTE limits are calculated by dividing the permitted quarterly limit by 90 days.

(B) Quarterly VOC PTE is based on the highest quarterly VOC PTE, which is established in Quarter 2.

The daily PTE for all emission units at this stationary source is 201 lb/day, which is less than 250 lb/day; therefore, the offset ratio for the credits leased from the Community Bank is 1.0 to 1.0. The following table shows the amount of ERCs that will be leased from the Community Bank to offset the remaining emissions from the loading rack and the emissions from the vapor control unit.

| Leased VOC ERCs from the Community Bank | | | | |
|---|-------------------|-------------------|-------------------|-------------------|
| Source | Qtr 1 (lb/qtr) | Qtr 2 (lb/qtr) | Qtr 3 (lb/qtr) | Qtr 4 (lb/qtr) |
| Loading Rack (A/C 25229) | 1,282.4 | 1,330.5 | 1,327.2 | 1,276.1 |
| Vapor Control Unit (A/C 25230) | 1,316 | 1,331 | 1,346 | 1,346 |
| Total | 2,598.4 | 2,661.5 | 2,673.2 | 2,622.1 |

The facility has identified sufficient ERCs to meet offsetting requirements.

Section 308 –CEQA: The California Environmental Quality Act (CEQA) is a statute that requires state and local agencies to identify the significant adverse environmental impacts of their actions and to avoid or mitigate those impacts to the extent feasible. The first step in the review of projects subject to CEQA is to determine if the project is exempt from CEQA. The State CEQA Guidelines (SCG) provide that “Where it can be seen with certainty that there is no possibility that the activity in question may have a significant effect on the environment, the activity is not subject to CEQA.” (SCG §15061(b)(3)) Based on the environmental analysis below staff have concluded that the project is exempt from CEQA because there is no possibility that the project will have a significant adverse effect on the environment.

As shown in the table below, the project’s operational phase emissions, or permitted emission limits are well below the SMAQMD Thresholds of Significance.

| Pollutant/Hazard | | Threshold | Project Total | Rounded Project Total (B) | Less than Standard ? |
|-----------------------|--------|----------------|----------------|---------------------------|----------------------|
| NOx (ozone precursor) | | 65 lb/day | 29.2 lb/day | 29 lb/day | Yes |
| VOC (ozone precursor) | | 65 lb/day | 24.9 lb/day | 25 lb/day | Yes |
| PM10 (A) | Daily | 80 lb/day | 1.2 lb/day | 1 lb/day | Yes |
| | Annual | 14.6 tons/year | 0.21 tons/year | 0 tons/year | Yes |
| PM2.5 (A) | Daily | 82 lb/day | 1.2 lb/day | 1 lb/day | Yes |
| | Annual | 15 tons/year | 0.21 tons/year | 0 tons/year | Yes |

| Pollutant/Hazard | | Threshold | Project Total | Rounded Project Total (B) | Less than Standard ? |
|----------------------------------|-------------------|-------------------------|------------------------|---------------------------|----------------------|
| Cancer Risk (per million) | | 10 per million | 0.1404 (C) | 0.14 (C) | Yes |
| Acute Non-Cancer Health Hazard | | 1.0 | 0.0108 (C) | 0.01 (C) | Yes |
| Chronic Non-Cancer Health Hazard | | 1.0 | 0.0068 (C) | 0.007 (C) | Yes |
| GHG as CO2e | Operational Phase | 10,000 metric tons/year | 3,471 metric tons/year | 3,471 metric tons/year | Yes |

- (A) Operational phase CEQA significance threshold for PM10 and PM2.5 is zero (0); however, if all feasible BACT is applied, the threshold is 80 lb/day and 14.6 tons/year for PM10 and 82 lb/day and 15 tons/year for PM2.5.
- (B) The District uses conventional rounding methods to determine what numbers round to zero. For BACT purposes the District has determined that an emissions level of 0.49 lb/day rounds to 0. Using this same methodology, the emissions from this operation are rounded to 0 lb PM10, PM2.5/day and 0 ton PM10, PM2.5/year.
- (C) See Health Risk Assessment analysis under Rule 402 in Sec. 3. Prohibitory Rule Compliance.

In addition to the exemption from CEQA for a project that demonstrates no possibility of a significant effect on the environment, CEQA review is also exempt for permitting actions that are considered ministerial. Under the District “Guidance Document, Permit Actions and CEQA Applicability,” section 5.1.1(f), issuance of an ATC is considered ministerial unless it requires the establishment of a new BACT standard. This project does not require a new BACT standard but rather relied on an existing BACT standard published in the District’s BACT Clearinghouse (No. **164**), thus making the permitting action ministerial and exempt from CEQA.

Therefore, upon approval of the project, the SMAQMD will issue the Authority to Construct and file a Notice of Exemption with the Sacramento County Clerk. The notice will be posted for 35 days. The evaluation and Authority to Construct will be made available for public inspection.

Section 406 – Submittal of BACT Determinations: This permit action relied on an existing BACT determination (**#164**) already published on SMAQMD’s BACT Clearinghouse. Therefore, this section does not apply.

Rule 203 – Prevention of Significant Deterioration

A source or modification triggers PSD if:

- Its potential to emit any one pollutant is greater than or equal to 100 tons/year if it is one of the 28 selected industrial categories in 42 U.S.C. Section 7479 (1), or greater than or equal to 250 tons/year for all other categories; or
- It is part of a major stationary source and the project’s net emissions increase for any pollutant will be greater than the significance levels listed below:

| Pollutant | Level of Significance (Tons/Yr) |
|---|----------------------------------|
| CO | 100 |
| NOx | 40 |
| SOx | 40 |
| PM | 25 |
| PM10 | 15 |
| PM2.5 | 10 (PM2.5) or 40 (SO2) or 40(NO) |
| Ozone | 40 of NOx or VOCs |
| Lead | 0.6 |
| Fluorides | 3 |
| Sulfuric acid mist | 7 |
| H2S | 10 |
| Total reduced sulfur (including H ₂ S) | 10 |
| Reduced sulfur compounds (including H ₂ S) | 10 |
| Greenhouse Gases (CO ₂ e) | 75,000 |

There are no emissions sources at the facility that appear to have the potential to emit over 100 or 250 tons per year, and as demonstrated in Section II.2, the emissions from this equipment would not cause the facility to exceed the PSD thresholds. Since this is not a major source, it is not necessary to consider the major modification significance levels. Section II.2 also indicates that annual emissions are well below the levels of significance.

Rule 214 – Federal New Source Review

| FACILITY'S POTENTIAL TO EMIT | | | | | | |
|----------------------------------|-----------|------|------|------|------|-------|
| | tons/year | | | | | |
| | VOC | NOx | SOx | PM10 | CO | PM2.5 |
| Potential to Emit ^(A) | 24.4 | 4.61 | 0.02 | 0.22 | 6.75 | 0.22 |
| Major Source Thresholds | 25 | 25 | 100 | 100 | 100 | 100 |
| Major Source (Y/N) | No | No | No | No | No | No |

(A) The facility has a facility cap of 24.4 tons per year to keep potential to emit less than the major source threshold.

This rule does not apply because this permit action is not for a new major stationary source or a modification at an existing major stationary source.

Rule 217 – Public Notice Requirements for Permits

Sections 401-402 – CARB, EPA, and Public Notification: The public noticing requirements of Rule 217 do not apply if:

- Offsets are not required under Rule 202, Section 302.
- A visibility analysis is not required under Rule 214, Section 413.
- The increase in potential to emit for the project, calculated under Section 403 of Rule 217, is below the following limits:

| Pollutant | lb/qtr |
|-----------|--------|
| VOC | 5,000 |
| NOx | 5,000 |
| SOx | 9,200 |
| PM10 | 7,300 |
| PM2.5 | 10 TPY |
| CO | 49,500 |

Analysis:

- As determined in Section III.2, offsets are required.
- This permit action is not subject to Rule 214, so the visibility analysis required by Section 413 of Rule 214 is inapplicable.
- As shown below, the increase in potential to emit does exceed the notification exemption thresholds for NOx and VOC.

| Increase in Potential to Emit | | | | | |
|-------------------------------|-----------------------------------|------------------|-----------------|------------------------|------------------------|
| Pollutant | Potential to Emit for the Project | | Increase in PTE | Notification Threshold | Notification Required? |
| | Pre-Application | Post-Application | | | |
| VOC | 0 lb/qtr | 2,692 lb/qtr | 2,692 lb/qtr | ≥ 5,000 | No |
| NOx | 0 lb/qtr | 2,288 lb/qtr | 2,288 lb/qtr | ≥ 5,000 | No |
| SOx | 0 lb/qtr | 8 lb/qtr | 8 lb/qtr | ≥ 9,200 | No |
| PM10 | 0 lb/qtr | 108 lb/qtr | 108 lb/qtr | ≥ 7,300 | No |
| PM2.5 | 0.00 TPY | 0.21 TPY | 0.21 TPY | ≥ 10 TPY | No |
| CO | 0 lb/qtr | 3,364 lb/qtr | 3,364 lb/qtr | ≥ 49,500 | No |

Per Rule 217, Section 110, since emission offsets are required, this permit action is subject to CARB, EPA, and public review. The preliminary decision was sent to CARB and EPA for review and comment and a public notice was published in the Sacramento Bee on July 31, 2017.

3. PROHIBITORY RULE COMPLIANCE:

Rule 401 – Ringelmann Chart

The permit will include conditions requiring that the vapor control unit comply with the Ringelmann No. 1 or 20% opacity standard and in the District’s experience; properly maintained dryers are able to meet the requirement. The equipment will be inspected prior to the issuance of the permit to operate and on a regular basis thereafter to ensure continuous compliance.

Rule 402 – Nuisance

The District regulates emissions of toxics substances for under Rule 402, SMAQMD’s guidance document, Health Risk Management Programs For Existing, Modified and New Stationary Sources (March 24, 2016) and any applicable ATCM’s adopted by CARB. The health risk action levels and results are summarized below.

| Health Risk Action Levels and Assessment Summary | | | | |
|--|--------------------------------------|---------|---------------------|--------|
| Type of Health Risk | Permitting Thresholds ^(A) | | Project HRA Results | |
| | T-BACT | Maximum | Residential | Worker |
| Cancer Risk (Chances per million) | ≥ 1.0 | 10.0 | 0.1404 | 0.1165 |
| Acute Non-Cancer (Hazard Index) | ≥ 1.0 | 1.0 | 0.0013 | 0.0108 |
| Chronic Non-Cancer (Hazard Index) | ≥ 1.0 | 1.0 | 0.0008 | 0.0068 |

(A) In certain circumstances, the District may allow a health risk in excess of the levels specified here. For more information, see SMAQMD's guidance document, Health Risk Management Programs for Existing, Modified and New Stationary Sources (2016).

A/C 25229 – Loading Racks

The modification to the loading rack will cause an increase to the fugitive emissions associated with the loading of gasoline tank trucks. The following pollutants have been identified as toxic air contaminants by the Office of Environmental Health Hazard Assessment (OEHHA):

| Pollutant | CAS Number | Weight Percent in RFG (wt %) | Emissions (A) | |
|-----------------|------------|------------------------------|---------------|----------|
| | | | (lb/hr) | (lb/yr) |
| Benzene | 71432 | 0.4% | 2.44E-03 | 2.14E+01 |
| Ethyl benzene | 100414 | 0.1% | 6.09E-04 | 5.34E+00 |
| Hexane | 110543 | 1.4% | 8.53E-03 | 7.47E+01 |
| Toluene | 108883 | 1.1% | 6.70E-03 | 5.87E+01 |
| Xylenes (mixed) | 1330207 | 0.4% | 2.44E-03 | 2.14E+01 |

(A) Emissions are based on the San Diego APCD Emission Factor Tables R01 – Bulk Gasoline Loading Rack Emissions, which are based on the vapor speciation profile for reformulated gasoline.

A/C 25230 – APC Vapor Control Unit

Transfer of gasoline through gasoline loading racks and the vapor control unit cause emissions of uncombusted gasoline. The following pollutants have been identified as toxic air contaminants by the Office of Environmental Health Hazard Assessment (OEHHA):

| Pollutant | CAS Number | Weight Percent in RFG (wt %) | Emissions (A) | |
|-----------------|------------|------------------------------|---------------|----------|
| | | | (lb/hr) | (lb/yr) |
| Benzene | 71432 | 1.0% | 6.09E-03 | 5.34E+01 |
| Ethyl benzene | 100414 | 1.6% | 9.75E-03 | 8.54E+01 |
| Hexane | 110543 | 8.0% | 4.88E-02 | 4.27E+02 |
| Toluene | 108883 | 0.8% | 4.88E-03 | 4.27E+01 |
| Xylenes (mixed) | 1330207 | 2.4% | 1.46E-02 | 1.28E+02 |

(A) Emissions are based on the San Diego APCD Emission Factor Tables for Bulk Terminal Gasoline Vapor Processors, which references Calculation Procedure V03 – SOIL VAPOR EXTRACTION PROCESSES, GASOLINE MITIGATION and is based on the liquid speciation profile for reformulated gasoline.

The project's emissions are modeled with the use of an EPA approved air dispersion model to determine the concentrations of toxic pollutants at residential and non-residential receptors surrounding the project. The model used for this analysis is Lakes Environmental's AERMOD View, Version 8.9.0.

The following parameters were used as inputs to the model:

A/C 25229 – Loading Rack

| | | |
|---------------------------------|---|----------------------------|
| Source Type | = | Volume Source |
| Source Coordinates | = | UTM 10 629436 E, 4269723 N |
| Release Height | = | 30 ft. |
| Length of Side | = | 20 ft. |
| $\sigma_y = \text{Length}/4.3$ | = | 15.26 ft. |
| $\sigma_z = \text{Height}/2.15$ | = | 6.98 ft. |
| Nominal Emission Rate | = | 1.0 g/s |

A/C 25230 – Vapor Control Unit

| | | |
|-----------------------|---|----------------------------|
| Source Type | = | Point Source |
| Source Coordinates | = | UTM 10 629397 E, 4269772 N |
| Stack Height | = | 35 ft. |
| Stack Diameter | = | 7 ft. |
| Stack Temperature | = | 1,000 °F |
| Stack Flow Rate | = | 34,000 acfm |
| Nominal Emission Rate | = | 1.0 g/s |

SMAQMD utilizes the California Air Resources Board's Hotspots Analysis and Reporting Program (HARP2), Version 16088 model which incorporates the health risk assessment methodologies from the "Risk Assessment Guidelines - Guidance Manual for Preparation of Health Risk Assessments" (February 2015).

CANCER RISK ASSESSMENT:

From equation 5.4.1.1 and 8.2.4 A:

$$\text{Risk}_{\text{air}} = C_{\text{air}} * (\text{BR}/\text{BW}) * A * \text{EF} * \text{CPF} * \text{ED}/\text{AT} * (1\text{E}-06) * (\text{GLC}) * \text{ASF} * \text{FAH}$$

Where:

| | | |
|----------------------------|---|--|
| Risk_{air} | = | Cancer risk from inhalation exposure |
| C_{air} | = | Concentration ($\mu\text{g}/\text{m}^3$) |
| (BR/BW) | = | Breathing Rate/Body Weight |
| | = | 361 (l/kg-day) 95%, 3rd Trimester |
| | = | 1090 (l/kg-day) 95%, 0<2 yrs |
| | = | 631 (l/kg-day) 80%, 2<9 yrs |
| | = | 572 (l/kg-day) 80%, 2<16 yrs |
| | = | 261 (l/kg-day) 80%, 16<30 yrs |
| | = | 230 (l/kg-day) 8 hr worker rate |
| A | = | Inhalation Absorption Factor (default = 1) |
| EF | = | Exposure Frequency |
| | = | 350 days for Res |
| | = | 245 days for Non-Res |
| CPF | = | Cancer Potency Factor (kg-day/mg) |
| ED | = | Exposure Duration, 30 years Res, 25 years Non-Res |
| AT | = | Averaging Time, 25,550 days |
| ASF | = | Age sensitivity factor for a specified age group |
| FAH | = | Fraction of time spent at home (use 1 for children under 16 when a school is within a 1 in a million cancer risk isopleth) |
| | = | 0.85, 3rd Trimester |

= 0.85, 0<2 yrs
= 0.72, 2<16 yrs
= 0.73, 16<30 yrs
(1E-06) = (mg/1000 µg)*(m³/1000 L)
GLC = Ground Level Adjustment Factor
= 1.0 for resident
= 1.0 for worker – The facility is a continuous source; therefore the worker adjustment factor is 1.0.

CANCER RISK SUMMARY:

| Permit No. | Receptor (Worst Case) | TAC | Excess Cancer Risk (risk in a million) |
|---------------------------|--|---------------|--|
| A/C's 25229 & 25330 | Residential (Located at Receptor #765, UTM: 629717, 4270092) | Benzene | 0.1343 |
| | | Ethyl Benzene | 0.0061 |
| | | Total | 0.1404 |
| | Non-residential (Located at Receptor #115, UTM: 629457, 4269832) | Benzene | 0.1133 |
| | | Ethyl Benzene | 0.0032 |
| | | Total | 0.1165 |

NON-CANCER RISK ASSESSMENT: The chronic non-cancer health risk is determined for a given pollutant by dividing the pollutant's annual average ambient air concentration (µg/m³) by the chronic reference exposure level of that pollutant in order to obtain the chronic hazard index (HI). The acute non-cancer health risk is determined by dividing the pollutant's maximum hourly ambient air concentration (µg/m³) by the acute reference exposure level in order to obtain the acute hazard index (HI). In addition, each contaminant can affect different organs of the body and several compounds may affect common organs. Therefore, when there are multiple toxic compounds involved, the effects are additive for the common organs.

A list of chronic or acutely hazardous air contaminants may be found at the OEHHA website www.oehha.ca.gov. The method of calculating the HI numbers (Risk Assessment Guidelines) is also found at this website.

