PRIVILEGED AND CONFIDENTIAL – ATTORNEY-CLIENT PRIVILEGE – ATTORNEY WORK-PRODUCT

August 31, 2021

Subject: All American Asphalt - Air Toxics Study

In October 2020, the City of Irvine commissioned a study of air toxic emissions from the All American Asphalt ("AAA") facility to better understand the chemicals released by the plant and what potential health impact those emissions may have on the neighboring communities. As part of the study, ambient air samples were collected at four fixed air monitoring locations representing both the facility and the neighboring communities. Those air samples were tested for over 100 air toxic compounds. Air concentrations collected at the fence-line of AAA's facility and inside the facility did not show elevated levels compared with those locations nearer the neighboring communities. Moreover, air concentrations were found to be within levels typical for the area and region, as measured by the South Coast AQMD in their Multiple Air Toxics Exposure Study (MATES IV) that uses repeated long-term monitoring campaigns to determine toxic pollutant levels across the air basin.

In addition to a comparative assessment, air toxic pollutant concentrations were used to estimate potential health risk impacts. Again, the results of those assessments indicate cancer risk estimates that were like those identified by the South Coast AQMD for the area and region. Together with the fence-line and community air monitoring, health risk impacts did not show a direct correlation between pollutant concentrations measured near the AAA facility and those observed in the neighboring communities. Lastly, the study compared air toxic pollutant concentrations with non-cancer chronic and acute public health standards published by the California Office of Environmental Health Hazard Assessment (OEHHA) and those result also show risks within acceptable standards and background levels.

The study also included collecting publicly available data on air toxic pollutant emissions reported annually to the South Coast AQMD to determine potential applicability of the California Air Toxics Hot Spots Program (AB2588). The study found that reported air toxic emissions would prioritize the facility to conduct a more detailed air toxics emissions inventory and quantification, and potentially a facility wide health risk assessment (HRA). South Coast AQMD staff also noted this and other reporting inconsistencies during their audit of the facility's submitted emission reports, which led the agency to require the facility to prepare and submit a more detailed Air Toxics Inventory Report in accordance with the AB 2588 Program. Our study on air toxics emissions reporting supports the current regulatory actions being undertaken by the agency.

Enclosed are written comments from the South Coast AQMD, and the Air Toxics Study.

Greg Wolffe, CPP
Principal Scientist
Yorke Engineering, LLC

Enclosures:

1. Attachment 1 – Air Toxics Study and Prioritization Score, Yorke
2. Attachment 2 – Screening HRA and Air Toxics Prioritization Score, SCAQMD

ATTACHMENT 1 – AIR TOXICS STUDY

SCREENING HEALTH RISK ASSESSMENT (SHRA) AND AIR TOXICS PRIORITIZATION SCORE FOR ALL AMERICAN ASPHALT (FACILITY ID 082207), YORKE

June 22, 2021

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Subject: Air Toxics Study: Screening Health Risk Assessment (SHRA) and Air Toxics Prioritization Score for All American Asphalt (Facility ID 082207)

Dear Mr. Lizzi:

Yorke Engineering, LLC (Yorke) has prepared this letter report that summarizes the methods and results of an air toxics study that evaluated emissions and health risk impacts based on air monitoring near the All American Asphalt (AAA) facility located in Irvine, CA. Our evaluation was performed under contract to Ninyo & Moore, which has been retained by Rutan and Tucker as outside counsel to the City of Irvine (the City). The scope of this evaluation is an analysis of:

- Prioritization Score, calculated from Annual Emissions Reports (AERs) submitted by AAA to the South Coast Air Quality Management District (SCAQMD or District); and
- Screening Health Risk Assessment (SHRA) using air toxic hotspots methodology based on ambient concentrations of toxic air contaminants (TACs) measured near the facility.

The purpose of these analyses is to provide Ninyo & Moore and the City with an indication of the potential facility contribution to health risks by comparing ambient measured concentrations. The Prioritization Score (PS) calculation uses the methodology from the current version of the SCAQMD) guideline document[1] for evaluating the need to reduce the health risk associated with emissions of TACs from existing sources. The SHRA used the Hot Spots Analysis and Reporting Program (HARP) Risk Assessment Standalone Tool (RAST) with District-approved exposure assumptions.

Each of the analyses are described in more detail in this letter and its attachments.

AIR EMISSIONS REPORTING

AAA is required to submit annual emissions to the SCAQMD upon notification by the District that a report is due on a calendar year (CY) basis. These reports are known as AERs and are currently due no later than 75 days after the end of the CY the report covers. The SCAQMD requires reporting of both criteria pollutants, such as nitrogen oxides (NO_x), volatile organic compounds (VOCs), and particulate matter (PM), and TACs.

[1] SCAQMD Facility Prioritization Procedure for the Rule 1402 Implementation of the AB 2588 Program, October 2020.

AAA is also subject to the California Air Toxics "Hot Spots" Information and Assessment Act program (AB 2588). Facilities subject to AB 2588 are required to include a quadrennial update of TAC emissions every 4 years as part of the AER. The quadrennial update reports an expanded list of TACs not included in a routine AER. The District uses the TAC emissions from the quadrennial update to calculate a PS, which is a methodology used by the SCAQMD to determine whether a facility should be notified to take further action under AB 2588, such as beginning the process of preparing a detailed Air Toxics Inventory Report (ATIR) or a formal Health Risk Assessment (HRA) of the facility's operations. SCAQMD Rule 1402 implements the AB 2588 program within the South Coast Air Basin.

The most recent quadrennial update for the AAA facility was for CY2016, with the next quadrennial update due for CY2020. Although it is not clear based on publicly available information if the SCAQMD has calculated a PS for AAA or, if it has, what PS was calculated, it does not appear that AAA has been required by the SCAQMD to prepare an HRA under AB 2588 or Rule 1402.

AIR TOXICS EMISSIONS REPORTED

Air toxics are reported every year through the AER for the AAA facility. Our evaluation assessed facility emissions from each reporting year from 2015 through 2019 (previous five reporting years). Emissions reporting under the AB 2588 program is administered by the SCAQMD according to the *AB 2588 and Rule 1402 Supplemental Guidelines*.[2] Emissions of air toxics reported to the District are publicly available online from the District's website as well as the California Air Resources Board (CARB) website. Air toxics emissions data were downloaded from CARB's website in tabular format for CY2015 through 2018. Where there was a difference between CARB's database and the SCAQMD's website, the value from the SCAQMD's website was used. CY2015 through 2019 TAC emissions for the AAA facility are shown in Attachment A, Table A.1.

During the five reporting years, a total of 42 chemical compounds were reported by AAA. Of those, 10 compounds were consistently reported for all 5 years: arsenic, benzene, cadmium, hexavalent chromium, formaldehyde, lead, methylene chloride, naphthalene, ammonia, nickel, and Polycyclic Aromatic Hydrocarbons (PAH). In addition, nine compounds were only reported during CY2016 (the AB 2588 reporting year).

Our review noted the inconsistent reporting of PAH compounds, which were reported as both a group of compounds as well as the 18 individual compound species during the 5-year period reviewed. In addition to differences in how PAH was reported (species vs. as a group), AAA also reported significantly higher overall PAH emissions for 2017 and 2018 than in other years. When PAH emissions are speciated, certain PAH compounds that are not currently identified as having any health effects do not contribute to the overall score. Attachment A, Table A.1 identifies each PAH compound that does not have an associated health effect value as "PAH(-)" and each PAH compound that does have an associated health effect value as "PAH(+)". Because 2017 and 2018

[2] https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=13.

also corresponded to years when PAH emissions was reported as a group using a higher toxicity factor, potential health risk scores for those years are considerably higher.

PRIORITIZATION SCORING

PSs are a conservative screening tool. The SCAQMD's current PS calculation methodology is contained in the *Facility Prioritization Procedure for the Rule 1402 Implementation of the AB 2588 Program*[3] (PS Guidelines, October 2020). The PS Guidelines specify calculation of 13 health endpoint/receptor combinations for each chemical, which are aggregated into a Total Score (TS) for the facility. The actual facility PS is the health endpoint/receptor the produces the highest TS of the 13 combinations.