The hazard indexes for the affected organs are shown below:

| Toxic Air Pollutant | Target Organ Effects – Acute HI (Residential) | | | | | | | | |
|---------------------|---|----------------|-----------------------------|---------|-------------|---------|---------|-------------|------|
| | Alimentary Tract | Cardiovascular | Reproductive/ Developmental | Eye | Hematologic | Immune | Nervous | Respiratory | Skin |
| Benzene | X | X | 1.3E-03 | X | 1.3E-03 | 1.3E-03 | X | X | X |
| Toluene | X | X | 2.3E-06 | 2.3E-06 | X | X | 2.3E-06 | 2.3E-06 | X |
| Xylenes | X | X | X | 2.2E-06 | X | X | 2.2E-06 | 2.2E-06 | X |
| Total | X | X | 1.3E-03 | 4.4E-06 | 1.3E-03 | 1.3E-03 | 4.4E-06 | 4.4E-06 | X |

| Toxic Air Pollutant | Target Organ Effects – Chronic HI (Residential) | | | | | | | | | | | |
|---------------------|---|------|----------------|-----------------------------|-----------|---------|-------------|--------|---------|---------|-------------|------|
| | Alimentary | Bone | Cardiovascular | Reproductive/ Developmental | Endocrine | Eye | Hematologic | Immune | Kidney | Nervous | Respiratory | Skin |
| Benzene | X | X | X | X | X | X | 8.3E-04 | X | X | X | X | X |
| Ethyl benzene | 6.5E-07 | X | X | 6.5E-07 | 6.5E-07 | X | X | X | 6.5E-07 | X | X | X |
| Hexane | X | X | X | X | X | X | X | X | X | 1.6E-06 | X | X |
| Toluene | X | X | X | 2.0E-05 | X | X | X | X | X | 2.0E-05 | 2.0E-05 | X |
| Xylenes (mixed) | X | X | X | X | X | 4.6E-06 | X | X | X | 4.6E-06 | 4.6E-06 | X |
| Total | 6.5E-07 | X | X | 2.0E-05 | 6.5E-07 | 4.6E-06 | 8.3E-04 | X | 6.5E-07 | 2.6E-05 | 2.4E-05 | X |

| Toxic Air Pollutant | Target Organ Effects – Acute HI (Non-residential) | | | | | | | | |
|---------------------|---|----------------|-----------------------------|---------|-------------|---------|---------|-------------|------|
| | Alimentary Tract | Cardiovascular | Reproductive/ Developmental | Eye | Hematologic | Immune | Nervous | Respiratory | Skin |
| Benzene | X | X | 1.1E-02 | X | 1.1E-02 | 1.1E-02 | X | X | X |
| Toluene | X | X | 2.1E-05 | 2.1E-05 | X | X | 2.1E-05 | 2.1E-05 | X |
| Xylenes | X | X | X | 1.4E-05 | X | X | 1.4E-05 | 1.4E-05 | X |
| Total | X | X | 1.1E-02 | 3.5E-05 | 1.1E-02 | 1.1E-02 | 3.5E-05 | 3.5E-05 | X |

| Toxic Air Pollutant | Target Organ Effects – Chronic HI (Non-residential) | | | | | | | | | | | |
|---------------------|---|------|----------------|-----------------------------|-----------|---------|-------------|--------|---------|---------|-------------|------|
| | Alimentary | Bone | Cardiovascular | Reproductive/ Developmental | Endocrine | Eye | Hematologic | Immune | Kidney | Nervous | Respiratory | Skin |
| Benzene | X | X | X | X | X | X | 6.8E-03 | X | X | X | X | X |
| Ethyl Benzene | 3.3E-06 | X | X | 3.3E-06 | 3.3E-06 | X | X | X | 3.3E-06 | X | X | X |
| Hexane | X | X | X | X | X | X | X | X | X | 1.1E-05 | X | X |
| Toluene | X | X | X | 1.8E-04 | X | X | X | X | X | 1.8E-04 | 1.8E-04 | X |
| Xylenes | X | X | X | X | X | 3.2E-05 | X | X | X | 3.2E-05 | 3.2E-05 | X |
| Total | 3.3E-06 | X | X | 1.8E-04 | 3.3E-06 | 3.2E-05 | 6.8E-03 | X | 3.3E-06 | 2.2E-04 | 2.1E-04 | X |

NON-CANCER ACUTE RISK SUMMARY:

| Permit No. | Receptor (Worst Case) | Target Organ | Hazard Index |
|---------------------|---|--------------|--------------|
| A/C's 25229 & 25230 | Residential (Located at Receptor #765, UTM: 629717, 4270092) | Rep/Dev | 1.3E-03 |
| | | Eye | 4.4E-06 |
| | | Hematologic | 1.3E-03 |
| | | Immune | 1.3E-03 |
| | | Nervous | 4.4E-06 |
| | | Respiratory | 4.4E-06 |
| | Non-residential (Located at Receptor #78, UTM: 629347, 4269722) | Rep/Dev | 1.1E-02 |
| | | Eye | 3.5E-05 |
| | | Hematologic | 1.1E-02 |
| | | Immune | 1.1E-02 |
| | | Nervous | 3.5E-05 |
| | | Respiratory | 3.5E-05 |

NON-CANCER CHRONIC RISK SUMMARY:

| Permit No. | Receptor (Worst Case) | Target Organ | Hazard Index |
|---------------------|--|--------------|--------------|
| A/C's 25229 & 25230 | Residential (Located at Receptor #765, UTM: 629717, 4270092) | Alimentary | 6.5E-07 |
| | | Rep/Dev | 2.0E-05 |
| | | Endocrine | 6.5E-07 |
| | | Eye | 4.6E-06 |
| | | Hematologic | 8.3E-04 |
| | | Kidney | 6.5E-07 |
| | | Nervous | 2.6E-05 |
| | | Respiratory | 2.4E-05 |
| | Non-residential (Located at Receptor #115, UTM: 629457, 4269832) | Alimentary | 3.6E-06 |
| | | Rep/Dev | 1.8E-04 |
| | | Endocrine | 3.3E-06 |
| | | Eye | 3.2E-05 |
| | | Hematologic | 6.8E-03 |
| | | Kidney | 3.3E-06 |
| | | Nervous | 2.2E-04 |
| | | Respiratory | 2.1E-04 |

HRA CONCLUSION: The health risk for this project is considered acceptable to the SMAQMD because:

- The evaluated cancer risk for a maximum exposed individual resident (MEIR) is **0.1404** in one million, which poses no significant risk.
- The evaluated cancer risk for a maximum exposed individual worker (MEIW) is **0.1165** in one million, which poses no significant risk.
- The evaluated noncancer Acute Hazard Index is less than one for all cases.
- The evaluated noncancer Chronic Hazard Index is less than one for all cases.
- Since the cancer risk does not exceed 1 in one million, T-BACT is not required.

Rule 406 – Specific Contaminants

The proposed equipment is not expected to exceed the emissions limit of 0.2% by volume sulfur compound as SO₂ and 0.1 gr/dscf for combustion contaminants calculated to 12% CO₂.

| | | |
|--|---|----------------------------|
| Fuel F-Factor | = | 8,710 dscf/MMBtu |
| Molar Volume | = | 385.3 ft ³ /mol |
| Uncontrolled Emission Factor | = | 8.4 lb/1000 gallon |
| Propane Fuel Density | = | 24,548 Btu/lb fuel |
| Propane Fuel Density | = | 101,352 lb fuel/MMCF |
| Propane HHV | = | 2,488 MMBtu/MMCF |
| Conversion Factor | = | 7,000 gr/lb |
| PM10 Emission Factor | = | 1.6E-03 lb/1000 gal |
| SO ₂ Emission Factor | = | 1.2E-04 lb/1000 gal |
| Weight % C in Natural Gas | = | 82 % or 0.82 lb C/lb fuel |
| C to CO ₂ Conversion Efficiency | = | 0.995 |

PM10 Concentration (combustion contaminants):

- A. Calculate uncorrected grain loading
= (1.6E-03 lb/1000 gal) x (1000 gal/8.4 lb fuel) x (lb fuel/24,548 Btu) x (7000 gr/lb) x (10⁶ Btu/MMBtu) x (MMBtu/8,710 dscf)
= 0.006235978 gr/dscf
- B. Calculate CO₂ emission factor (lb CO₂/MMBtu) assuming 100% C to CO₂ conversion
= (0.82 lb C/lb fuel) x (mol C/12.01 lb C) x (mol CO₂/mol C) x (44.01 lb CO₂/mol CO₂) x (101,352 lb fuel/MMCF) x (MMCF/2,488 MMBtu)
= 122.481125 lb CO₂/MMBtu
- C. Calculate lb CO₂/MMBtu at 99.5% Conversion
= 122.481125 lb CO₂/MMBtu x 99.5%
= 121.868720 lb CO₂/MMBtu
- D. Calculate volume % of CO₂ in Exhaust Gas
= % CO₂
= mol CO₂/mol exhaust
= (121.868720 lb CO₂/MMBtu) x (mol CO₂/44.01 lb CO₂) x (MMBtu/8,710 dscf) x (385.3 dscf/mol exhaust)
= 0.12252379 mol CO₂/mol exhaust or 12.252379 % CO₂
- E. Calculate corrected grain loading
= (0.006235978 gr/dscf) x (12% CO₂/12.252379 % CO₂)
= 0.006 gr/dscf corrected to 12% CO₂

SO₂ Concentration (% SO₂ by volume):

The following calculation is at 0% excess air which represents worst case.

$$\begin{aligned} &= (1.2\text{E-}04 \text{ lb SO}_2/1000 \text{ gal}) \times (1000 \text{ gal}/8.4 \text{ lb fuel}) \times (\text{lb fuel}/24,548 \text{ Btu}) \times (\text{MMBtu}/8,710 \text{ dscf}) \times (1 \text{ mol} \\ &\quad \text{SO}_2/64 \text{ lb SO}_2) \times (385.3 \text{ scf/mol}) \\ &= 0.000004079 \text{ mol SO}_2/\text{mol exhaust or } 0.00004079\% \text{ SO}_2 \end{aligned}$$

The rule emission limits for SO₂ and PM are 0.2% SO₂ by volume and 0.1 grains/cf at 12% CO₂, respectively. Therefore, the emissions from each boiler comply with Rule 406.

Rule 420 – Sulfur Content of Fuels

This rule limits the sulfur content of all liquid fuels to less than 0.5% by weight (5,000 ppm). California reformulated gasoline (RFG3) is limited to 20 parts per million sulfur by weight. Since the gasoline product loaded through the loading rack well below the sulfur content limit, it is expected that the resulting vapors will comply with this rule.

Rule 447 – Organic Liquid Loading

This rule limits VOC emissions from the loading of organic liquids and applies to any tank truck, trailer, or railroad tank car from a bulk plant or bulk terminal. Therefore this rule applies to the Loading Rack and the Vapor Control Unit.

Section 301 – This section limits emissions of VOC from the transfer of organic liquids into any tank truck, trailer, or railroad tank car from a bulk terminal to 0.08 lb/1000 gallons of organic liquids loaded. The VOC emissions from bulk loading of liquids will be limited to 0.02 lb/1000 gallons. Therefore, the equipment is expected to meet this requirement. In accordance with Section 303, this system must be certified by CARB.

Section 304 – This section requires that all equipment associated with bulk loading of organic liquids be maintained to be leak free and vapor tight. The permit will include conditions requiring periodic maintenance to ensure leak free and vapor tight equipment.

Section 305 – This section requires that the vapor holder tank (vapor diaphragm) used to store vapors prior to control in the vapor control unit be maintained such that the VOC concentration in the airspace above the diaphragm does not exceed 3,000 parts per million, expressed as methane.

Section 501 – To verify compliance with Sections 301, 304, and 305, the facility will be required to test the efficiency of the control device in accordance with EPA Method 18, 25, 25A, 25B, or CARB Test Procedure TP-202.1 or TP-203.1, monitor for leaks using EPA Method 21, and measure the VOC concentration above the vapor diaphragm airspace using EPA Method 18, CARB Methods 150 or 1-100, or CARB Test Procedure TP-204.3.

Records must be maintained at the site for a period of at least three years.

4. NSPS COMPLIANCE:

NSPS under 40 CFR, Part 60: The list of all adopted New Source Performance Standards (<http://yosemite.epa.gov/r9/r9nspns.nsf/ViewStandards?ReadForm&Part=60>) was reviewed to determine if the proposed project is subject to one or more of these regulations. The following 40 CFR, Part 60 NSPS section applies to this source category.

40 CFR Part 60, Subpart XX Standards of Performance for Bulk Gasoline Terminals:

The provisions of this subpart apply to the total of all the loading racks at a bulk gasoline terminal which deliver liquid product into gasoline tank trucks, which was constructed or modified on or after December 17, 1980. Since the vapor control unit is considered new and will modify the loading rack, this subpart applies to the facility.

40 CFR §60.502(b) requires the facility to have a vapor collection and control system. The emissions from the vapor collection and control system due to the organic liquid loading must not exceed 35 mg/L (0.29 lb/1000 gallons). The vapor collection and control system is expected to meet 0.02 lb/1000 gallons, and therefore is expected to comply with this section.

40 CFR §60.502(e) requires the facility to load, with some exceptions, only into tank trucks that are considered to be vapor tight. District Rule 448 requires all delivery vessel trucks that service stationary tanks in the District to be certified by CARB to be vapor tight. Therefore, it is expected that the facility will comply with this requirement.

Conditions will be included in the permit to ensure that the facility complies with the operation, maintenance, and recordkeeping standards of this subpart.

5. NESHAP COMPLIANCE:

NESHAPs under 40 CFR, Part 61: The list of all adopted National Emission Standards for Hazardous Air Pollutants (NESHAP) (<http://yosemite.epa.gov/r9/r9nsps.nsf/ViewStandards?ReadForm&Part=61>) were reviewed to determine if the proposed project is subject to one or more of these regulations. There are currently no 40 CFR, Part 61 NESHAP sections that apply to this source category.

NESHAPs under 40 CFR, Part 63: The District has not requested nor obtained delegation of Part 63 NESHAPs. However, these NESHAPS are being enforced as state Air Toxic Control Measures (ATCMs) pursuant to Health and Safety Code, Sections 39658(b) and 39666(d). The list of all adopted National Emission Standards for Hazardous Air Pollutants (<http://yosemite.epa.gov/r9/r9nsps.nsf/ViewStandards?ReadForm&Part=63>) were reviewed to determine if the proposed project is subject to one or more of these regulations. The following subpart is applicable to this facility:

40 CFR 63 Subpart BBBBBB National Emission Standards for Hazardous Air Pollutants – Gasoline Distribution Bulk Terminals, Bulk Plants, and Pipeline Facilities

This regulation applies to area source gasoline bulk terminals, bulk plants, and pipeline facilities. As discussed below, the facility is a bulk gasoline terminal that is not subject to 40 CFR 63 Subparts R or CC. Therefore this subpart applies.

40 CFR §63.11088 requires that each loading rack meet the emission limit and management practice listed in Table 2, the testing and monitoring requirements specified in §63.11092, the applicable notifications as required under §63.11093, and the recordkeeping and reporting requirements of §§63.11094 and 63.11095.

The emission limit specified in Table 2 for organic liquid loading is 80 mg/L (0.67 lb/1000 gallons). The facility is expected to meet this requirement by meeting District Rule 447 and BACT.

The testing requirements of §63.11092(a) will be met by meeting the requirements of District Rule 447. The facility is required to install and has proposed to install a continuous monitoring system that will meet the specifications listed in §63.11092(b)(1)(iii).

The facility will be required to submit an Initial Notification and a Notification of Compliance Status in accordance with §63.11093, and must maintain records of the vapor control unit in accordance with §63.11094(f). A semiannual compliance report must be submitted in accordance with §63.11095.

Staff reviewed the subpart discussed below in detail to verify inapplicability:

40 CFR 63 Subpart R National Emission Standards for Hazardous Air Pollutants – Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations)

The facility's total maximum VOC emissions are limited to 24.4 tons per year. This limit is enforced by a permit condition. Using USEPA's EIIP, Volume III: Chapter II Gasoline Marketing (Stage I and Stage II), January 2001, Table 11.3.2, baseline gasoline type (Attachment B), the total HAP's percentage of VOC emissions is 5.25%. Using the facility's maximum VOC emission and the 5.25% HAPs, the facility's maximum HAP's emissions is 1.3 tons per year. Therefore, the facility is not a major source for HAP as defined in 40 CFR 63.2 – Definitions; and per § 63.420(a)(2), the facility is not subject to this rule.

40 CFR 63 Subpart CC National Emission Standards for Hazardous Air Pollutants From Petroleum Refineries

This facility does not have any petroleum refining process units, as defined in this subpart. Therefore, this subpart is not applicable to this facility.

6. **ATCM COMPLIANCE:** The list of all adopted Airborne Toxic Control Measures (<http://www.arb.ca.gov/toxics/atcm/atcm.htm>) was reviewed to determine if the proposed project is subject to one or more of these regulations. There are currently no ATCM regulations that apply to this source category.

IV. RECOMMENDATION: This bulk loading rack and vapor recovery unit should comply with all applicable District rules and regulations. The following is recommended:

1. **PRELIMINARY DECISION** – Propose that an Authority to Construct be issued to Phillips 66 with the conditions on Authority to Construct Nos. 25229 & 25230.
2. **NOTICING FOR ERC USE** – Following the procedures in SMAQMD Rule 217, Section 110 and Section 401:
 - a) Publish a public notice in the Sacramento Bee newspaper and request comments within the 30 day review period.
 - b) Transmit to the California Air Resources Board and the U.S. EPA Region 9 the proposed Engineering Evaluation and Authority to Construct and request comments within the 30 day review period.
 - c) Publish a public notice to the District website and request comments within the 30 day review period (not a SMAQMD Rule 217 requirement).

3. **FINAL ACTION** The Preliminary Decision was issued on July 31, 2017 and notice was given to the U.S. Environmental Protection Agency and the California Air Resources Board. Additionally a notice was published in the Sacramento Bee and on the District's website. The comment period ended on August 31, 2017. Technical, no substantive comments were received from the applicant and no comments were received from EPA, ARB, or the public. The technical comments have been incorporated. Finalize Authority to Construct Nos. 25229 & 25230. Provide written notice of the final action to the applicant, the U.S. Environmental Protection Agency, the California Air Resources Board, and to any party that requests such information. Publish the notice on the District's website and make the notice and all supporting documents available for public inspection at the District's office.