The four health endpoints are:

- Cancer, which represents the probability of a person developing cancer after exposure to a chemical identified as a carcinogen;
- Chronic Non-Cancer, which represents whether a person would be subject to chronic (i.e., continuous exposure over a significant fraction of a lifetime) exposure to a chemical above an "acceptable" concentration, where exposure above the acceptable concentration may result in adverse noncancer health effects to a given "target organ;"
- Chronic Non-Cancer 8-hour, which represents whether a person would be subject to repeated 8-hour exposures over a significant fraction of a lifetime to a chemical above an "acceptable" concentration, where exposure above the acceptable concentration may result in adverse noncancer health effects to a given "target organ;" and
- Acute Non-Cancer, which represents whether a person would be subject to infrequent 1-hour exposures above an "acceptable" concentration, where exposure above the acceptable concentration may result in adverse noncancer health effects to a given "target organ."

The non-cancer acute health endpoint is evaluated at a single receptor. This receptor is generally selected as the closest point on or outside of the facility fenceline in the worst-case downwind direction since, in most cases, a member of the public could be at any point on or outside of the facility fenceline for up to an hour.

The health endpoints (other than acute) are each evaluated at four receptor types. Because the closest receptors do not always experience the highest potential for health effects due to local meteorological conditions that affect the direction emissions from a facility are dispersed, the closest receptor in a worst-case downwind direction is included to account for this. These four receptors are:

- The closest sensitive receptor;
- The closest worker receptor;
- The closest sensitive receptor in the worst-case downwind direction from the facility; and

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[3] http://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-facility-prioritization-procedure.pdf?sfvrsn=26.

- The closest worker receptor in the worst-case downwind direction from the facility.

Based on a PS analysis, facilities may be prioritized or ranked for potential public impacts.

From the simplified reported toxics emissions submitted in the AER, SCAQMD staff prioritizes facilities using a procedure approved by the Governing Board into three categories: high, intermediate, and low priority. High priority facilities may be asked to prepare an ATIR. The three prioritization categories are shown in Table 1.

Table 1: Prioritization Score Categories

PS Range	PS Category
PS > 10	High Priority
1 < PS ≤ 10	Intermediate Priority
PS ≤ 1	Low Priority

AAA's TS have been calculated from the emissions reported to the District for CY2015 through 2019 for each of the receptors. The TS are summarized in Table 2. Per Table 1, AAA may have been high priority based on CY2017 and CY2018 emissions; however, as noted previously, the CY2017 and CY2018 emissions may have been inadvertently over-reported. The sections that follow describe assumptions used in the TS calculations.

The CY2017 and CY2018 reporting of 140 pounds of aggregated PAH (CAS Number 1151) may have been inadvertent, as the CY2019 report contains speciated PAH in approximately the same quantity. A PS calculated from the CY2017 or CY2018 emissions would be higher than a PS calculated from the CY2019 emissions.

Table 2: Prioritization Score by AER Reporting Year

Calendar Year	Cancer Risk (30-Year)	Chronic Non-Cancer (Annual)	Chronic Non-Cancer (8-hour)	Acute Non-Cancer (1-hour)
2015	0.04	0.01	0.01	**6.08**
2016	0.03	0.01	0.00	**4.48**
2017	**18.74**	0.07	0.01	**6.84**
2018	**18.98**	0.07	0.01	**6.79**
2019	0.59	0.07	0.01	**7.01**

Although quadrennial updates are submitted every 4 years, the SCAQMD has the discretion to conduct a prioritization score evaluation or require a formal HRA at any time. A high priority facility will typically be contacted by the District and provided an opportunity to review and correct a quadrennial update if a reporting error and/or overly conservative assumptions may have resulted in a PS > 10. If the quadrennial update is determined to be accurate, a high priority facility may be asked to take further action under AB 2588, such as beginning the process of preparing a detailed ATIR. An intermediate priority facility may be required to continue to provide a quadrennial update every 4 years; a low priority facility may be exempted from the AB 2588 program, although the District has the discretion to require a quadrennial update in future years.

Meteorological Data

The TS calculations use parameters known as Receptor Proximity Adjustment Factors (RP). The RP incorporates downwind distance and local meteorology into the TS calculations. The PS Guidelines provide RP for twenty-four meteorological (MET) stations. The MET stations nearest AAA are shown in Figure 1.

The MET station used for AAA's TS calculations is Mission Viejo. The Mission Viejo MET station is located approximately 12,500 meters from AAA; the John Wayne International Airport (KSNA) MET station is located approximately 14,500 meters from AAA. The Mission Viejo MET station is approximately 2,000 meters closer to AAA. In addition to proximity, the SCAQMD allows for consideration of other factors[4]. The Mission Viejo MET station appears to be more representative with respect to surrounding terrain, land use and surface characteristics.

Receptors

The PS Guidelines require identifying a total of 13 receptors. The receptor distance used for calculation of the cancer, non-cancer chronic, and non-cancer chronic 8-hour scores is "… defined as the closest distance between any major source or group of major sources of air toxic emissions at the facility and the property boundary of any of the receptor locations …." For calculation of the non-cancer acute score, the receptor "… can be at the facility fenceline to account for the short one-hour exposure duration …" and, to be conservative, "… the worst-case wind direction is used for the single receptor distance."

For this analysis, the development to the west of the facility was selected as the location of both the closest and closest in the worst-case downwind direction sensitive receptors, and the closest and closest in the worst-case downwind direction worker receptors (see Figure 2).

The smallest downwind distance in the RP tables is 50 meters; the worst-case downwind wind direction at this distance for the Mission Viejo MET station is 270 degrees (see Figure 3). As shown in Figure 3, it appears that a fenceline receptor is located 270 degrees downwind from and within 50 meters of one of the release points at AAA.

Receptor data is summarized in Table 3.

Table 3: Receptor Information

Receptor Type	Distance Basis	Downwind Distance (feet/meters)	Downwind Direction (Blowing to ; from North)
Sensitive	Closest	3,386/1,032	276 (~280)
Worker	Closest	3,386/1,032	276 (~280)
Sensitive	Closest in Worst-Case Downwind Direction	3,573/1,089	270

[4] SCAQMD provides for consideration of factors other than proximity. The SCAQMD website (http://www.aqmd.gov/home/air-quality/meteorological-data/modeling-guidance#MetData, Meteorological Data) states that "… Considerations for choosing a meteorological station includes the source's meteorological conditions (such as prevailing winds, mixing heights, etc.), terrain, surrounding land use and surface characteristics, and proximity …" and goes on to state that "… This means that the closest meteorological station to the source under review is not always the most representative meteorologically …"

Receptor Type	Distance Basis	Downwind Distance (feet/meters)	Downwind Direction (Blowing to ; from North)
Worker	Closest in Worst-Case Downwind Direction	3,573/1,089	270
Acute	Closest in Worst-Case Downwind Direction	135/41.2	270

Operating Schedule

The facility operating schedule was used to convert the annual emissions reported to the District to hourly emissions and to calculate a parameter known as the Worker Adjustment Factor (WAF). The PS Guidelines state that "… for facilities that operate less than 8 hours per day and 5 days per week, WAF is calculated based on an operating schedule of 8 hours per day and 5 days per week." A review of the District's engineering evaluations for some of the equipment at the facility showed operating schedules less than 8 hours per day and 5 days per week. The WAF was calculated from an operating schedule of 8 hours per day and 5 days per week. The facility was assumed to operate 52 weeks per year. This appears to be a reasonable assumption based on the District's engineering evaluations.

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Figure 1: Location of Nearest SCAQMD-Approved Meteorological Stations