Issue Authority to Construct Nos. 25229 & 25230 to Phillips 66 Company with the following conditions:

Refer to conditions in Authority to Construct No. 25229 & 25230

REVIEWED BY: Brian J. Keel DATE: 9-5-17

APPROVED BY: [Signature] DATE: 9/5/17

**Attachment A:
Permit to Operate 23446**



0040417073

PERMIT TO OPERATE

ISSUED TO: **PHILLIPS 66 COMPANY**

EQUIPMENT LOCATION: **76 BROADWAY, SACRAMENTO, CA 95818**

| PERMIT NO. | EQUIPMENT DESCRIPTION |
|------------|-----------------------|
|------------|-----------------------|

- | | |
|-------|--|
| 23446 | LOADING RACK CONSISTING OF THE FOLLOWING: A. FOUR GASOLINE LOADING ARMS, VENTED TO A VAPOR RECOVER UNIT (CHEVRON SACRAMENTO TERMINAL P/O 20328). B. FOUR DIESEL LOADING ARMS. C. TWO GASOLINE PUMPS, 40 HP EACH. D. TWO GASOLINE PUMPS, 50 HP EACH. E. TWO ETHANOL PUMPS, 20 HP EACH. F. ONE DIESEL PUMP, 50 HP. |
|-------|--|

SUBJECT TO THE FOLLOWING CONDITIONS:

GENERAL

1. The equipment shall be properly maintained and operated in accordance with the manufacturer's recommendations at all times.
[Basis: SMAQMD Rule 201, Section 405]

DATE ISSUED: 05-01-2012
DATE EFFECTIVE: 07-30-2013
DATE REVISED: 10-11-2013
DATE EXPIRES: 05-01-2014 (UNLESS RENEWED)

LARRY GREENE
AIR POLLUTION CONTROL OFFICER

BY: 

SACRAMENTO METROPOLITAN
AIR QUALITY MANAGEMENT DISTRICT **0040417073**

2. The Air Pollution Control Officer and/or authorized representatives, upon the presentation of credentials shall be permitted:
 - A. To enter upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this Permit to Operate, and
 - B. At reasonable times to have access to and copy any records required to be kept under terms and conditions of this Permit to Operate, and
 - C. To inspect any equipment, operation, or method required in this Permit to Operate, and
 - D. To sample emissions from the source or require samples to be taken.

[Basis: SMAQMD Rule 201, Section 405]
3. This Permit to Operate does not authorize the emission of air contaminants in excess of those allowed by Division 26, Part 4, Chapter 3, of the California Health and Safety Code or the Rules and Regulations of the Sacramento Metropolitan Air Quality Management District (SMAQMD).

[Basis: SMAQMD Rule 201, Section 405]
4. The equipment shall not discharge such quantities of air contaminants or other materials 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.

[Basis: SMAQMD Rule 402, Section 301]
5. A legible copy of this Permit to Operate shall be maintained on the premises with the equipment.

[Basis: SMAQMD Rule 201, Section 401]

EMISSIONS LIMITATIONS

6. The permittee shall not transfer or permit the transfer of organic liquid, with a vapor pressure greater than or equal to 0.5 psia under actual loading conditions, into any tank truck, trailer or railroad tank car unless the emissions to the atmosphere do not exceed 0.08 pounds of VOC per one thousand (1,000) gallons of organic liquids transferred.

[Basis: SMAQMD Rule 447]
7. Emissions from the entire stationary source shall not exceed the following:

[Basis: SMAQMD Rule 201, Section 405]

| Pollutant | Combined Facility Permitted Emissions (tons/year) |
|-----------|--|
| VOC | 24.4 |

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EQUIPMENT OPERATION

8. VOC emissions from the organic liquid loading operation are vented and controlled by the Chevron Sacramento Terminal Air Pollution Control device (Chevron Sacramento Terminal Permit to Operate #20328). Compliance with those requirements of PO #20328 that pertain to the vapor recovery system (i.e. emission limits, recordkeeping, reporting, maintenance and operation requirements) treating vapors from the Phillips 66 loading rack regulated under PO #23446 is the responsibility of the Chevron Sacramento Terminal and is not the responsibility of Phillips 66. Phillips 66 must discontinue the loading of organic liquid upon being notified that the Air Pollution Control device (Chevron Sacramento Terminal Permit to Operate #20328) is not in operation or is operating in violation of the Chevron Sacramento Terminal Permit to Operate #20328.

[Basis: SMAQMD Rule 201, Section 405]

9. The total volume of organic liquids loaded through the Chevron Sacramento Terminal and Phillips 66 Company loading racks shall not exceed the following:

[Basis: SMAQMD Rule 201, Section 405]

| Fuel Type | Maximum Allowable Fuel Loading | |
|-----------------------|--------------------------------|-----------------|
| | gallons/day | gallons/quarter |
| Gasoline and transmix | 2,200,000 | 202,400,000 |
| Diesel | No limitation | 80,000,000 |
| Jet A | No limitation | 80,000,000 |

10. The permittee shall not load organic liquids into any tank truck, trailer or railroad tank car unless the loading facility is equipped with a CARB certified vapor collection and disposal system.

[Basis: SMAQMD Rule 447, Section 303]

11. The loading rack shall be maintained leak free and vapor tight.

A. Leak free is defined as a liquid leak of less than three drops per minute excluding losses which occur upon disconnecting transfer fittings, provided that such disconnect losses do not exceed one (1) fluid ounce, averaged over three disconnects.

B. Vapor tight is defined as a concentration of total organic compounds, measured one (1) centimeter from any source, which does not exceed 10,000 ppm (expressed as methane) above background, as determined by U.S. EPA Method 21.

[Basis: SMAQMD Rule 447, Section 304]

12. Loadings of liquid product into gasoline tank trucks shall be limited to vapor tight gasoline tank trucks using the procedures of Condition Nos. 13-20.

[Basis: 40 CFR Part 60 Subpart XX Section 60.502e]

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13. The terminal owner or operator shall obtain the vapor tightness documentation described in Condition No. 13 for each gasoline tank truck which is to be loaded at the affected facility.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502e(1)]
14. The owner or operator shall require the tank identification number to be recorded as each gasoline tank truck is loaded at the affected facility.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502e(2)]
15. The terminal owner or operator shall cross-check each tank identification number obtained in Condition No. 13 with the vapor tightness documentation within 2 weeks after the corresponding tank is loaded, unless either of the following conditions is maintained:
[Basis: 40 CFR Part 60 Subpart XX Section 60.502e(3)(i)]
 - A. If less than an average of one gasoline tank truck per month over the last 26 weeks is loaded without vapor tightness documentation then the documentation cross-check shall be performed each quarter;
or
[Basis: 40 CFR Part 60 Subpart XX Section 60.502e(3)(i)(A)]
 - B. If less than an average of one gasoline tank truck per month over the last 52 weeks is loaded without vapor tightness documentation then the documentation cross-check shall be performed semiannually.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502e(3)(i)(B)]
16. If either the quarterly or semiannual cross-check provided in Condition Nos. 15A and 15B reveal that these conditions are not being maintained, the source must return to bi-weekly monitoring until such time as these conditions are again met.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502e(3)(ii)]
17. The terminal owner or operator shall notify the owner or operator of each non-vapor tight gasoline tank truck loaded at the affected facility within 1 week of the documentation cross check in Condition No. 14.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502e(4)]
18. The terminal owner or operator shall take steps assuring that the non-vapor tight gasoline tank truck will not be reloaded at the affected facility until vapor tightness documentation for that tank truck is obtained.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502e(5)]
19. The terminal owner or operator shall act to assure that the loadings of gasoline tank trucks at the affected facility are made only into tanks equipped with vapor collection equipment that is compatible with the terminal's vapor collection system.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502f]
20. The terminal owner or operator shall act to assure that the bulk terminal's and the tank truck's vapor collection systems are connected during each loading of a gasoline tank truck at the affected facility. Examples of actions to accomplish this include training drivers in the hookup procedures and posting visible reminder signs at the affected loading racks.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502g]

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21. A pressure measurement device (liquid manometer, magnahelic gauge, or equivalent instrument), capable of measuring up to 500 mm (19.7 in) of water gauge pressure with +/- 2.5 mm (0.1 in) of water precision, shall be calibrated and installed on the terminal's vapor collection system at a pressure tap as close as possible to the connection with the gasoline tank truck.
[Basis: 40 CFR Part 60 Subpart XX Section 60.503(d)(1)]
22. The vapor collection equipment and liquid loading equipment shall be designed and operated to prevent gauge pressure in the delivery tank from exceeding 4,500 pascals [450 mm (17.7 inches) of water] during product loading.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502h]
23. No pressure-vacuum vent in the bulk gasoline terminal's vapor collection system shall begin to open at a system pressure less than 4,500 pascals [450 mm (17.7 inches) of water].
[Basis: 40 CFR Part 60 Subpart XX Section 60.502i]

MONITORING REQUIREMENTS

24. A result by any of the below listed test methods which shows non-compliance with any provision of SMAQMD Rule 447 shall constitute a violation.
- A. Diaphragm Airspace: Concentrations in the airspace above vapor diaphragms shall be determined by U.S. EPA Test Method 18 or CARB Test Method 150, 1-100, or 2-6.
 - B. Leak Detection: U.S. EPA Reference Method 21 shall be used to determine vapor tight conditions.
 - C. Vapor Pressure: Vapor pressure may be obtained from standard reference texts or may be determined by ASTM D-2879-83 or ASTM D-323-82.
 - D. Determination of Compounds Exempt from VOC Definition: If any of the perfluorocarbons are being claimed as exempt compounds, the person making the claim must state in advance which compounds are present, and the U.S. EPA approved test method used to make the determination of these compounds.
[Basis: SMAQMD Rule 447]
25. Each calendar month, the vapor collection system and each loading rack handling gasoline shall be inspected during the loading of the gasoline tank trucks for total organic compounds liquid or vapor leaks. For the purposes of this condition, detection methods incorporating sight, sound or smell are acceptable. Each detection of a leak shall be recorded and the source of the leak repaired within 15 calendar days after it is detected.
[Basis: 40 CFR Part 60 Subpart XX Section 60.502j]

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RECORDKEEPING REQUIREMENTS

26. The following record shall be continuously maintained onsite for the most recent five year period and shall be made available to the SMAQMD Air Pollution Control Officer upon request. Monthly and quarterly records shall be made available for inspection within 30 days of the end of the reporting period.

[Basis: SMAQMD Rule 202]

| Frequency | Information to be recorded |
|------------------------|--|
| At all times | <p>A. Tank vapor tightness documentation required by Condition No. 14. [Basis: 40 CFR Part 60 Subpart XX Section 60.505a]</p> <p>B. Documentation of all notifications required under Condition No. 17. [Basis: 40 CFR Part 60 Subpart XX Section 60.505d]</p> <p>C. A record of all replacements or additions of components performed on an existing vapor processing system. [Basis: 40 CFR Part 60 Subpart XX Section 60.505f]</p> |
| At least once per year | <p>D. The documentation file for each gasoline tank truck shall be updated at least once per year to reflect current test results as determined by California Air Resources Board Certification and Test Procedures for Vapor Recovery Systems of Gasoline Delivery Tanks.</p> <p>E. This documentation shall include, as a minimum, the following information:</p> <ul style="list-style-type: none">i. Test title: California Air Resources Board Certification and Test Procedures for Vapor Recovery Systems of Gasoline Delivery Tanks.ii. Tank owner and address.iii. Tank identification number.iv. Testing location.v. Date of test.vi. Tester name and signature.vii. Witness inspector, if any: name, signature and affiliation.viii. Test results: average pressure change in 5 minutes, mm of water (average for 2 runs). [Basis: 40 CFR Part 60 Subpart XX Section 60.505b and 40 CFR 63 Subpart BBBB Section 63.11094(b)(2)] |

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| Frequency | Information to be recorded |
|-----------|--|
| Daily | F. Volume of gasoline and transmix loaded through the Chevron and Phillips 66 Company loading racks (gallons/day). |
| Monthly | <p>G. A record of each monthly leak inspection required by Condition No. 25 shall be kept on file at the bulk terminal. Inspection records shall include, as a minimum, the following information:</p> <ul style="list-style-type: none"> i. Date of inspection. ii. Findings (may indicate no leaks discovered or nature, location and severity of each leak). iii. Leak determination method. iv. Corrective action (date each leak repaired and reasons for any repair interval in excess of 15 days). v. Inspector name and signature. <p>[Basis: 40 CFR Part 60 Subpart XX Section 60.505c]</p> <ul style="list-style-type: none"> vi. For each leak that is detected, the following specified information shall be recorded: <ul style="list-style-type: none"> (a) The equipment type and identification number. (b) The nature of the leak (i.e., vapor or liquid) and the method of detection (i.e., sight, sound, or smell). (c) The date the leak was detected and the date of each attempt to repair the leak. (d) Repair methods applied in each attempt to repair the leak. (e) Repair delayed" and the reason for the delay if the leak is not repaired within 15 calendar days after discovery of the leak. (f) The expected date of successful repair of the leak if the leak is not repaired within 15 days. (g) The date of successful repair of the leak. <p>[Basis: 40 CFR 63.11094(e)]</p> |
| Quarterly | <p>H. Volume of diesel loaded through the Chevron and Phillips 66 Company loading racks (gallons/quarter).</p> <p>I. Volume of gasoline and transmix loaded through the Chevron and Phillips 66 Company loading racks (gallons/quarter).</p> |

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Your application for this air quality Permit to Operate was evaluated for compliance with Sacramento Metropolitan Air Quality Management District (SMAQMD), state and federal air quality rules. The following listed rules are those that are most applicable to the operation of your equipment. Other rules may also be applicable.

| <u>SMAQMD RULE NO.</u> | <u>RULE TITLE</u> |
|------------------------|--|
| 201 | GENERAL PERMIT REQUIREMENTS (8-24-06) |
| 202 | NEW SOURCE REVIEW (8-23-12) |
| 217 | PUBLIC NOTICE REQUIREMENTS FOR PERMITS (8-23-12) |
| 401 | RINGELMANN CHART (4-19-83) |
| 402 | NUISANCE (8-3-77) |
| 447 | ORGANIC LIQUID LOADING (4-2-98) |

| <u>Federal</u> | <u>Regulation Title</u> |
|----------------|-------------------------|
|----------------|-------------------------|

| | |
|----------------------|--|
| 40 CFR 60 SUBPART XX | STANDARDS OF PERFORMANCE FOR BULK GASOLINE TERMINALS |
|----------------------|--|

In addition, the conditions on this Permit to Operate may reflect some, but not all, requirements of these rules. There may be other conditions that are applicable to the operation of your equipment. Future changes in prohibitory rules may establish more stringent requirements which may supersede the conditions listed here.

For further information please consult your SMAQMD rulebook or contact the SMAQMD for assistance.

ATTACHMENT B

Calculation of Offset Trigger

PHILLIPS 66 COMPANY
76 BROADWAY, Sacramento, CA 95818

Revised: June 8, 2017

| Permit No. | Location Identifier | Equipment | Stationary Source Potential to Emit | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|---------------------|----------------------------------|-------------------------------------|--------------|---------------|--------------|---------------|---------------|--------------|---------------|--------------|---------------|---------------|--------------|---------------|--------------|---------------|---------------|--------------|---------------|--------------|---------------|--------------|-------------|--------------|--------------|--------------|-------------|-------|-----|
| | | | (lb/quarter) | | | | | | | | | | | | | | | | | | | | (ton/yr) | | | | | | | |
| | | | Quarter 1 | | | | | Quarter 2 | | | | | Quarter 3 | | | | | Quarter 4 | | | | | Annual | | | | | | | |
| | | | VOC | NOx | SOx | PM10 | CO | VOC | NOx | SOx | PM10 | CO | VOC | NOx | SOx | PM10 | CO | VOC | NOx | SOx | PM10 | CO | VOC | NOx | SOx | PM10 | CO | VOC | NOx | SOx |
| 23443 | 76 Broadway | Tank 3876 - Ext Floating Roof | 1,381 | 0 | 0 | 0 | 0 | 1,381 | 0 | 0 | 0 | 0 | 1,381 | 0 | 0 | 0 | 0 | 1,381 | 0 | 0 | 0 | 0 | 2,762 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 23444 | 76 Broadway | Tank 35018 - Int Floating Roof | 5,990 | 0 | 0 | 0 | 0 | 5,990 | 0 | 0 | 0 | 0 | 5,990 | 0 | 0 | 0 | 0 | 5,990 | 0 | 0 | 0 | 0 | 11,980 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 23445 | 76 Broadway | Tank 30017 - Int Floating Roof | 3,988 | 0 | 0 | 0 | 0 | 3,988 | 0 | 0 | 0 | 0 | 3,988 | 0 | 0 | 0 | 0 | 3,988 | 0 | 0 | 0 | 0 | 7,976 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 23446 | 76 Broadway | Loading Rack - Modified by 25229 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 23447 | 76 Broadway | Tank 3877 - modified by 23847 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 23448 | 76 Broadway | Engine - replaced by 24758 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 23449 | 76 Broadway | Tank 3875 - Ext Floating Roof | 1,761 | 0 | 0 | 0 | 0 | 1,979 | 0 | 0 | 0 | 0 | 1,847 | 0 | 0 | 0 | 0 | 1,551 | 0 | 0 | 0 | 0 | 3,569 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 23847 | 76 Broadway | Tank 3877 - Ethanol Offload | 1,257 | 0 | 0 | 0 | 0 | 1,257 | 0 | 0 | 0 | 0 | 1,257 | 0 | 0 | 0 | 0 | 1,257 | 0 | 0 | 0 | 0 | 2,514 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 24758 | 76 Broadway | IC Engine, Diesel | 55 | 153 | 0 | 15 | 162 | 55 | 153 | 0 | 15 | 162 | 55 | 153 | 0 | 15 | 162 | 55 | 153 | 0 | 15 | 162 | 0.028 | 0.077 | 0.000 | 0.008 | 0.081 | 0.008 | 0.008 | |
| 25042 | 76 Broadway | Component Fugitive Emissions | 123 | 0 | 0 | 0 | 0 | 124 | 0 | 0 | 0 | 0 | 125 | 0 | 0 | 0 | 0 | 125 | 0 | 0 | 0 | 0 | 0.249 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 25229 | 76 Broadway | Loading Rack | 1,316 | 0 | 0 | 0 | 0 | 1,331 | 0 | 0 | 0 | 0 | 1,346 | 0 | 0 | 0 | 0 | 1,346 | 0 | 0 | 0 | 0 | 2,670 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | |
| 25230 | 76 Broadway | APC - Vapor Control Unit | 1,316 | 2,238 | 8 | 105 | 3,291 | 1,331 | 2,263 | 8 | 106 | 3,327 | 1,346 | 2,288 | 8 | 108 | 3,364 | 1,346 | 2,288 | 8 | 108 | 3,364 | 2,670 | 4,538 | 0.016 | 0.214 | 6.673 | 0.214 | | |
| Total | | | 17,187 | 2,391 | 8 | 120 | 3,453 | 17,436 | 2,416 | 8 | 121 | 3,489 | 17,335 | 2,441 | 8 | 123 | 3,526 | 17,039 | 2,441 | 8 | 123 | 3,526 | 34.42 | 4.61 | 0.02 | 0.22 | 6.75 | 0.22 | | |
| Facility Cap ^(A) | | | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 24.4 | ----- | ----- | ----- | ----- | ----- | | |
| Offset Trigger Level | | | 5,000 | 5,000 | 13,650 | 7,300 | 49,500 | 5,000 | 5,000 | 13,650 | 7,300 | 49,500 | 5,000 | 5,000 | 13,650 | 7,300 | 49,500 | 5,000 | 5,000 | 13,650 | 7,300 | 49,500 | ----- | ----- | ----- | ----- | ----- | 15 | | |
| Major Source Trigger Level | | | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | 25.0 | 25.0 | 100.0 | 100.0 | 100.0 | 100 | | |

^(A) Facility maintains an annual cap of 24.4 tons/year of VOC to prevent triggering major source thresholds.