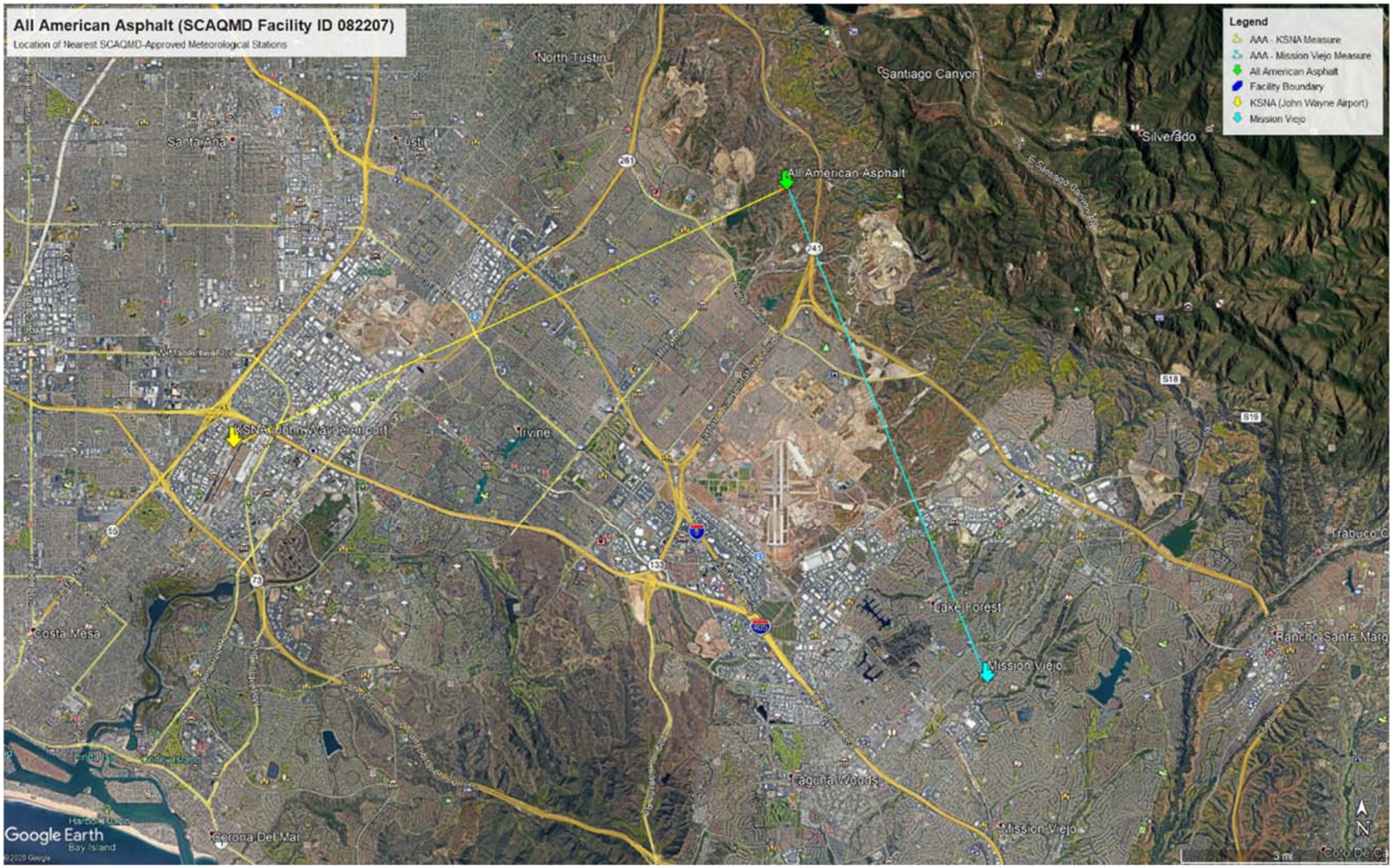

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Figure 2: Sensitive and Worker Receptors

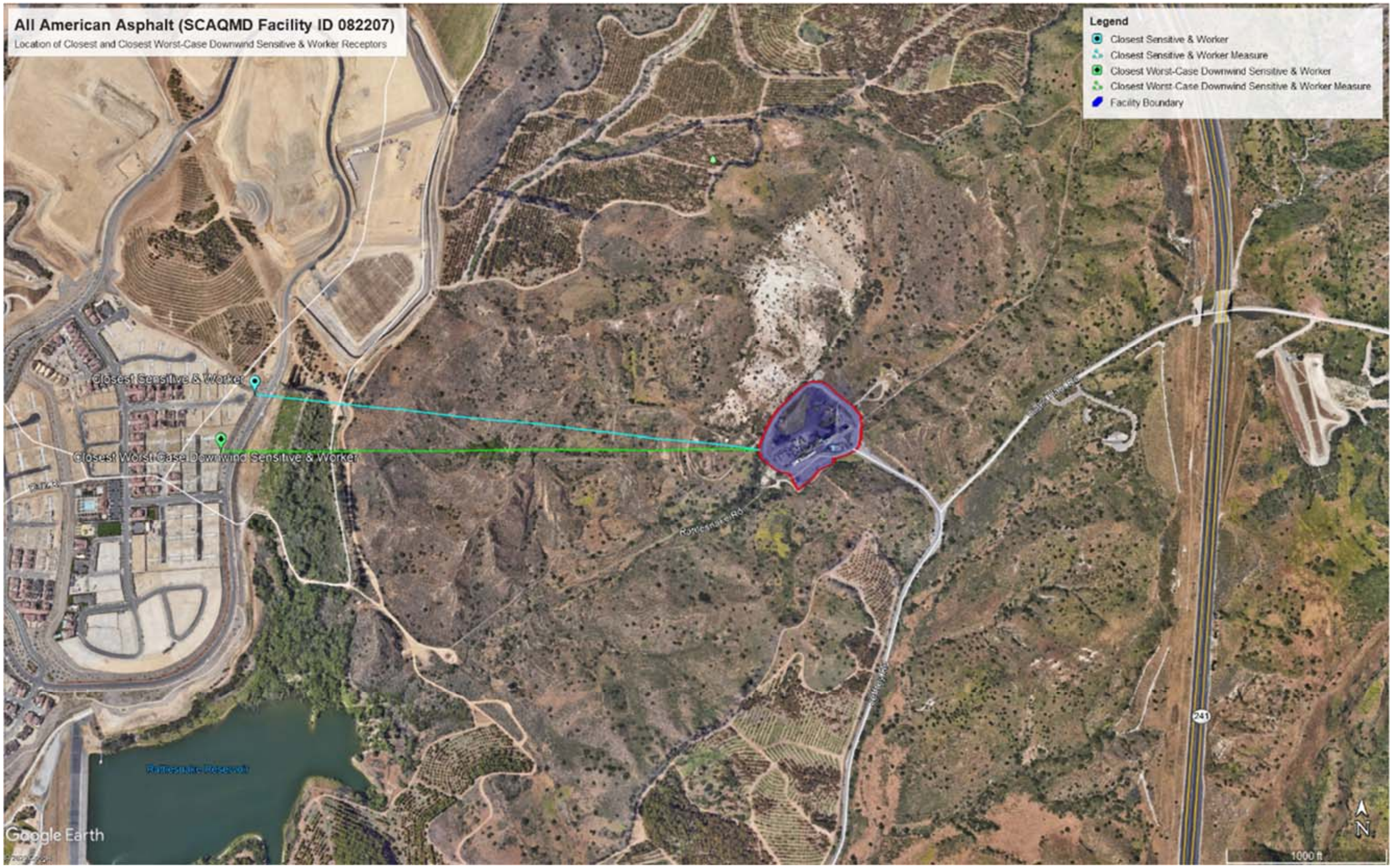

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Figure 3: Acute Receptor

SCREENING HEALTH RISK ASSESSMENT DISCUSSION

A full HRA involves four steps that aim at estimating the extent of cancer and non-cancer health effects associated with TAC emissions on both a population and specific receptor basis. The four major components of an HRA are:

- Hazard identification;
- Exposure assessment;
- Dose-response assessment; and
- Risk characterization.

The hazard identification involves the evaluation of all emissions sources to determine if particular toxic substances may cause health effects if released to the air.

The exposure assessment estimates the extent of public exposure to facility TAC emissions. Public exposure is quantified based on the predicted maximum short-term and long-term ground-level concentrations (GLCs) resulting from the TAC emissions, the exposure pathway(s), and the duration of exposure to those emissions. Air dispersion modeling is used to predict maximum short-term and long-term unitized concentrations for input into the risk assessment model.

Dose-response assessment is the process of characterizing the relationship between the exposure to a substance or emitted pollutant and the incidence of an adverse health effect in an exposed population. The Office of Environmental Health Hazard Assessment (OEHHA) has determined the parameters to be used in preparing HRAs.

Risk characterization, which is the final step in the risk assessment process, is the integration of the exposure and dose-response assessment for the emitted pollutants.

The SHRA essentially combines the hazard identification and exposure assessment steps. Rather than preparing an emissions inventory and performing dispersion modeling to estimate the GLC for a TAC at a specific location, the results of the ambient sampling are used directly in the RAST.