**Attachment C:
BACT Determination #164**

UNDER PUBLIC REVIEW SMAQMD BACT CLEARINGHOUSE

CATEGORY:

Bulk Terminal Loading Rack

BACT Size: Minor Source BACT

Bulk Terminal Loading Rack and VCU

| | |
|---------------------------------------|---------------------------------|
| BACT Determination Number: 164 | BACT Determination Date: |
|---------------------------------------|---------------------------------|

Equipment Information

Permit Number: 25229
Equipment Description: Bulk Terminal Loading Rack and VCU
Unit Size/Rating/Capacity: 39.1 MMBtu/hr
Equipment Location: PHILLIPS 66 COMPANY
 76 BROADWAY
 SACRAMENTO, CA

BACT Determination Information

| | | |
|--------------|--------------------------------|---|
| ROCs | Standard: | 0.02 lb/1000 gal |
| | Technology Description: | Bottom Loading with dry break couplers and vapor collection system venting to a vapor control unit that meets 0.02 lb/1000 gallons loaded (A) |
| | Basis: | Achieved in Practice |
| NOx | Standard: | 0.034 lb/1000 gal |
| | Technology Description: | |
| | Basis: | Achieved in Practice |
| SOx | Standard: | |
| | Technology Description: | Natural gas or LPG fired flare |
| | Basis: | Achieved in Practice |
| PM10 | Standard: | 0.01 grains/scf |
| | Technology Description: | |
| | Basis: | Achieved in Practice |
| PM2.5 | Standard: | 0.01 grains/scf |
| | Technology Description: | |
| | Basis: | Achieved in Practice |
| CO | Standard: | 0.05 lb/1000 gal |
| | Technology Description: | |
| | Basis: | Achieved in Practice |
| LEAD | Standard: | N/A |
| | Technology Description: | |
| | Basis: | |

Comments: (A) Emission factor is measured in accordance with CARB Vapor Recovery Test Procedure TP-203.1 - Determination of Emission Factor of Vapor Recovery Systems of Terminals (03-17-1999) or the methods (§60.503) described in 40 CFR Part 60 Subpart XX - Standards of Performance for Bulk Gasoline Terminals, which measures total mass of VOC emitted from the vapor processor as a function of the total volume of gasoline loaded by the loading rack.

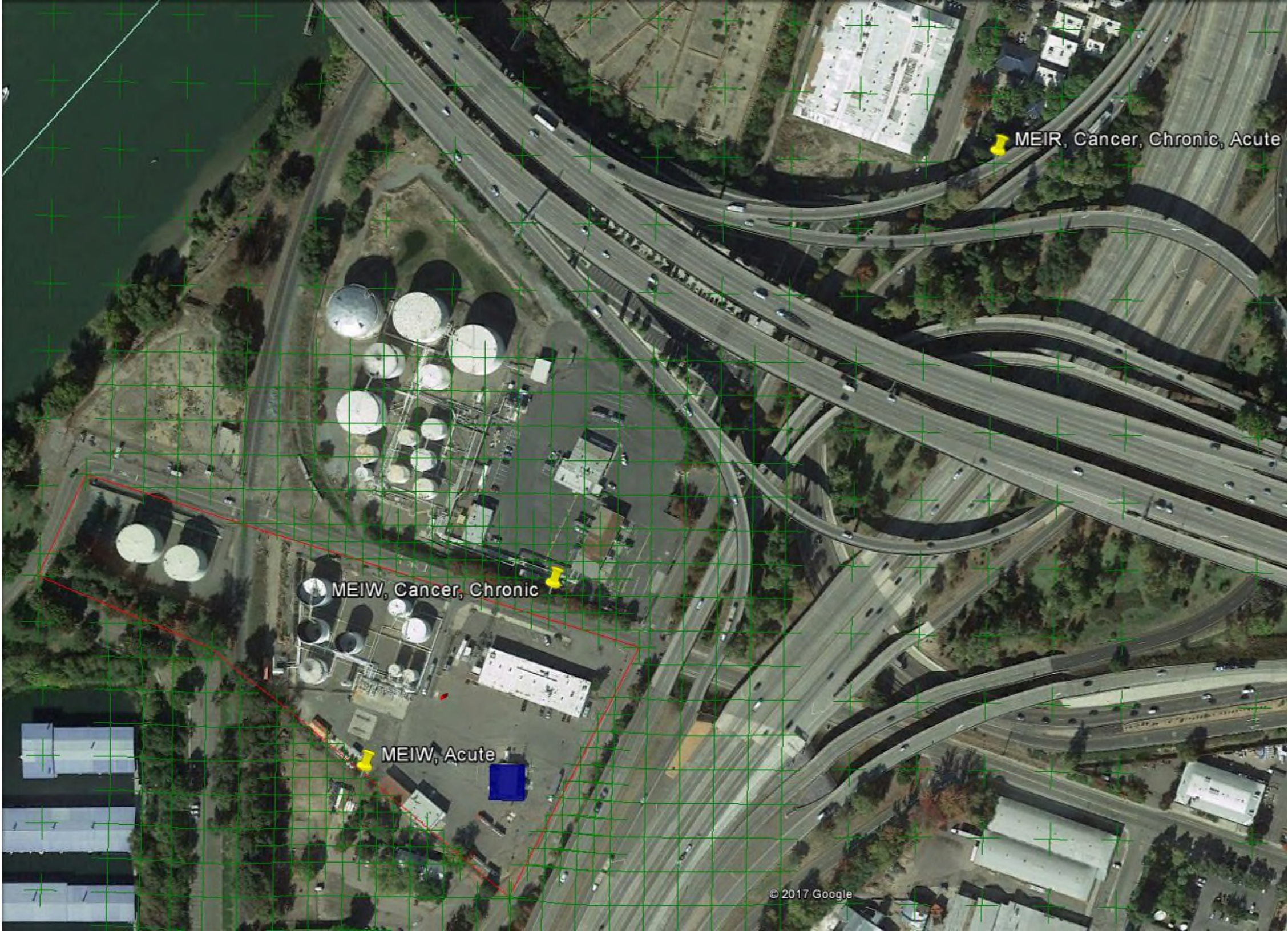
District Contact: Matt Baldwin Phone No.: (916) 874 - 4858 email: mbaldwin@airquality.org

**Attachment D:
Health Risk Assessment Summary**

MEIR, Cancer, Chronic, Acute

MEIW, Cancer, Chronic

MEIW, Acute



HRA CALCS for A/C 25229 & 25230 - PHILLIPS 66

| | | | | | | |
|------------------|------|--------|---------|--------|--------|---------|
| Source Location: | UTM: | 629397 | 4269772 | Cancer | Acute | Chronic |
| Residential Risk | | | | 0.1404 | 0.0013 | 0.0008 |
| Worker Risk | | | | 0.1165 | 0.0108 | 0.0068 |

Risk Assumptions:

Cancer & Chronic:

| Rec # | UTM Location: | | Distance (ft): | Direction | |
|-------|---------------|---------|----------------|-----------|-----------------------------|
| 765 | 629717 | 4270092 | 1,485 | SE | Cr = residential conc. |
| 115 | 629457 | 4269832 | 278 | N | Cnr = non-residential conc. |

Acute:

| Rec # | UTM Location: | | Distance (ft): | Direction | |
|-------|---------------|---------|----------------|-----------|------------------------|
| 765 | 629717 | 4270092 | 1,485 | NE | 1-hr max res conc. |
| 78 | 629347 | 4269722 | 232 | N | 1-hr max non-res conc. |

Pollutants:

| Pollutant | ID | Cancer Potency Factor, CPF (mg/kg-day) ⁻¹ | | Chronic REL (µg/m ³) | | | Acute REL (µg/m ³) | | A/C 25229 - Loading Rack | | | A/C 25230 - Vapor Control Unit | | |
|----------------------|---------|--|------|----------------------------------|------|------|--------------------------------|---------|-------------------------------|-----------------|-----------------|--------------------------------|-----------------|-----------------|
| | | inh | oral | inh | oral | 8-hr | | | Emission Factor (lb/1000 gal) | Emissions lb/hr | Emissions lb/yr | Emission Factor (lb/1000 gal) | Emissions lb/hr | Emissions lb/yr |
| | | | | | | | | | | | | | | |
| VOC (total) | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.02 | 6.09E-01 | 5.34E+03 | 0.02 | 6.09E-01 | 5.34E+03 |
| Benzene | 71432 | 0.1 | #N/A | 3 | #N/A | 3 | 27 | 0.00008 | 2.44E-03 | 2.14E+01 | 0.0002 | 6.09E-03 | 5.34E+01 | |
| Ethyl benzene | 100414 | 0.0087 | #N/A | 2000 | #N/A | #N/A | #N/A | 0.00002 | 6.09E-04 | 5.34E+00 | 0.00032 | 9.75E-03 | 8.54E+01 | |
| 2,2,4-Trimethylpenta | 540841 | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00014 | 4.27E-03 | 3.74E+01 | 0.00036 | 1.10E-02 | 9.61E+01 | |
| Hexane | 110543 | #N/A | #N/A | 7000 | #N/A | #N/A | #N/A | 0.00028 | 8.53E-03 | 7.47E+01 | 0.0016 | 4.88E-02 | 4.27E+02 | |
| Toluene | 108883 | #N/A | #N/A | 300 | #N/A | #N/A | 37000 | 0.00022 | 6.70E-03 | 5.87E+01 | 0.00016 | 4.88E-03 | 4.27E+01 | |
| Xylenes (mixed) | 1330207 | #N/A | #N/A | 700 | #N/A | #N/A | 22000 | 0.00008 | 2.44E-03 | 2.14E+01 | 0.00048 | 1.46E-02 | 1.28E+02 | |

Cancer Risk:

| | MEIR | | | MEIW | | |
|------------------------|----------|----------|----------|----------|----------|----------|
| | 25229 | 25230 | Total | 25229 | 25230 | Total |
| Benzene | 1.07E-07 | 2.72E-08 | 1.34E-07 | 1.07E-07 | 6.20E-09 | 1.13E-07 |
| Ethyl benzene | 2.33E-09 | 3.78E-09 | 6.11E-09 | 2.33E-09 | 8.63E-10 | 3.19E-09 |
| 2,2,4-Trimethylpentane | | | 0.00E+00 | | | 0.00E+00 |
| Hexane | | | 0.00E+00 | | | 0.00E+00 |
| Toluene | | | 0.00E+00 | | | 0.00E+00 |
| Xylenes (mixed) | | | 0.00E+00 | | | 0.00E+00 |
| Total | 1.09E-07 | 3.10E-08 | 1.40E-07 | 1.09E-07 | 7.06E-09 | 1.16E-07 |

Non-cancer acute hazard index

Acute HI = $C_{air,Max1-hr} \div$ Acute REL

| MEIR | Cair _{Max1-hr} (µg/m ³) | Acute REL (µg/m ³) | Target Organ | | | | | | | | |
|------------------------|--|--------------------------------|--------------|------|----------|----------|----------|----------|----------|----------|------|
| | | | Alim | Card | RepDev | Eye | Hema | Immu | Nerv | Resp | Skin |
| Benzene | | 27 | 0 | 0 | 0.001345 | 0 | 0.001345 | 0.001345 | 0 | 0 | 0 |
| Ethyl benzene | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2,2,4-Trimethylpentane | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Hexane | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Toluene | | 37000 | 0 | 0 | 2.26E-06 | 2.26E-06 | 0 | 0 | 2.26E-06 | 2.26E-06 | 0 |

| | | | | | | | | | | | | | | | | | | | | |
|----------------------------------|-------|---|---|---|----------|---|---|----------|----------|---|----------|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------|---------------|
| Xylenes (mixed) | 22000 | 0 | 0 | 0 | 2.18E-06 | 0 | 0 | 2.18E-06 | 2.18E-06 | 0 | | | | | | | | | | |
| Total HI for each target organ = | | | | | | | | | | | 0 | 0 | 0.001347 | 4.44E-06 | 0.001345 | 0.001345 | 4.44E-06 | 4.44E-06 | 0 | 0.0013 |

| MEIW | Cair _{Max1-hr} (µg/m ³) | Acute REL (µg/m ³) | Target Organ | | | | | | | | | Max HI | | | | | | | | |
|----------------------------------|---|--------------------------------------|--------------|------|----------|----------|----------|----------|----------|----------|----------|----------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------|---------------|
| | | | Alim | Card | RepDev | Eye | Hema | Immu | Nerv | Resp | Skin | | | | | | | | | |
| Benzene | | 27 | 0 | 0 | 0.010818 | 0 | 0.010818 | 0.010818 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| Ethyl benzene | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| 2,2,4-Trimethylpentane | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| Hexane | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | |
| Toluene | | 37000 | 0 | 0 | 2.11E-05 | 2.11E-05 | 0 | 0 | 2.11E-05 | 2.11E-05 | 0 | 0 | 0 | | | | | | | |
| Xylenes (mixed) | | 22000 | 0 | 0 | 0 | 1.41E-05 | 0 | 0 | 1.41E-05 | 1.41E-05 | 0 | 0 | 0 | | | | | | | |
| Total HI for each target organ = | | | | | | | | | | | 0 | 0 | 0.01084 | 3.51E-05 | 0.010818 | 0.010818 | 3.51E-05 | 3.51E-05 | 0 | 0.0108 |

Non-cancer chronic hazard index (inhalation)

Chronic HI (inh) = Cair_{Annual} ÷ Chronic REL

| MEIR | Cair _{Annual} (µg/m ³) | Chronic REL (µg/m ³) | Target Organ | | | | | | | | | | | Max HI | | | | | | | | | |
|----------------------------------|--|--|--------------|------|------|----------|----------|----------|----------|------|-----------------|----------|----------|-----------------|-----------------|-----------------|-----------------|----------|-----------------|-----------------|-----------------|----------|---------------|
| | | | Alim | Bone | Card | RepDev | Endo | Eye | Hema | Immu | Kidn | Nerv | Resp | | Skin | | | | | | | | |
| Benzene | | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000831 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | |
| Ethyl benzene | | 2000 | 6.52E-07 | 0 | 0 | 6.52E-07 | 6.52E-07 | 0 | 0 | 0 | 6.52E-07 | 0 | 0 | 0 | | | | | | | | | |
| 2,2,4-Trimethylpentane | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | |
| Hexane | | 7000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.57E-06 | 0 | 0 | | | | | | | | | |
| Toluene | | 300 | 0 | 0 | 0 | 1.96E-05 | 0 | 0 | 0 | 0 | 0 | 1.96E-05 | 1.96E-05 | 0 | | | | | | | | | |
| Xylenes (mixed) | | 700 | 0 | 0 | 0 | 0 | 0 | 4.57E-06 | 0 | 0 | 0 | 4.57E-06 | 4.57E-06 | 0 | | | | | | | | | |
| Total HI for each target organ = | | | | | | | | | | | 6.52E-07 | 0 | 0 | 2.02E-05 | 6.52E-07 | 4.57E-06 | 0.000831 | 0 | 6.52E-07 | 2.57E-05 | 2.41E-05 | 0 | 0.0008 |

| MEIW | Cair _{Annual} (µg/m ³) | Chronic REL (µg/m ³) | Target Organ | | | | | | | | | | | Max HI | | | | | | | | | |
|----------------------------------|--|--|--------------|------|------|----------|----------|----------|---------|------|-----------------|----------|----------|-----------------|-----------------|-----------------|----------------|----------|-----------------|-----------------|-----------------|----------|---------------|
| | | | Alim | Bone | Card | RepDev | Endo | Eye | Hema | Immu | Kidn | Nerv | Resp | | Skin | | | | | | | | |
| Benzene | | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.00685 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | |
| Ethyl benzene | | 2000 | 3.33E-06 | 0 | 0 | 3.33E-06 | 3.33E-06 | 0 | 0 | 0 | 3.33E-06 | 0 | 0 | 0 | | | | | | | | | |
| 2,2,4-Trimethylpentane | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | | | | | | | | |
| Hexane | | 7000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.1E-05 | 0 | 0 | | | | | | | | | |
| Toluene | | 300 | 0 | 0 | 0 | 0.000181 | 0 | 0 | 0 | 0 | 0 | 0.000181 | 0.000181 | 0 | | | | | | | | | |
| Xylenes (mixed) | | 700 | 0 | 0 | 0 | 0 | 0 | 3.16E-05 | 0 | 0 | 0 | 3.16E-05 | 3.16E-05 | 0 | | | | | | | | | |
| Total HI for each target organ = | | | | | | | | | | | 3.33E-06 | 0 | 0 | 0.000184 | 3.33E-06 | 3.16E-05 | 0.00685 | 0 | 3.33E-06 | 0.000224 | 0.000213 | 0 | 0.0068 |

HRA CALCS for A/C 25229 - PHILLIPS 66

Source Location: UTM: 629436 4269723

| | Cancer | Acute | Chronic |
|------------------|--------|--------|---------|
| Residential Risk | 0.1094 | 0.0010 | 0.0007 |
| Worker Risk | 0.1094 | 0.0104 | 0.0065 |

Risk Assumptions:

Cancer & Chronic:

| Rec # | UTM Location: | | Distance (ft): | Direction | Unit Concentration (µg/m3)/(g/s) | |
|-------|---------------|---------|----------------|-----------|----------------------------------|-------|
| 765 | 629717 | 4270092 | 1,522 | SE | Cr = residential conc. | 6.47 |
| 115 | 629457 | 4269832 | 364 | N | Cnr = non-residential conc. | 63.24 |

Acute:

| Rec # | UTM Location: | | Distance (ft): | Direction | Unit Concentration (µg/m3)/(g/s) | |
|-------|---------------|---------|----------------|-----------|----------------------------------|--------|
| 765 | 629717 | 4270092 | 1,522 | NE | 1-hr max res conc. | 91.22 |
| 78 | 629347 | 4269722 | 292 | N | 1-hr max non-res conc. | 911.11 |

Dispersion Assumptions

Source Type = Volume Source
 Source Coordinates = UTM 10 629436 E 4269723 N
 Release Height = 30 ft
 Length of Side = 20 ft
 Initial lateral dimension = 15.26 ft
 Initial vertical dimension = 6.98 ft
 Nominal Emission Rate: = 1.0 g/s

Pollutants:

| Pollutant | ID | Cancer Potency Factor, CPF (mg/kg-day) ⁻¹ | | Chronic REL (µg/m ³) | | | Acute REL (µg/m ³) | | A/C 25229 - Loading Rack | | | | | |
|----------------------|---------|--|------|----------------------------------|------|------|--------------------------------|---------|-------------------------------|----------|-----------|--------|-----------------------|-----------|
| | | | | | | | | | Emission Factor (lb/1000 gal) | | Emissions | | Throughput (1000 gal) | |
| | | | | | | | | | lb/hr | lb/yr | hourly | annual | | |
| | | inh | oral | inh | oral | 8-hr | #N/A | #N/A | | | | | | |
| VOC (total) | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.02 | 6.09E-01 | 5.34E+03 | 100% | 30.47 | 266925.96 |
| Benzene | 71432 | 0.1 | #N/A | 3 | #N/A | 3 | 27 | 0.00008 | 2.44E-03 | 2.14E+01 | 0.4% | | | |
| Ethyl benzene | 100414 | 0.0087 | #N/A | 2000 | #N/A | #N/A | #N/A | 0.00002 | 6.09E-04 | 5.34E+00 | 0.1% | | | |
| 2,2,4-Trimethylpenta | 540841 | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.00014 | 4.27E-03 | 3.74E+01 | 0.7% | | | |
| Hexane | 110543 | #N/A | #N/A | 7000 | #N/A | #N/A | #N/A | 0.00028 | 8.53E-03 | 7.47E+01 | 1.4% | | | |
| Toluene | 108883 | #N/A | #N/A | 300 | #N/A | #N/A | 37000 | 0.00022 | 6.70E-03 | 5.87E+01 | 1.1% | | | |
| Xylenes (mixed) | 1330207 | #N/A | #N/A | 700 | #N/A | #N/A | 22000 | 0.00008 | 2.44E-03 | 2.14E+01 | 0.4% | | | |

Wt%

Source: SDAPCD R01

Emission Rates:

| Pollutant | Annual Emissions (lb/year) | Annual Rate (g/s) | Max Hourly Rate (lb/hr) | Hourly Rate (g/s) | Cair (annual) | | Cair (hourly) | |
|----------------------|----------------------------|-------------------|-------------------------|-------------------|----------------------|----------------------|----------------------|----------------------|
| | | | | | MEIR | MEIW | MEIR | MEIW |
| | | | | | (µg/m ³) | (µg/m ³) | (µg/m ³) | (µg/m ³) |
| Benzene | 2.14E+01 | 0.000307148 | 2.44E-03 | 3.07E-04 | 0.00199 | 0.01942 | 0.03 | 0.28 |
| Ethyl benzene | 5.34E+00 | 0.000076787 | 6.09E-04 | 7.67869E-05 | 0.00050 | 0.00486 | 0.01 | 0.07 |
| 2,2,4-Trimethylpenta | 3.74E+01 | 0.000537508 | 4.27E-03 | 0.000537508 | 0.00348 | 0.03399 | 0.05 | 0.49 |
| Hexane | 7.47E+01 | 0.001075017 | 8.53E-03 | 0.001075017 | 0.00696 | 0.06798 | 0.10 | 0.98 |
| Toluene | 5.87E+01 | 0.000844656 | 6.70E-03 | 0.000844656 | 0.00547 | 0.05342 | 0.08 | 0.77 |
| Xylenes (mixed) | 2.14E+01 | 0.000307148 | 2.44E-03 | 0.000307148 | 0.00199 | 0.01942 | 0.03 | 0.28 |

Cancer Risk

| Inhalation Dose: | | | | | | | Cancer Risk: | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| MEIR | | | | | | | RISK_{inh-res} = DOSE_{air} × CPF × ASF × ED/AT × FAH | | | | | | |
| DOSE _{air (residential)} = (C _{air}) × (BR/BW) × (A) × (EF) × (1×10 ⁻⁶) | | | | | | | Averaging Time AT = 70 years | | | | | | |
| Inhalation Absorption Factor: A = 1 (unitless) | | | | | | | 3rd Trim. 0-2 yrs 2-9 yrs 2-16 yrs 16-30 yrs 16-70 yrs | | | | | | |
| Exposure Frequency: EF = 0.96 (unitless) | | | | | | | ED 0.25 2 0 14 14 0 | | | | | | |
| Unit Conversion: 1×10 ⁻⁶ = 1.0E-06 (mg-m ³)/(μg-L) | | | | | | | ASF 10 10 3 3 1 1 | | | | | | |
| {BR/BW} 3rd Trim. 0-2 yrs 2-9 yrs 2-16 yrs 16-30 yrs 16-70 yrs | | | | | | | FAH 0.85 0.85 0.72 0.72 0.73 0.73 | | | | | | |
| (L/kg-day) 361 1090 631 572 261 233 | | | | | | | | | | | | | |
| DOSE _{air} (mg/kg-day) | | | | | | | CPF RISK _{inh-res} (per million) Total | | | | | | |
| Benzene 6.89E-07 2.08E-06 1.20E-06 1.09E-06 4.98E-07 4.45E-07 | | | | | | | 0.1 2.09E-09 5.05E-08 4.72E-08 7.28E-09 1.07E-07 | | | | | | |
| Ethyl benzene 1.72E-07 5.20E-07 3.01E-07 2.73E-07 1.25E-07 1.11E-07 | | | | | | | 0.0087 4.55E-11 1.10E-09 1.03E-09 1.58E-10 2.33E-09 | | | | | | |
| 2,2,4-Trimethylpenta 1.21E-06 3.64E-06 2.11E-06 1.91E-06 8.72E-07 7.78E-07 | | | | | | | | | | | | | |
| Hexane 2.41E-06 7.28E-06 4.22E-06 3.82E-06 1.74E-06 1.56E-06 | | | | | | | | | | | | | |
| Toluene 1.90E-06 5.72E-06 3.31E-06 3.00E-06 1.37E-06 1.22E-06 | | | | | | | | | | | | | |
| Xylenes (mixed) 6.89E-07 2.08E-06 1.20E-06 1.09E-06 4.98E-07 4.45E-07 | | | | | | | | | | | | | |
| | | | | | | | Total = 1.09E-07 | | | | | | |
| MEIW | | | | | | | RISK_{inh-work} = DOSE_{air} × CPF × ASF × ED/AT | | | | | | |
| Dose-air (worker) = (C _{air} × WAF) × (BR/BW) × (A) × (EF) × (1×10 ⁻⁶) | | | | | | | Averaging Time AT = 70 years | | | | | | |
| Inhalation Absorption Factor: A = 1 (unitless) | | | | | | | 3rd Trim. 0-2 yrs 2-9 yrs 2-16 yrs 16-30 yrs 16-70 yrs | | | | | | |
| Exposure Frequency: EF = 0.67 (unitless) | | | | | | | ED 0 0 0 0 0 25 | | | | | | |
| Unit Conversion: 1×10 ⁻⁶ = 1.0E-06 (mg-m ³)/(μg-L) | | | | | | | ASF 10 10 3 3 1 1 | | | | | | |
| Worker Adjustment Factor WAF = 1.0 24 hrs/day 7 days/week | | | | | | | FAH | | | | | | |
| {BR/BW} 3rd Trimestr 0-2 yrs 2-9 yrs 2-16 yrs 16-30 yrs 16-70 yrs | | | | | | | CPF RISK _{inh-res} (per million) Total | | | | | | |
| (L/kg-day) 240 1200 640 520 240 230 | | | | | | | 0.1 1.07E-07 1.07E-07 | | | | | | |
| Benzene 3.1E-06 1.6E-05 8.3E-06 6.8E-06 3.1E-06 3.0E-06 | | | | | | | 0.0087 2.33E-09 2.33E-09 | | | | | | |
| Ethyl benzene 7.8E-07 3.9E-06 2.1E-06 1.7E-06 7.8E-07 7.5E-07 | | | | | | | | | | | | | |
| 2,2,4-Trimethylpenta 5.5E-06 2.7E-05 1.5E-05 1.2E-05 5.5E-06 5.2E-06 | | | | | | | | | | | | | |
| Hexane 1.1E-05 5.5E-05 2.9E-05 2.4E-05 1.1E-05 1.0E-05 | | | | | | | | | | | | | |
| Toluene 8.6E-06 4.3E-05 2.3E-05 1.9E-05 8.6E-06 8.2E-06 | | | | | | | | | | | | | |
| Xylenes (mixed) 3.1E-06 1.6E-05 8.3E-06 6.8E-06 3.1E-06 3.0E-06 | | | | | | | | | | | | | |
| | | | | | | | Total = 1.09E-07 | | | | | | |

Non-cancer acute hazard index

Acute HI = C_{air}_{Max1-hr} ÷ Acute REL

| Pollutant | C _{air} _{Max1-hr} (μg/m ³) | Acute REL (μg/m ³) | Target Organ | | | | | | | | | |
|----------------------------------|---|-----------------------------------|--------------|------|----------|----------|----------|----------|----------|----------|------|-------------------------|
| | | | Alim | Card | RepDev | Eye | Hema | Immu | Nerv | Resp | Skin | |
| Benzene | 0.03 | 27 | 0 | 0 | 0.001038 | 0 | 0.001038 | 0.001038 | 0 | 0 | 0 | |
| Ethyl benzene | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 2,2,4-Trimethylpenta | 0.05 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Hexane | 0.10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Toluene | 0.08 | 37000 | 0 | 0 | 2.08E-06 | 2.08E-06 | 0 | 0 | 2.08E-06 | 2.08E-06 | 0 | |
| Xylenes (mixed) | 0.03 | 22000 | 0 | 0 | 0 | 1.27E-06 | 0 | 0 | 1.27E-06 | 1.27E-06 | 0 | |
| Total HI for each target organ = | | | 0 | 0 | 0.00104 | 3.36E-06 | 0.001038 | 0.001038 | 3.36E-06 | 3.36E-06 | 0 | Max HI 0.0010 |

| MEIW Pollutant | Cair _{Max1-hr} (µg/m ³) | Acute REL (µg/m ³) | Target Organ | | | | | | | | | |
|----------------------------------|---|--------------------------------------|--------------|----------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------|---------------|
| | | | Alim | Card | RepDev | Eye | Hema | Immu | Nerv | Resp | Skin | |
| Benzene | 0.28 | 27 | 0 | 0 | 0.010365 | 0 | 0.010365 | 0.010365 | 0 | 0 | 0 | |
| Ethyl benzene | 0.07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 2,2,4-Trimethylpenta | 0.49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Hexane | 0.98 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Toluene | 0.77 | 37000 | 0 | 0 | 2.08E-05 | 2.08E-05 | 0 | 0 | 2.08E-05 | 2.08E-05 | 0 | |
| Xylenes (mixed) | 0.28 | 22000 | 0 | 0 | 0 | 1.27E-05 | 0 | 0 | 1.27E-05 | 1.27E-05 | 0 | |
| Total HI for each target organ = | | | 0 | 0 | 0.010385 | 3.35E-05 | 0.010365 | 0.010365 | 3.35E-05 | 3.35E-05 | 0 | 0.0104 |

Non-cancer chronic hazard index (inhalation)

Chronic HI (inh) = Cair_{Annual} ÷ Chronic REL

| MEIR Pollutant | Cair _{Annual} (µg/m ³) | Chronic REL (µg/m ³) | Target Organ | | | | | | | | | | | | |
|----------------------------------|--|--|-----------------|----------|----------|-----------------|-----------------|-----------------|-----------------|----------|-----------------|-----------------|-----------------|----------|---------------|
| | | | Alim | Bone | Card | RepDev | Endo | Eye | Hema | Immu | Kidn | Nerv | Resp | Skin | |
| Benzene | 0.0019887 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000663 | 0 | 0 | 0 | 0 | 0 | |
| Ethyl benzene | 0.0004972 | 2000 | 2.49E-07 | 0 | 0 | 2.49E-07 | 2.49E-07 | 0 | 0 | 0 | 2.49E-07 | 0 | 0 | 0 | |
| 2,2,4-Trimethylpenta | 0.0034802 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Hexane | 0.0069605 | 7000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.94E-07 | 0 | 0 | |
| Toluene | 0.0054689 | 300 | 0 | 0 | 0 | 1.82E-05 | 0 | 0 | 0 | 0 | 0 | 1.82E-05 | 1.82E-05 | 0 | |
| Xylenes (mixed) | 0.0019887 | 700 | 0 | 0 | 0 | 0 | 0 | 2.84E-06 | 0 | 0 | 0 | 2.84E-06 | 2.84E-06 | 0 | |
| Total HI for each target organ = | | | 2.49E-07 | 0 | 0 | 1.85E-05 | 2.49E-07 | 2.84E-06 | 0.000663 | 0 | 2.49E-07 | 2.21E-05 | 2.11E-05 | 0 | 0.0007 |

| MEIW Pollutant | Cair _{Annual} (µg/m ³) | Chronic REL (µg/m ³) | Target Organ | | | | | | | | | | | | |
|----------------------------------|--|--|-----------------|----------|----------|----------------|-----------------|-----------------|-----------------|----------|-----------------|-----------------|-----------------|----------|---------------|
| | | | Alim | Bone | Card | RepDev | Endo | Eye | Hema | Immu | Kidn | Nerv | Resp | Skin | |
| Benzene | 0.0194243 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.006475 | 0 | 0 | 0 | 0 | 0 | |
| Ethyl benzene | 0.0048561 | 2000 | 2.43E-06 | 0 | 0 | 2.43E-06 | 2.43E-06 | 0 | 0 | 0 | 2.43E-06 | 0 | 0 | 0 | |
| 2,2,4-Trimethylpenta | 0.0339924 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Hexane | 0.0679849 | 7000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 9.71E-06 | 0 | 0 | |
| Toluene | 0.0534167 | 300 | 0 | 0 | 0 | 0.000178 | 0 | 0 | 0 | 0 | 0 | 0.000178 | 0.000178 | 0 | |
| Xylenes (mixed) | 0.0194243 | 700 | 0 | 0 | 0 | 0 | 0 | 2.77E-05 | 0 | 0 | 0 | 2.77E-05 | 2.77E-05 | 0 | |
| Total HI for each target organ = | | | 2.43E-06 | 0 | 0 | 0.00018 | 2.43E-06 | 2.77E-05 | 0.006475 | 0 | 2.43E-06 | 0.000216 | 0.000206 | 0 | 0.0065 |

HRA CALCS for A/C 25230 - PHILLIPS 66

Source Location: UTM: 629397 4269772

| | Cancer | Acute | Chronic |
|------------------|--------|--------|---------|
| Residential Risk | 0.0310 | 0.0003 | 0.0002 |
| Worker Risk | 0.0071 | 0.0005 | 0.0004 |

Risk Assumptions:

Cancer & Chronic:

| Rec # | UTM Location: | | Distance (ft): | Direction | Unit Concentration (µg/m3)/(g/s) | |
|-------|---------------|---------|----------------|-----------|----------------------------------|------|
| 765 | 629717 | 4270092 | 1,485 | SE | Cr = residential conc. | 0.66 |
| 115 | 629457 | 4269832 | 278 | N | Cnr = non-residential conc. | 1.46 |

Acute:

| Rec # | UTM Location: | | Distance (ft): | Direction | Unit Concentration (µg/m3)/(g/s) | |
|-------|---------------|---------|----------------|-----------|----------------------------------|-------|
| 765 | 629717 | 4270092 | 1,485 | NE | 1-hr max res conc. | 10.81 |
| 78 | 629347 | 4269722 | 232 | N | 1-hr max non-res conc. | 15.96 |

Dispersion Assumptions

Source Type = Point Source
 Source Coordinates = UTM 10 629397 E 4269772 N
 Release Height = 35 ft
 Release Temperature = 1000 deg F
 Stack Diameter = 7 ft
 Gas Exit Flow Rate = 34000 acfm
 Nominal Emission Rate = 1.0 g/s

Pollutants:

| Pollutant | ID | Cancer Potency Factor, CPF (mg/kg-day) ⁻¹ | | Chronic REL (µg/m ³) | | | Acute REL (µg/m ³) | | A/C 25230 - Vapor Control Unit | | | Throughput (1000 gal) | | |
|----------------------|---------|--|------|----------------------------------|------|------|--------------------------------|------|--------------------------------|-----------|----------|-----------------------|---------------|-----------|
| | | | | | | | | | Emission Factor (lb/1000 gal) | Emissions | | Wt% | hourly annual | |
| | | | | | | | | | | lb/hr | lb/yr | | 30.47 | 266925.96 |
| | | inh | oral | inh | oral | 8-hr | #N/A | #N/A | | | | | | |
| VOC (total) | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | 0.02 | 6.09E-01 | 5.34E+03 | 100.0% | 100% | |
| Benzene | 71432 | 0.1 | #N/A | 3 | #N/A | 3 | 27 | | 0.0002 | 6.09E-03 | 5.34E+01 | 1.0% | 0.4% | |
| Ethyl benzene | 100414 | 0.0087 | #N/A | 2000 | #N/A | #N/A | #N/A | | 0.00032 | 9.75E-03 | 8.54E+01 | 1.8% | 0.7% | |
| 2,2,4-Trimethylpenta | 540841 | #N/A | #N/A | #N/A | #N/A | #N/A | #N/A | | 0.00036 | 1.10E-02 | 9.61E+01 | 8.0% | 1.4% | |
| Hexane | 110543 | #N/A | #N/A | 7000 | #N/A | #N/A | #N/A | | 0.0016 | 4.88E-02 | 4.27E+02 | 0.8% | 1.1% | |
| Toluene | 108883 | #N/A | #N/A | 300 | #N/A | #N/A | 37000 | | 0.00016 | 4.88E-03 | 4.27E+01 | 2.4% | 0.4% | |
| Xylenes (mixed) | 1330207 | #N/A | #N/A | 700 | #N/A | #N/A | 22000 | | 0.00048 | 1.46E-02 | 1.28E+02 | | | |