The RAST was used to conduct the dose-response assessment and risk characterization. The dose-response assessment is the relationship between pollutant exposure and potential incidence of an adverse health effect in the exposed populations. It is determined for each chemical using the most current OEHHA potency factors for cancer risk and Reference Exposure Levels (RELs) for acute and chronic non-cancer risks, which are incorporated into the RAST. Human doses were calculated for the modeled environmental exposures over specified time periods via multiple environmental pathways using the measured GLC. The risk characterization integrates the health effects and public exposure information and provides quantitative estimates of health risks resulting from exposure to the measured GLC.

The SHRA uses the exposure assumptions outlined in the SCAQMD's October 2020 *Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act*[5] (HRA Guidelines). The exposure assumptions are provided in Table 4.

Table 4: RAST Exposure Assumptions

Parameter	Assumptions				Comments
Multi-Pathway					
Inhalation	Res	☒	Work	☒	–
Soil	Res	☒	Work	☒	–
Dermal	Res	☒	Work	☒	"Warm" climate
Mother's Milk	Res	☒	Work	☐	–
Drinking Water	Res	☐	Work	☐	–
Fish	Res	☐	Work	☐	–
Homegrown Produce	Res	☒	Work	☐	Default for "Households that Garden"
Beef/Dairy	Res	☐	Work	☐	–
Pigs, Chickens, and/or Eggs	Res	☐	Work	☐	–
Deposition Velocity	0.02 m/s				–
Residential Cancer Risk Assumptions					
Exposure Duration	30 years				–
Fraction of Time at Home	Third Trimester to 16 years: Off 16 years to 30 years: On				–
Intake Scenario	RMP Using Derived Method				
Worker Cancer Risk Assumptions					
Exposure Duration	25 years				–
Intake Scenario	OEHHA Derived Method				8-hour breathing rates
Worker Adjustment Factor	4.2				8 hours per day, 5 days per week: (24/8) x (7/5)
Residential and Worker Non-Cancer Risk Assumptions					
Intake Scenario	OEHHA Derived Method				–

Ground-Level Concentrations

The approximate sampling locations are identified in Figure 4; the measured GLCs are reproduced in Table B.1. The GLCs used in the SHRA are provided in Table 5.

[5] https://www.aqmd.gov/docs/default-source/planning/risk-assessment/ab-2588-supplemental-guidelines.pdf?sfvrsn=19.

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Figure 4: Approximate Ambient Sampling Locations