Source: SDAPCD V03

Emission Rates:

| Pollutant | Annual Emissions (lb/year) | Annual Rate (g/s) | Max Hourly Rate (lb/hr) | Hourly Rate (g/s) | Cair (annual) | | Cair (hourly) | |
|----------------------|----------------------------|-------------------|-------------------------|-------------------|----------------------|----------------------|----------------------|----------------------|
| | | | | | MEIR | MEIW | MEIR | MEIW |
| | | | | | (µg/m ³) | (µg/m ³) | (µg/m ³) | (µg/m ³) |
| Benzene | 5.34E+01 | 0.000767869 | 6.09E-03 | 7.68E-04 | 0.00050 | 0.00112 | 0.01 | 0.01 |
| Ethyl benzene | 8.54E+01 | 0.001228591 | 9.75E-03 | 0.001228591 | 0.00081 | 0.00180 | 0.01 | 0.02 |
| 2,2,4-Trimethylpenta | 9.61E+01 | 0.001382165 | 1.10E-02 | 0.001382165 | 0.00091 | 0.00202 | 0.01 | 0.02 |
| Hexane | 4.27E+02 | 0.006142954 | 4.88E-02 | 0.006142954 | 0.00404 | 0.00900 | 0.07 | 0.10 |
| Toluene | 4.27E+01 | 0.000614295 | 4.88E-03 | 0.000614295 | 0.00040 | 0.00090 | 0.01 | 0.01 |
| Xylenes (mixed) | 1.28E+02 | 0.001842886 | 1.46E-02 | 0.001842886 | 0.00121 | 0.00270 | 0.02 | 0.03 |

Cancer Risk

| Inhalation Dose: | | | | | | | Cancer Risk: | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| MEIR | | | | | | | RISK_{inh-res} = DOSE_{air} × CPF × ASF × ED/AT × FAH | | | | | | |
| DOSE _{air (residential)} = (C _{air}) × (BR/BW) × (A) × (EF) × (1×10 ⁻⁶) | | | | | | | Averaging Time AT = 70 years | | | | | | |
| Inhalation Absorption Factor: A = 1 (unitless) | | | | | | | 3rd Trim. 0-2 yrs 2-9 yrs 2-16 yrs 16-30 yrs 16-70 yrs | | | | | | |
| Exposure Frequency: EF = 0.96 (unitless) | | | | | | | ED 0.25 2 0 14 14 0 | | | | | | |
| Unit Conversion: 1×10 ⁻⁶ = 1.0E-06 (mg·m ³)/(μg·L) | | | | | | | ASF 10 10 3 3 1 1 | | | | | | |
| {BR/BW} 3rd Trim. 0-2 yrs 2-9 yrs 2-16 yrs 16-30 yrs 16-70 yrs | | | | | | | FAH 0.85 0.85 0.72 0.72 0.73 0.73 | | | | | | |
| (L/kg-day) 361 1090 631 572 261 233 | | | | | | | | | | | | | |
| DOSE _{air} (mg/kg-day) | | | | | | | CPF RISK _{inh-res} (per million) Total | | | | | | |
| Benzene 1.75E-07 5.28E-07 3.06E-07 2.77E-07 1.26E-07 1.13E-07 | | | | | | | 0.1 5.31E-10 1.28E-08 1.20E-08 1.85E-09 2.72E-08 | | | | | | |
| Ethyl benzene 2.80E-07 8.45E-07 4.89E-07 4.43E-07 2.02E-07 1.81E-07 | | | | | | | 0.0087 7.39E-11 1.78E-09 1.67E-09 2.57E-10 3.78E-09 | | | | | | |
| 2,2,4-Trimethylpenta 3.15E-07 9.50E-07 5.50E-07 4.99E-07 2.28E-07 2.03E-07 | | | | | | | | | | | | | |
| Hexane 1.40E-06 4.22E-06 2.45E-06 2.22E-06 1.01E-06 9.03E-07 | | | | | | | | | | | | | |
| Toluene 1.40E-07 4.22E-07 2.45E-07 2.22E-07 1.01E-07 9.03E-08 | | | | | | | | | | | | | |
| Xylenes (mixed) 4.20E-07 1.27E-06 7.34E-07 6.65E-07 3.03E-07 2.71E-07 | | | | | | | | | | | | | |
| | | | | | | | Total = 3.10E-08 | | | | | | |
| MEIW | | | | | | | RISK_{inh-work} = DOSE_{air} × CPF × ASF × ED/AT | | | | | | |
| Dose-air (worker) = (C _{air} × WAF) × (BR/BW) × (A) × (EF) × (1×10 ⁻⁶) | | | | | | | Averaging Time AT = 70 years | | | | | | |
| Inhalation Absorption Factor: A = 1 (unitless) | | | | | | | 3rd Trim. 0-2 yrs 2-9 yrs 2-16 yrs 16-30 yrs 16-70 yrs | | | | | | |
| Exposure Frequency: EF = 0.67 (unitless) | | | | | | | ED 0 0 0 0 0 25 | | | | | | |
| Unit Conversion: 1×10 ⁻⁶ = 1.0E-06 (mg·m ³)/(μg·L) | | | | | | | ASF 10 10 3 3 1 1 | | | | | | |
| Worker Adjustment Factor WAF = 1.0 24 hrs/day 7 days/week | | | | | | | FAH | | | | | | |
| {BR/BW} 3rd Trimestr 0-2 yrs 2-9 yrs 2-16 yrs 16-30 yrs 16-70 yrs | | | | | | | CPF RISK _{inh-res} (per million) Total | | | | | | |
| (L/kg-day) 240 1200 640 520 240 230 | | | | | | | 0.1 6.20E-09 6.20E-09 | | | | | | |
| Benzene 1.8E-07 9.1E-07 4.8E-07 3.9E-07 1.8E-07 1.7E-07 | | | | | | | 0.0087 8.63E-10 8.63E-10 | | | | | | |
| Ethyl benzene 2.9E-07 1.4E-06 7.7E-07 6.3E-07 2.9E-07 2.8E-07 | | | | | | | | | | | | | |
| 2,2,4-Trimethylpenta 3.3E-07 1.6E-06 8.7E-07 7.1E-07 3.3E-07 3.1E-07 | | | | | | | | | | | | | |
| Hexane 1.4E-06 7.2E-06 3.9E-06 3.1E-06 1.4E-06 1.4E-06 | | | | | | | | | | | | | |
| Toluene 1.4E-07 7.2E-07 3.9E-07 3.1E-07 1.4E-07 1.4E-07 | | | | | | | | | | | | | |
| Xylenes (mixed) 4.3E-07 2.2E-06 1.2E-06 9.4E-07 4.3E-07 4.2E-07 | | | | | | | | | | | | | |
| | | | | | | | Total = 7.06E-09 | | | | | | |

Non-cancer acute hazard index

Acute HI = C_{air}_{Max1-hr} ÷ Acute REL

| Pollutant | C _{air} _{Max1-hr} (μg/m ³) | Acute REL (μg/m ³) | Target Organ | | | | | | | | | |
|----------------------------------|---|-----------------------------------|--------------|------|----------|----------|----------|----------|----------|----------|------|-------------------------|
| | | | Alim | Card | RepDev | Eye | Hema | Immu | Nerv | Resp | Skin | |
| Benzene | 0.01 | 27 | 0 | 0 | 0.000308 | 0 | 0.000308 | 0.000308 | 0 | 0 | 0 | |
| Ethyl benzene | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 2,2,4-Trimethylpenta | 0.01 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Hexane | 0.07 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Toluene | 0.01 | 37000 | 0 | 0 | 1.8E-07 | 1.8E-07 | 0 | 0 | 1.8E-07 | 1.8E-07 | 0 | |
| Xylenes (mixed) | 0.02 | 22000 | 0 | 0 | 0 | 9.06E-07 | 0 | 0 | 9.06E-07 | 9.06E-07 | 0 | |
| Total HI for each target organ = | | | 0 | 0 | 0.000308 | 1.09E-06 | 0.000308 | 0.000308 | 1.09E-06 | 1.09E-06 | 0 | Max HI 0.0003 |

| MEIW Pollutant | Cair _{Max1-hr} (µg/m ³) | Acute REL (µg/m ³) | Target Organ | | | | | | | | | |
|----------------------------------|---|--------------------------------------|--------------|----------|-----------------|----------------|-----------------|-----------------|----------------|----------------|----------|--------------------------|
| | | | Alim | Card | RepDev | Eye | Hema | Immu | Nerv | Resp | Skin | |
| Benzene | 0.01 | 27 | 0 | 0 | 0.000454 | 0 | 0.000454 | 0.000454 | 0 | 0 | 0 | |
| Ethyl benzene | 0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 2,2,4-Trimethylpenta | 0.02 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Hexane | 0.10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| Toluene | 0.01 | 37000 | 0 | 0 | 2.65E-07 | 2.65E-07 | 0 | 0 | 2.65E-07 | 2.65E-07 | 0 | |
| Xylenes (mixed) | 0.03 | 22000 | 0 | 0 | 0 | 1.34E-06 | 0 | 0 | 1.34E-06 | 1.34E-06 | 0 | |
| Total HI for each target organ = | | | 0 | 0 | 0.000454 | 1.6E-06 | 0.000454 | 0.000454 | 1.6E-06 | 1.6E-06 | 0 | Max HI 0.0005 |

Non-cancer chronic hazard index (inhalation)

Chronic HI (inh) = Cair_{Annual} ÷ Chronic REL

| MEIR Pollutant | Cair _{Annual} (µg/m ³) | Chronic REL (µg/m ³) | Target Organ | | | | | | | | | | | | |
|----------------------------------|--|--|-----------------|----------|----------|-----------------|-----------------|-----------------|-----------------|----------|-----------------|-----------------|-----------------|----------|--------------------------|
| | | | Alim | Bone | Card | RepDev | Endo | Eye | Hema | Immu | Kidn | Nerv | Resp | Skin | |
| Benzene | 0.0005046 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000168 | 0 | 0 | 0 | 0 | | |
| Ethyl benzene | 0.0008073 | 2000 | 4.04E-07 | 0 | 0 | 4.04E-07 | 4.04E-07 | 0 | 0 | 0 | 4.04E-07 | 0 | 0 | | |
| 2,2,4-Trimethylpenta | 0.0009082 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Hexane | 0.0040366 | 7000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5.77E-07 | 0 | | |
| Toluene | 0.0004037 | 300 | 0 | 0 | 0 | 1.35E-06 | 0 | 0 | 0 | 0 | 0 | 1.35E-06 | 1.35E-06 | | |
| Xylenes (mixed) | 0.0012110 | 700 | 0 | 0 | 0 | 0 | 0 | 1.73E-06 | 0 | 0 | 0 | 1.73E-06 | 1.73E-06 | | |
| Total HI for each target organ = | | | 4.04E-07 | 0 | 0 | 1.75E-06 | 4.04E-07 | 1.73E-06 | 0.000168 | 0 | 4.04E-07 | 3.65E-06 | 3.08E-06 | 0 | Max HI 0.0002 |

| MEIW Pollutant | Cair _{Annual} (µg/m ³) | Chronic REL (µg/m ³) | Target Organ | | | | | | | | | | | | |
|----------------------------------|--|--|--------------|----------|----------|----------------|--------------|-----------------|-----------------|----------|--------------|-----------------|-----------------|----------|--------------------------|
| | | | Alim | Bone | Card | RepDev | Endo | Eye | Hema | Immu | Kidn | Nerv | Resp | Skin | |
| Benzene | 0.0011247 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0.000375 | 0 | 0 | 0 | 0 | | |
| Ethyl benzene | 0.0017995 | 2000 | 9E-07 | 0 | 0 | 9E-07 | 9E-07 | 0 | 0 | 0 | 9E-07 | 0 | 0 | | |
| 2,2,4-Trimethylpenta | 0.0020245 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | |
| Hexane | 0.0089977 | 7000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1.29E-06 | 0 | | |
| Toluene | 0.0008998 | 300 | 0 | 0 | 0 | 3E-06 | 0 | 0 | 0 | 0 | 0 | 3E-06 | 3E-06 | | |
| Xylenes (mixed) | 0.0026993 | 700 | 0 | 0 | 0 | 0 | 0 | 3.86E-06 | 0 | 0 | 0 | 3.86E-06 | 3.86E-06 | | |
| Total HI for each target organ = | | | 9E-07 | 0 | 0 | 3.9E-06 | 9E-07 | 3.86E-06 | 0.000375 | 0 | 9E-07 | 8.14E-06 | 6.86E-06 | 0 | Max HI 0.0004 |


```

**
*****
**
** AERMOD Input Produced by:
** AERMOD View Ver. 8.8.9
** Lakes Environmental Software Inc.
** Date: 7/10/2017
** File: L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25230_input.inp
**

```

```

*****
**
**
*****
** AERMOD Control Pathway
*****
**
**

```

```

CO STARTING
TITLEONE L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25229_25230.isc
MODELOPT DFAULT CONC
AVERTIME 1 PERIOD
URBANOPT 466488 SACRAMENTO
POLLUTID OTHER
RUNORNOR NOT RUN
ERRORFIL 25229_25230.err
CO FINISHED
**

```

```

*****
** AERMOD Source Pathway
*****
**
**

```

```

SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
LOCATION S25230 POINT 629397.000 4269772.000 5.910
** DESCRSRC APC-VCU
LOCATION S25229 VOLUME 629436.000 4269723.000 6.220
** DESCRSRC LOADING RACK
** Source Parameters **
SRCPARAM S25230 1.0 10.668 810.928 4.48804 2.134
SRCPARAM S25229 1.0 9.144 4.651 2.127
URBANSRC ALL
SRCGROUP S25230 S25230
SRCGROUP S25229 S25229
SRCGROUP ALL
SO FINISHED
**

```

```

*****
** AERMOD Receptor Pathway
*****
**
**

```

```

RE STARTING
INCLUDED 25229_25230.rou
RE FINISHED
**

```

```

*****
** AERMOD Meteorology Pathway
*****
**
**

```

```

ME STARTING
** Surface File Path: L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\
SURFFILE "Exec 10-14 N1MD.SFC"
** Profile File Path: L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\
PROFFILE "Exec 10-14 N1MD.PFL"
SURFDATA 23232 2010 SACRAMENTO/EXECUTIVE_ARPT
UAIRDATA 23230 2010 OAKLAND/WSO_AP
PROFBASE 4.6 METERS
ME FINISHED
**

```

```

*****
** AERMOD Output Pathway
*****
**
**

```

```

OU STARTING
RECTABLE ALLAVE 1ST

```

RECTABLE 1 1ST
** Auto-Generated Plotfiles
PLOTFILE 1 S25230 1ST "L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25229_25230.AD\01H1G001.PLT" 31
PLOTFILE 1 S25229 1ST "L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25229_25230.AD\01H1G002.PLT" 32
PLOTFILE 1 ALL 1ST "L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25229_25230.AD\01H1GALL.PLT" 33
PLOTFILE PERIOD S25230 "L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25229_25230.AD\PE00G001.PLT" 34
PLOTFILE PERIOD S25229 "L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25229_25230.AD\PE00G002.PLT" 35
PLOTFILE PERIOD ALL "L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25229_25230.AD\PE00GALL.PLT" 36
SUMMFILE "L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\25229_25230.sum"

OU FINISHED

**

** Project Parameters

** PROJCTN CoordinateSystemUTM
** DESCPTN UTM: Universal Transverse Mercator
** DATUM World Geodetic System 1984
** DTMRGN Global Definition
** UNITS m
** ZONE 10
** ZONEINX 0
**

PROJECT INFORMATION

HARP Version: 17023
 Project Name: HRA25229_25230
 Project Output Directory: L:\SSD FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230
 HARP Database: NA

FACILITY INFORMATION

Origin
 X (m):0
 Y (m):0
 Zone:1
 No. of Sources:0
 No. of Buildings:0

EMISSION INVENTORY

No. of Pollutants:12
 No. of Background Pollutants:0

| Emissions ScrID | StkID | ProID | PolID | PolAbbrev | Multi (lbs/yr) | Annual Ems (lbs/hr) | MaxHr Ems | MWAF |
|--------------------|-------|-------|---------|-----------------|-------------------|------------------------|-----------|------|
| S25229 | 0 | 0 | 71432 | Benzene | 1 | 21.4 | 0.00244 | 1 |
| S25229 | 0 | 0 | 100414 | Ethyl Benzene | 1 | 5.34 | 0.000609 | 1 |
| S25229 | 0 | 0 | 540841 | 2,2,4TriMePentn | 1 | 37.4 | 0.00427 | 1 |
| S25229 | 0 | 0 | 110543 | Hexane | 1 | 74.7 | 0.00853 | 1 |
| S25229 | 0 | 0 | 108883 | Toluene | 1 | 58.7 | 0.0067 | 1 |
| S25229 | 0 | 0 | 1330207 | Xylenes | 1 | 21.4 | 0.00244 | 1 |
| S25230 | 0 | 0 | 71432 | Benzene | 1 | 53.4 | 0.00609 | 1 |
| S25230 | 0 | 0 | 100414 | Ethyl Benzene | 1 | 85.4 | 0.00975 | 1 |
| S25230 | 0 | 0 | 540841 | 2,2,4TriMePentn | 1 | 96.1 | 0.011 | 1 |
| S25230 | 0 | 0 | 110543 | Hexane | 1 | 427 | 0.0488 | 1 |
| S25230 | 0 | 0 | 108883 | Toluene | 1 | 42.7 | 0.00488 | 1 |
| S25230 | 0 | 0 | 1330207 | Xylenes | 1 | 128 | 0.0146 | 1 |

Background

| PolID | PolAbbrev | Conc (ug/m^3) | MWAF |
|-------|-----------|---------------|------|
|-------|-----------|---------------|------|

Ground level concentration files (\glc\)

- 100414MAXHR.txt
- 100414PER.txt
- 108883MAXHR.txt
- 108883PER.txt
- 110543MAXHR.txt
- 110543PER.txt
- 1330207MAXHR.txt
- 1330207PER.txt
- 540841MAXHR.txt
- 540841PER.txt
- 71432MAXHR.txt
- 71432PER.txt

POLLUTANT HEALTH INFORMATION

Health Database: C:\HARP2\Tables\HEALTH1.mdb
 Health Table Version: HEALTH16088
 Official: True

| PolID | PolAbbrev | InhCancer | OralCancer | AcuteREL | InhChronicREL | OralChronicREL | InhChronic8HRREL |
|---------|-----------------|-----------|------------|----------|---------------|----------------|------------------|
| 71432 | Benzene | 0.1 | 27 | 3 | 3 | | |
| 100414 | Ethyl Benzene | 0.0087 | | 2000 | | | |
| 540841 | 2,2,4TriMePentn | | | | | | |
| 110543 | Hexane | | | 7000 | | | |
| 108883 | Toluene | | 37000 | 300 | | | |
| 1330207 | Xylenes | | 22000 | 700 | | | |

AIR DISPERSION MODELING INFORMATION

All executables were obtained from USEPA's Support Center for Regulatory Atmospheric Modeling website (<http://www.epa.gov/scram001/>)
 AERMOD: 15181
 AERMAP: 11103
 BPIPPRM: 04274
 AERPLOT: 13329

METEOROLOGICAL INFORMATION

Version:
Surface File:
Profile File:
Surface Station:
Upper Station:
On-Site Station:

LIST OF AIR DISPERSION FILES

AERMOD Input File:
AERMOD Output File:
AERMOD Error File:
Plotfile list

LIST OF RISK ASSESSMENT FILES

Health risk analysis files (\hra\)

ACUTEGLCList.csv
ACUTEHRAInput.hra
ACUTENCAcuteRisk.csv
ACUTENCAcuteRiskSumByRec.csv
ACUTEOutput.txt
ACUTEPathwayRec.csv
ACUTEPoIDB.csv
RESCANCancerRisk.csv
RESCANCancerRiskSumByRec.csv
RESCANGLCList.csv
RESCANHRAInput.hra
RESCANOutput.txt
RESCANPathwayRec.csv
RESCANPoIDB.csv
RESCHRONGLCList.csv
RESCHRONHRAInput.hra
RESCHRONNCCChronicRisk.csv
RESCHRONNCCChronicRiskSumByRec.csv
RESCHRONOutput.txt
RESCHRONPathwayRec.csv
RESCHRONPoIDB.csv
WKRCCANCancerRisk.csv
WKRCCANCancerRiskSumByRec.csv
WKRCCANGLCList.csv
WKRCCANHRAInput.hra
WKRCCANOutput.txt
WKRCCANPathwayRec.csv
WKRCCANPoIDB.csv
WKRCHRONGLCList.csv
WKRCHRONHRAInput.hra
WKRCHRONNCCChronicRisk.csv
WKRCHRONNCCChronicRiskSumByRec.csv
WKRCHRONOutput.txt
WKRCHRONPathwayRec.csv
WKRCHRONPoIDB.csv

Spatial averaging files (\lsa)

HARP2 - HRACalc (dated 17023) 7/10/2017 11:37:14 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully

RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: NCAcute
Calculation Method: Derived

EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
NOTE: The worker adjustment factors below are only used for cancer assessments. However, the GLC adjustment factor is also applied to 8-hr noncancer chronic assessments.
Worker adjustments factors enabled: YES
GLC adjustment factor: 1
Exposure frequency: 245

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

TIER 2 SETTINGS
Tier2 not used.

Calculating acute risk
Acute risk breakdown by pollutant and receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\ACUTENCAcuteRisk.csv
Acute risk total by receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\ACUTENCAcuteRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 17023) 7/10/2017 11:33:41 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully

RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: Cancer
Calculation Method: Derived

EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 30

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 14
16 to 70 Years Bin: 0

PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

INHALATION

Daily breathing rate: RMP

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: ON
16 years to 70 years: ON

SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Mixed

TIER 2 SETTINGS

Tier2 not used.

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\RESCANCancerRisk.csv
Cancer risk total by receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\RESCANCancerRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 17023) 7/10/2017 11:34:49 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully

RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: NCChronic
Calculation Method: Derived

EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

INHALATION

Daily breathing rate: LongTerm24HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Mixed

TIER 2 SETTINGS
Tier2 not used.

Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\RESCHRONNCChronicRisk.csv
Chronic risk total by receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\RESCHRONNCChronicRiskSumByRec.csv
HRA ran successfully

HARP2 - HRACalc (dated 17023) 7/10/2017 11:43:16 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully

RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: Cancer
Calculation Method: Derived

EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: 16
Total Exposure Duration: 25

Exposure Duration Bin Distribution
3rd Trimester Bin: 0
0<2 Years Bin: 0
2<9 Years Bin: 0
2<16 Years Bin: 0
16<30 Years Bin: 0
16 to 70 Years Bin: 25

PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors

NOTE: The worker adjustment factors below are only used for cancer assessments. However, the GLC adjustment factor is also applied to 8-hr noncancer chronic assessments.

Worker adjustments factors enabled: YES
GLC adjustment factor: 1
Exposure frequency: 245

Fraction at time at home

3rd Trimester to 16 years: OFF
16 years to 70 years: OFF

SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Mixed

TIER 2 SETTINGS

Tier2 not used.

Calculating cancer risk
Cancer risk breakdown by pollutant and receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\WKRCANCancerRisk.csv
Cancer risk total by receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\WKRCANCancerRiskSumByRec.csv

HRA ran successfully

WKRCANOutput

HARP2 - HRACalc (dated 17023) 7/10/2017 11:42:37 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
Pathway receptors loaded successfully

RISK SCENARIO SETTINGS

Receptor Type: Worker
Scenario: NCChronic
Calculation Method: Derived

EXPOSURE DURATION PARAMETERS FOR CANCER
Exposure duration are only adjusted for cancer assessments

PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: True
Dermal: True
Mother's milk: True
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
NOTE: The worker adjustment factors below are only used for cancer assessments. However, the GLC adjustment factor is also applied to 8-hr noncancer chronic assessments.
Worker adjustments factors enabled: YES
GLC adjustment factor: 1
Exposure frequency: 245

Fraction at time at home
NOTE: Exposure duration (i.e., start age, end age, ED, & FAH) are only adjusted for cancer assessments.

SOIL & DERMAL PATHWAY SETTINGS

Deposition rate (m/s): 0.02
Soil mixing depth (m): 0.01
Dermal climate: Mixed

TIER 2 SETTINGS
Tier2 not used.

Calculating chronic risk
Chronic risk breakdown by pollutant and receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\WKRCHRONNCChronicRisk.csv
Chronic risk total by receptor saved to: L:\SSD
FOLDERS\Modeling\25000-25499\25229_25230\HRA25229_25230\hra\WKRCHRONNCChronicRiskSumByRec.csv
HRA ran successfully

**Attachment E:
Potential to Emit Calculations**

SACRAMENTO METROPOLITAN AIR QUALITY MANAGEMENT DISTRICT

777 12th Street, 3rd Floor; Sacramento, CA 95814

Potential to Emit Calculations

| | | | |
|---------------------------|--|------------------|--------------------|
| | | ATC # | 25229 25230 |
| ENGINEER: | Matt Baldwin | NAICS # | 424710 |
| | | UTM East | 629501 |
| | | UTM North | 4269802 |
| FACILITY NAME: | Phillips 66 | | |
| LOCATION: | 76 Broadway, Sacramento, CA 95818 | | |
| PROPOSAL: | Modification to Permit to Operate 23446; Installation of a new vapor processing and control unit for a bulk terminal loading rack. | | |
| PROCESS: | Bulk terminal loading rack; vapor collection and control | | |
| FLOW DIAGRAM: | Not required | | |
| EQUIPMENT: | Bulk terminal loading rack | | |
| CONTROL EQUIPMENT: | 39.1 MMBtu/hr vapor combustion unit; LPG and/or natural gas pilot fuel. | | |

APPLICATION DATA:

| Operating Schedule | Units | Formula Symbol | Reference |
|-----------------------|-------------|----------------|-----------|
| Daily Operation = | 24 hours | Od | Applicant |
| Quarterly Operation = | 2,208 hours | Oq | Applicant |
| Yearly Throughput = | 8,760 hours | Oy | Applicant |

| Loading Rack Data | Units | Formula Symbol | Reference |
|-------------------------|-------------------------|----------------|-----------|
| Gasoline Loading Arms = | 4 arms | - | PO 23446 |
| Diesel Loading Arms = | 4 arms | - | PO 23446 |
| Capacity = | 600 gallons/min per arm | | EV 23446 |

| Throughput Data | Units | Formula Symbol | Reference |
|---------------------|------------------------------|----------------|-----------|
| Daily Throughput = | 630,000 gallons gasoline | Tdg | Applicant |
| = | 69,300 gallons ethanol | Tde | Applicant |
| = | 252,000 gallons diesel | Tdd | Applicant |
| Annual Throughput = | 229,950,000 gallons gasoline | Tyg | Applicant |
| = | 25,294,500 gallons ethanol | Tye | Applicant |
| = | 91,980,000 gallons diesel | Tyd | Applicant |

| Vapor Combustion Unit | Units | Formula Symbol | Reference |
|--------------------------|---------------------------|----------------|--------------------|
| Rating = | 39.1 MMBtu/hr | BR | Manufacturer Spec. |
| Flow Rate to Combustor = | 500 scfm | ER | Manufacturer Spec. |
| Hydrocarbon Conc. = | 55% volume as propane | Chc | Manufacturer Spec. |
| Exhaust Temperature = | 1,460 deg Rankine (F+460) | ET | Manufacturer Spec. |
| Exhaust Volume = | 34,000 acfm | EV | Manufacturer Spec. |
| Exhaust Diameter = | 7 ft | - | Manufacturer Spec. |
| Fuel Consumption = | 9,000 gpm | Fh | Manufacturer Spec. |

| Vapor Bladder Tank | Units | Formula Symbol | Reference |
|--------------------|-------------------------|----------------|--------------------|
| Capacity = | 9,800.0 ft ³ | - | Manufacturer Spec. |

ASSUMPTIONS:

| | Units | Formula Symbol | Reference |
|-----------------------------|-----------------------------------|-----------------------|-----------------------------|
| Molar Volume = | 385.3 ft ³ /mol | MV | District |
| F-Factor = | 8,710 dscf/MMBtu | Fd | EPA Method 19 |
| Gallons per cubic foot = | 7.481 gallons/ft ³ | CONVg | District |
| Propane = | 44 lb/mol | MWc3 | District |
| = | 24,548 Btu/lb | HHV1 | <u>NFPA 58</u> |
| = | 2,488 Btu/ft ³ | HHV2 | <u>NFPA 58</u> |
| = | 91,500 Btu/gal | HHV3 | AP42 Appendix A |
| = | 101,352 lb fuel/MMCF | Df | |
| = | 0.54 grains S/100 ft ³ | | District |
| NO2 = | 46 lb/mol | MWno2 | District |
| SO2 = | 64 lb/mol | MWso2 | District |
| S = | 32 lb/mol | MWs | District |
| CO = | 28 lb/mol | Mwco | District |
| CO2 = | 44 lb/mol | MWco2 | District |
| C = | 12 lb/mol | MWc | District |
| Carbon Content of Propane = | 0.82 lb C/lb fuel | C | District |
| C to CO2 Conversion = | 99.5% conversion | %CON | AP42, Table 1.5-1 (07/2008) |
| Diesel contribution = | 12.7% of throughput | %dj | SDAPCD |

EMISSION FACTORS:

| Loading Rack Emission Factors | Units | Formula Symbol | Reference |
|--------------------------------------|----------------------|-----------------------|-----------------------|
| VOC | 0.02 lb/1000 gallons | EFvoc | SDAPCD ^(A) |
| NOx | 0.0 lb/1000 gallons | - | - |
| SOx | 0.0 lb/1000 gallons | - | - |
| PM10 | 0.0 lb/1000 gallons | - | - |
| PM2.5 | 0.0 lb/1000 gallons | - | - |
| CO | 0.0 lb/1000 gallons | - | - |
| Lead | 0.0 lb/1000 gallons | - | - |
| GHG (CO2e) | 0.0 lb/1000 gallons | - | - |

^(A) Emission factors for VOC, NOx, and CO are based on Generac Statement of Exhaust Emissions for a SG100 Industrial Generator, EPA Certificate GGNXB08.92C2-029, 156 bhp.

| VCU Emission Factors | Units | Formula Symbol | Reference |
|-----------------------------|-------------------------|-----------------------|------------------------------|
| VOC | 0.02 lb/1000 gallons | EFvoc | District BACT ^(A) |
| NOx | 0.034 lb/1000 gallons | EFnox | District BACT ^(A) |
| SOx | 1.2E-04 lb/1000 gallons | EFsox | See calculation |
| PM10 | 1.6E-03 lb/1000 gallons | EFpm | See calculations 3 & 4 |
| PM2.5 | 1.6E-03 lb/1000 gallons | EFpm | See calculations 3 & 4 |
| CO | 0.05 lb/1000 gallons | EFco | District BACT ^(A) |
| Lead | 0.0 lb/1000 gallons | EFpb | - |
| GHG (CO2e) | 28.7 lb/1000 gallons | EFghg | See calculations 3 & 4 |

^(A) Standards from District BACT Determination #164.

CALCULATIONS:

1. Determine throughput for the loading rack:

Gasoline and Ethanol

Max. Hourly Throughput, **Th1** = Td1/Od = 29,138 gallons/hour
 Daily Throughput, **Td1** = Tdg + Tde = 699,300 gallons/day
 Quarterly Throughput, **Tq1** = Td1 × 92 days = 64,335,600 gallons/quarter
 Yearly Throughput, **Ty1** = Tyg + Tye = 255,244,500 gallons/year

Diesel

Max. Hourly Throughput, **Th2** = Tdd/Od = 10,500 gallons/hour
 Daily Throughput, **Td2** = Tdd = 252,000 gallons/day
 Quarterly Throughput, **Tq2** = Tq3 + Tq4 = 23,184,000 gallons/quarter
 Yearly Throughput, **Ty2** = Tq2 × 4 quarters = 91,980,000 gallons/year

Combined Throughput*

Max. Hourly Throughput, **Th** = Td/Od = 30,471 gallons/hour
 Daily Throughput, **Td** = Td1 + %dj × Td2 = 731,304 gallons/day
 Quarterly Throughput, **Tq** = Tq1 + %dj × Tq2 = 67,279,968 gallons/quarter
 Yearly Throughput, **Ty** = Tq × 4 quarters = 266,925,960 gallons/year

2. Determine uncontrolled emissions:

Bulk Transfer Emission Factor, **EFbu** ^(A) = (C × MWc3 × 1000) / (MV × CONVg) = 8.4 lb/1000 gallons

^(A) CARB Emission Factor for Gasoline Bulk Transfer using the equation in Attachment 2 to the Revised Emission Factor for Gasoline Marketing Operations at California Gasoline Dispensing Facilities and the maximum concentration provided by the applicant (55% as propane).

3. Determine combustion emission factors using propane as a surrogate:

| Combustion Emission Factors | Units | Formula Symbol | Reference |
|-----------------------------|---------------------|----------------|-----------------------------|
| SOx | 0.05 lb/1000 gal | EFs | AP42, Table 1.5-1 (07/2008) |
| PM10 | 0.7 lb/1000 gal | EFp | AP42, Table 1.5-1 (07/2008) |
| PM2.5 | 0.7 lb/1000 gal | EFp | AP42, Table 1.5-1 (07/2008) |
| GHG (CO2e) | 63.12 kg CO2e/MMBtu | EFco2e | 40 CFR 98 Tables C1 & C2 |

4. Convert liquid propane emission factors to vapor equivalent:

Propane Equivalent, **PE** = EFbu × HHV1 × 1/HHV3 = 2.2524 gal propane/1000 gal vapor
 SOx Emission Factor, **EFsox** = EFs × PE = 0.00012163 lb/1000 gal vapor
 PM Emission Factor, **EFpm** = EFp × PE = 0.00157670 lb/1000 gal vapor
 EFghg = EFco2e × 2.204 lb/kg × EFbu × HHV1 = 28.67 lb/1000 gal vapor

5. Determine CO2 emission factor:

EFco2 = C × 1/MWc × mol CO2/mol C × MWco2 × Df/HHV × %CON = 121.868720 lb/MMBtu

5. Determine %CO2 in exhaust:

%CO2 = EFco2 × 1/MWco2 × 1/Fd × MV = 0.12252379 mol CO2/mol exhaust
 12.252379% CO2

EMISSION CALCULATIONS:

1. Determine loading rack emissions (A/C 25229):

| Throughput (1000 gallons) | Emission Factor | Hourly | Daily | Quarterly | Annual |
|---------------------------|------------------|-----------|----------|------------|-------------|
| | - | 30.471 | 731.304 | 67,279.968 | 266,925.960 |
| VOC | 0.02 lb/1000 gal | 0.61 lb | 14.6 lb | 1,346 lb | 5,339 lb |
| NOx | - lb/1000 gal | 0.00 lb | 0.0 lb | 0 lb | 0 lb |
| SOx | - lb/1000 gal | 0.00 lb | 0.0 lb | 0 lb | 0 lb |
| PM10 | - lb/1000 gal | 0.00 lb | 0.0 lb | 0 lb | 0 lb |
| PM2.5 | - lb/1000 gal | 0.00 lb | 0.0 lb | 0 lb | 0 lb |
| CO | - lb/1000 gal | 0.00 lb | 0.0 lb | 0 lb | 0 lb |
| Lead | - lb/1000 gal | 0.00 lb | 0.0 lb | 0 lb | 0 lb |
| GHG (CO2e) | - lb/1000 gal | 0.00 tons | 0.0 tons | 0 tons | 0 tons |

2. Determine vapor combustion unit (VCU) emissions:

| Throughput (1,000 gallons) | Emission Factor | Hourly | Daily | Quarterly | Annual |
|----------------------------|---------------------|-----------|-----------|------------|-------------|
| | - | 30.471 | 731.304 | 67,279.968 | 266,925.960 |
| VOC | 0.02 lb/1000 gal | 0.61 lb | 14.6 lb | 1,346 lb | 5,339 lb |
| NOx | 0.034 lb/1000 gal | 1.04 lb | 24.9 lb | 2,288 lb | 9,075 lb |
| SOx | 1.2E-04 lb/1000 gal | 0.00 lb | 0.1 lb | 8 lb | 32 lb |
| PM10 | 1.6E-03 lb/1000 gal | 0.05 lb | 1.2 lb | 108 lb | 427 lb |
| PM2.5 | 1.6E-03 lb/1000 gal | 0.05 lb | 1.2 lb | 108 lb | 427 lb |
| CO | 0.05 lb/1000 gal | 1.52 lb | 36.6 lb | 3,364 lb | 13,346 lb |
| Lead | - lb/1000 gal | 0.00 lb | 0.0 lb | 0 lb | 0 lb |
| GHG (CO2e) | 28.67 lb/1000 gal | 0.44 tons | 10.5 tons | 965 tons | 3,827 tons |

3. Determine Combustion Contaminants (corrected to 12% CO2):

$$PM = EF_{pm} \times 1/EF_{bu} \times 1/HHV1 \times 1/Fd \times 7,000 \text{ grains/lb} \times 12\%CO2/\%CO2 = 0.006 \text{ grains/dscf}$$

4. Determine SO2 Concentration:

$$\%SO2 = EF_{sox} \times 1/EF_{bu} \times 1/HHV1 \times 1/Fd \times 1/MW_{so2} \times MV = 0.00004079 \%$$

RULE & REGULATION COMPLIANCE EVALUATION:

District Rule 202-New Source Review

Section 301-Best Available Control Technology (BACT)

Loading Rack (A/C 25229)

1. Determine proposed Potential Emissions (PE):

| | Daily (DPE) | Quarterly | Annual |
|-------|-------------|-----------|----------|
| VOC | 14.6 lb | 1,346 lb | 5,339 lb |
| NOx | 0.0 lb | 0 lb | 0 lb |
| SOx | 0.0 lb | 0 lb | 0 lb |
| PM10 | 0.0 lb | 0 lb | 0 lb |
| PM2.5 | 0.0 lb | 0 lb | 0 lb |
| CO | 0.0 lb | 0 lb | 0 lb |
| Lead | 0.0 lb | 0 lb | 0 lb |

2. Determine Historic Potential Emissions (HPE) for new or modified permit:*

| | Daily (DHPE) | Quarterly | Annual |
|------|--------------|-----------|--------|
| VOC | 0.0 lb | 0 lb | 0 lb |
| NOx | 0.0 lb | 0 lb | 0 lb |
| SOx | 0.0 lb | 0 lb | 0 lb |
| PM10 | 0.0 lb | 0 lb | 0 lb |

| | | | |
|--------------|--------|------|------|
| PM2.5 | 0.0 lb | 0 lb | 0 lb |
| CO | 0.0 lb | 0 lb | 0 lb |
| Lead | 0.0 lb | 0 lb | 0 lb |

* Daily potential emissions were limited by P/O 23446 and allowed the facility to load up to 202,000 gallons/day of gasoline. Thus, the daily historic potential emissions are equal to the daily limit for gasoline. However, for quarterly potential emissions, the facility's emissions were included in Chevron's potential to emit, which is where the vapors were processed. The miscellaneous fugitive emissions from the loading rack are currently being counted towards Chevron's permit. Thus, the historic potential quarterly emissions will be treated as zero.

3. Determine if BACT is required:

| | DPE* | DHPE | NEI** | Trigger | BACT |
|--------------|-------------|-------------|--------------|----------------|-------------|
| VOC | 14.6 lb/day | 0.0 lb/day | 14.6 lb/day | > 0 lb/day | Yes |
| NOx | 0.0 lb/day | 0.0 lb/day | 0.0 lb/day | > 0 lb/day | No |
| SOx | 0.0 lb/day | 0.0 lb/day | 0.0 lb/day | > 0 lb/day | No |
| PM10 | 0.00 lb/day | 0.0 lb/day | 0.0 lb/day | > 0 lb/day | No |
| PM2.5 | 0.00 lb/day | 0.0 lb/day | 0.0 lb/day | > 0 lb/day | No |
| CO | 0.0 lb/day | 0.0 lb/day | 0.0 lb/day | > 550 lb/day | No |
| Lead | 0.0 lb/day | 0.0 lb/day | 0.0 lb/day | > 3.3 lb/day | No |

* For purposes of this calculation, the difference is done using tenths, then the difference is rounded to an integer using standard rounding convention (round up if greater than or equal to 0.5).

** BACT Emission Increase (BACT_{EI}). BACT_{EI} = DPE - DHPE.

*** Per Rule 202, Section 205, BACT is defined in terms of an emission unit. Per Rule 202, Section 216, an Emission Unit is defined as an identifiable operation or piece of process equipment which emits a regulated air pollutant. Each boiler is a separate emissions unit. Therefore applicability of BACT is determined for each separate emissions unit. Because each emissions unit is the same in all respects except for the serial number, they each have the same potential to emit, so only one calculation was done.

Result: BACT is required

Vapor Combustion Unit (A/C 25230)

1. Determine proposed Potential Emissions (PE):

| | Daily (DPE) | Quarterly | Annual |
|--------------|--------------------|------------------|---------------|
| VOC | 14.6 lb | 1,346 lb | 5,339 lb |
| NOx | 24.9 lb | 2,288 lb | 9,075 lb |
| SOx | 0.1 lb | 8 lb | 32 lb |
| PM10 | 1.2 lb | 108 lb | 427 lb |
| PM2.5 | 1.2 lb | 108 lb | 427 lb |
| CO | 36.6 lb | 3,364 lb | 13,346 lb |
| Lead | 0.0 lb | 0 lb | 0 lb |

2. Determine Historic Potential Emissions (HPE) for new or modified permit:*

| | Daily (DHPE) ** | Quarterly | Annual |
|--------------|------------------------|------------------|---------------|
| VOC | 0.0 lb | 0 lb | 0 lb |
| NOx | 0.0 lb | 0 lb | 0 lb |
| SOx | 0.0 lb | 0 lb | 0 lb |
| PM10 | 0.0 lb | 0 lb | 0 lb |
| PM2.5 | 0.0 lb | 0 lb | 0 lb |
| CO | 0.0 lb | 0 lb | 0 lb |
| Lead | 0.0 lb | 0 lb | 0 lb |

* This is a new emission unit, therefore previous PTE is zero.

** DHPE equals daily actual emissions if no enforceable daily emissions limitation is present prior to modification.

3. Determine if BACT is required:

| | DPE* | DHPE | NEI** | Trigger | BACT |
|------------|-------------|-------------|--------------|----------------|-------------|
| VOC | 14.6 lb/day | 0.0 lb/day | 15 lb/day | > 0 lb/day | Yes |

| | | | | | |
|--------------|-------------|------------|-----------|--------------|-----|
| NOx | 24.9 lb/day | 0.0 lb/day | 25 lb/day | > 0 lb/day | Yes |
| SOx | 0.1 lb/day | 0.0 lb/day | 0 lb/day | > 0 lb/day | No |
| PM10 | 1.20 lb/day | 0.0 lb/day | 1 lb/day | > 0 lb/day | Yes |
| PM2.5 | 1.20 lb/day | 0.0 lb/day | 1 lb/day | > 0 lb/day | Yes |
| CO | 36.6 lb/day | 0.0 lb/day | 37 lb/day | > 550 lb/day | No |
| Lead | 0.0 lb/day | 0.0 lb/day | 0 lb/day | > 3.3 lb/day | No |

* For purposes of this calculation, the difference is done using tenths, then the difference is rounded to an integer using standard rounding convention (round up if greater than or equal to 0.5).

** BACT Emission Increase (BACT_{EI}). BACT_{EI} = DPE - DHPE.

*** Per Rule 202, Section 205, BACT is defined in terms of an emission unit. Per Rule 202, Section 216, an Emission Unit is defined as an identifiable operation or piece of process equipment which emits a regulated air pollutant. Each boiler is a separate emissions unit. Therefore applicability of BACT is determined for each separate emissions unit. Because each emissions unit is the same in all respects except for the serial number, they each have the same potential to emit, so only one calculation was done.

Result: BACT is required

Section 302-Offsets

1. Determine permitted emissions for other permits at the stationary source:

| | Daily | Quarterly | Annual ** |
|--------------|--------------|------------------|------------------|
| VOC | #N/A | 14,774 lb | 29.08 TPY |
| NOx | #N/A | 153 lb | 0.08 TPY |
| SOx | #N/A | 0 lb | 0.00 TPY |
| PM10 | #N/A | 15 lb | 0.008 TPY |
| PM2.5 | #N/A | 15 lb | 0.008 TPY |
| CO | #N/A | 162 lb | 0.08 TPY |
| Lead | #N/A | 0 lb | 0.00 TPY |

* See Attachment B - Calculation of Offset Triggers.

** Phillips 66 has a facilitywide cap for VOC of 24.4 tons/year.

2. Determine permitted emissions for the stationary source including proposed emissions:

| | Daily | Quarterly | Annual |
|--------------|--------------|------------------|---------------|
| VOC | #N/A | 17,466 lb | 34.42 TPY |
| NOx | #N/A | 2,441 lb | 4.61 TPY |
| SOx | #N/A | 8 lb | 0.02 TPY |
| PM10 | #N/A | 123 lb | 0.22 TPY |
| PM2.5 | #N/A | 123 lb | 0.22 TPY |
| CO | #N/A | 3,526 lb | 6.75 TPY |
| Lead | #N/A | 0 lb | 0.00 TPY |

* Total facility emissions for Facility 6104; calculated pursuant to Rule 201, §411.3.

3. Determine permitted emissions for the stationary source including any facilitywide caps:

| | Daily | Quarterly | Annual |
|--------------|--------------|------------------|---------------|
| VOC | #N/A | 17,466 lb | 24.40 TPY |
| NOx | #N/A | 2,441 lb | 4.61 TPY |
| SOx | #N/A | 8 lb | 0.02 TPY |
| PM10 | #N/A | 123 lb | 0.22 TPY |
| PM2.5 | #N/A | 123 lb | 0.22 TPY |
| CO | #N/A | 3,526 lb | 6.75 TPY |
| Lead | #N/A | 0 lb | 0.00 TPY |

* Total facility emissions for Facility 6104; calculated pursuant to Rule 201, §411.3.

3. Determine Historic Potential Emissions (HPE):*

| | Daily | Quarterly | Annual |
|--|--------------|------------------|---------------|
|--|--------------|------------------|---------------|

| | | | |
|-------|--------|------|----------|
| VOC | 0.0 lb | 0 lb | 0.00 TPY |
| NOx | 0.0 lb | 0 lb | 0.00 TPY |
| SOx | 0.0 lb | 0 lb | 0.00 TPY |
| PM10 | 0.0 lb | 0 lb | 0.00 TPY |
| PM2.5 | 0.0 lb | 0 lb | 0.00 TPY |
| CO | 0.0 lb | 0 lb | 0.00 TPY |

* This is a new emission unit, therefore historic potential emissions are zero.

4. Determine emissions exempted from the requirements of Rule 201 Sections 302 and 303:*

| | Daily | Quarterly | Annual |
|-------|--------|-----------|----------|
| VOC | 0.0 lb | 0 lb | 0.00 TPY |
| NOx | 0.0 lb | 0 lb | 0.00 TPY |
| SOx | 0.0 lb | 0 lb | 0.00 TPY |
| PM10 | 0.0 lb | 0 lb | 0.00 TPY |
| PM2.5 | 0.0 lb | 0 lb | 0.00 TPY |
| CO | 0.0 lb | 0 lb | 0.00 TPY |

* Pursuant to Rule 201, §110, installation of emergency equipment is exempt from the requirement to provide offsets.

5. Determine Offset Trigger Levels:

| | Daily | Quarterly | Annual |
|-------|-------|-----------|-----------|
| VOC | - | 5,000 lb | - |
| NOx | - | 5,000 lb | - |
| SOx | - | 13,650 lb | - |
| PM10 | - | 7,300 lb | - |
| PM2.5 | - | - | 15.00 TPY |
| CO | - | 49,500 lb | - |

6. Determine quantity of offsets required (max quarterly)

| | Daily | Quarterly | Annual |
|-------|--------|-----------|----------|
| VOC | 0.0 lb | 2,692 lb | 0.00 TPY |
| NOx | 0.0 lb | 0 lb | 0.00 TPY |
| SOx | 0.0 lb | 0 lb | 0.00 TPY |
| PM10 | 0.0 lb | 0 lb | 0.00 TPY |
| PM2.5 | 0.0 lb | 0 lb | 0.00 TPY |
| CO | 0.0 lb | 0 lb | 0.00 TPY |

Result: Offsets are Required

6. Determine quantity of VOC offsets required per quarter.

| | Daily | Quarter 1 | Quarter 2 | Quarter 3 | Quarter 4 | Annual |
|------------------|---------|-----------|-----------|-----------|-----------|----------|
| | - | 90 days | 91 days | 92 days | 92 days | 365 days |
| P/O 25229 - VOC | 14.6 lb | 1,316 lb | 1,331 lb | 1,346 lb | 1,346 lb | 5,339 lb |
| P/O 25230 - VOC | 14.6 lb | 1,316 lb | 1,331 lb | 1,346 lb | 1,346 lb | 5,339 lb |
| Total VOC | | 2,632 lb | 2,662 lb | 2,692 lb | 2,692 lb | |

Section 228-Major Stationary Source Determination

| | Facility PTE | Threshold | Major Source |
|-------|--------------|----------------------------|--------------|
| VOC | 24.40 TPY | 25 TPY VOC | No |
| NOx | 4.61 TPY | 25 TPY NOx | No |
| SOx | 0.02 TPY | - | - |
| PM10 | 0.22 TPY | 100 TPY PM10 or SOx | No |
| PM2.5 | 0.22 TPY | 100 TPY PM2.5, NOx, or SOx | No |
| CO | 6.75 TPY | 100 TPY CO | No |

Lead 0.00 TPY 10 TPY Pb (HAP) No
Result: Facility is not a Major Stationary Source

Section 227-Major Modification Determination

| | Emission Aggregate* | Threshold | Major Modification |
|-------|---------------------|------------------------------------|--------------------|
| VOC | - | 25 TPY VOC | No |
| NOx | - | 25 TPY NOx | No |
| SOx | - | - | - |
| PM10 | - | 40 TPY VOC, NOx, SOx; 15 TPY PM10 | No |
| PM2.5 | - | 40 TPY VOC, NOx, SOx; 10 TPY PM2.5 | No |
| CO | - | 100 TPY CO | No |
| Lead | - | 0.6 TPY Pb | No |

* The stationary source is not classified as a major source; therefore this section does not apply.

Result: Project is not part of a Major Modification

District Rule 217-Public Notice Requirements for Permits

1. Determine pre-project potential to emit:

| Pollutant | Pre-Project PTE | Post-project PTE |
|------------------|-----------------|------------------|
| VOC (quarterly) | 0 lb/qtr | 2,692 lb/qtr |
| NOx (quarterly) | 0 lb/qtr | 2,288 lb/qtr |
| SOx (quarterly) | 0 lb/qtr | 8 lb/qtr |
| PM10 (quarterly) | 0 lb/qtr | 108 lb/qtr |
| PM2.5 (tons) | 0.00 TPY | 0.21 TPY |
| CO (quarterly) | 0 lb/qtr | 3,364 lb/qtr |

2. Determine increase in the potential to emit:

"Increase in historic potential to emit"

2,692 lb VOC/quarter
 2,288 lb NOx/quarter
 8 lb SOx/quarter
 108 lb PM10/quarter
 0.21 tons PM2.5/year
 3,364 lb CO/quarter

Exemption level for notification

5,000 lb VOC/quarter
 5,000 lb NOx/quarter
 9,200 lb SOx/quarter
 7,300 lb PM10/quarter
 10 tons PM2.5/year
 49,500 lb CO/quarter

Result: Public notice is required

District Rule 402-Nuisance

| Pollutant | CAS | EF ^(A) | | lb/yr | g/s (annualized) ^(B) |
|------------------------|---------|-------------------|----------|----------|---------------------------------|
| | | (lb/lb VOC) | lb/hr | | |
| Benzene | 71432 | 0.01 | 6.09E-03 | 5.34E+01 | 1.69283E-06 |
| Ethyl benzene | 100414 | 0.016 | 9.75E-03 | 8.54E+01 | 2.70853E-06 |
| 2,2,4-Trimethylpentane | 540841 | 0.02 | 1.10E-02 | 9.61E+01 | 3.04710E-06 |
| Hexane | 110543 | 0.08 | 4.88E-02 | 4.27E+02 | 1.35427E-05 |
| Toluene | 108883 | 0.008 | 4.88E-03 | 4.27E+01 | 1.35427E-06 |
| Xylenes (mixed) | 1330207 | 0.02 | 1.46E-02 | 1.28E+02 | 4.06280E-06 |

^(A) Emission factors are from SSan Diego APCD Emission Factor Tables for Bulk Terminal Gasoline Vapor Processors, which references Calculation Procedure V03 – SOIL VAPOR EXTRACTION PROCESSES, GASOLINE MITIGATION and is based on the liquid speciation profile for reformulated gasoline.

^(B) Emissions in g/s have been annualized by dividing the annual emissions in grams per year by 31,536,000 seconds per year.

District Rule 406-Specific Contaminants

| <u>Process</u> | <u>Emissions</u> | <u>Limit</u> | <u>Compliance</u> |
|-----------------------|-------------------------|---------------------|--------------------------|
| Combustion PM | 0.0060 grains/dscf | 0.1 grains/dscf | Yes |
| Sulfur Compounds | 0.0040792% by volume | 0.2% by volume | Yes |

California Environmental Quality Act

| Pollutant/Hazard | | Threshold | Project Total* | Less than Standard |
|-----------------------|--------|-------------------------|------------------------|--------------------|
| NOx (ozone precursor) | | 65 lb/day | 24.9 lb/day | Yes |
| VOC (ozone precursor) | | 65 lb/day | 14.6 lb/day | Yes |
| PM10 (A) | Daily | 80 lb/day | 1.2 lb/day | Yes |
| | Annual | 14.6 tons/year | 0.214 tons/year | Yes |
| PM2.5 (A) | Daily | 82 lb/day | 1.2 lb/day | Yes |
| | Annual | 15 lb/day | 0.214 lb/day | Yes |
| GHG as CO2e | Annual | 10,000 metric tons/year | 3,472 metric tons/year | Yes |

**Attachment F:
Notice of Exemption**

Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

From: Sacramento Metropolitan AQMD
777 12th Street, Suite 300
Sacramento, CA 95814

County Clerk
County of Sacramento
600 8th Street
Sacramento, CA 95814

Project Title: Phillips 66 – Loading Rack Modification **Project Nos:** A/Cs 25229 & 25230

Project Applicant: Phillips 66 – 1075 W. Sam Houston Parkway N., Suite 200, Houston, TX 77043

Project Location – Specific: 76 Broadway, Sacramento, CA 95818

Project Location – City: Sacramento **Project Location – County:** Sacramento

Description of Nature, Purpose and Beneficiaries of Project:

The project beneficiary, Phillips 66, is modifying their bulk terminal loading rack and installing a vapor processing and control unit. Phillips 66 is a petroleum marketer and is using the equipment to distribute fuels to tanker trucks.

Name of Public Agency Approving Project: Sacramento Metropolitan Air Quality Management District

Name of Person or Agency Carrying Out Project: Phillips 66

Exempt Status: (check one):

- Ministerial (Sec. 21080(b)(1); 15268);
- Declared Emergency (Sec. 21080(b)(3); 15269(a));
- Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- Categorical Exemption. State type and section number: _____
- Statutory Exemptions. State code number: Sec. 15061(b)(3)

Reasons why project is exempt:

SMAQMD determined there is no possibility that the project will have a significant adverse impact on the environment because its air pollutant emissions are within the Districts' acceptable limits and no other environmental medium is expected to be adversely affected. Also, this permitting action is covered under an existing BACT, therefore it is considered ministerial.

Lead Agency Contact

Person: Jorge DeGuzman **Area Code/Telephone Extension:** (916) 874-4860

Signature: _____ **Date:** _____ **Title:** Program Manager

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____