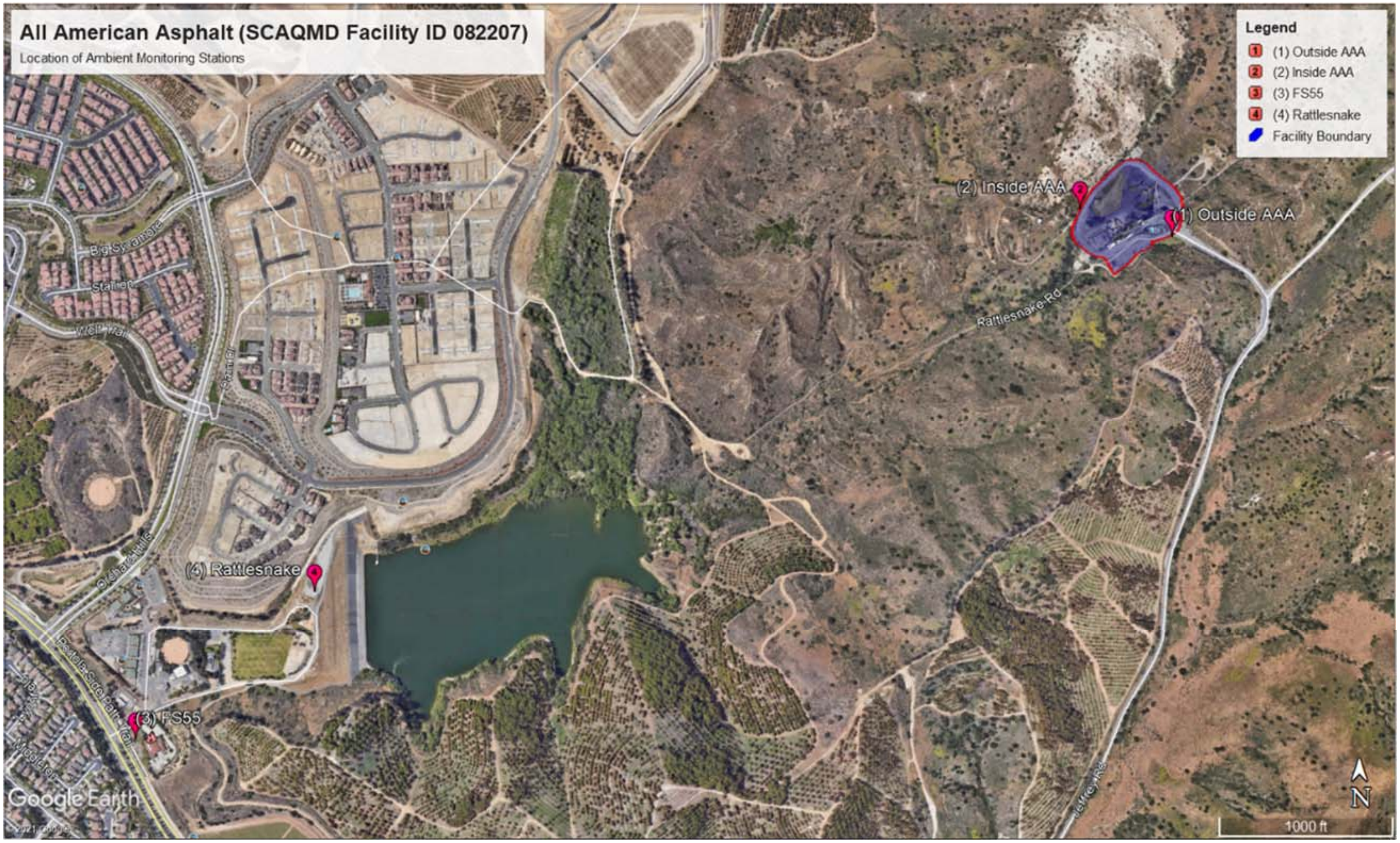

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Table 5: RAST Input

CAS Number	Chemical Name	Chemical Category	Ambient Sampling Location with Maximum Result	HARP2 Input [Annual] (µg/m³)[6]	HARP2 Input [1-Hour] (µg/m³)[7]
75-07-0	Acetaldehyde	Aldehydes	Inside AAA	3.4800	5.8000
67-64-1	Acetone	Aldehydes	Inside AAA	21.2000	35.3333
107-02-8	Acrolein	Aldehydes	Rattlesnake	0.0420	0.0700
4170-30-3	Crotonaldehyde	Aldehydes	Inside AAA	0.1820	0.3033
50-00-0	Formaldehyde	Aldehydes	Inside AAA	3.6600	6.1000
78-93-3	MEK & Butyraldehyde	Aldehydes	Inside AAA	2.2100	3.6833
123-38-6	Propionaldehyde	Aldehydes	Inside AAA	1.0600	1.7667
7429-90-5	Aluminum	Metals	Outside AAA	1.7000	2.8333
7440-39-3	Barium	Metals	Outside AAA	0.0490	0.0817
7440-50-8	Copper	Metals	FS55	0.3100	0.5167
7439-96-5	Manganese	Metals	Outside AAA	0.0400	0.0667
7440-02-0	Nickel	Metals	Outside AAA	0.0039	0.0065
7440-62-2	Vanadium	Metals	Outside AAA	0.0062	0.0103
7440-66-6	Zinc	Metals	Outside AAA	0.0790	0.1317
67-63-0	2-Propanol (IPA)	Other Organics	FS55	87.5076	145.8459
71-43-2	Benzene	Other Organics	Rattlesnake	5.0795	8.4659
74-83-9	Bromomethane	Other Organics	Inside AAA	3.9607	6.6011
74-87-3	Chloromethane	Other Organics	Inside AAA	1.8172	3.0287
67-56-1	Methanol	Other Organics	FS55	39.0508	65.0847
75-09-2	Methylene chloride	Other Organics	FS55	5.1757	8.6262

[6] The data from Table B.1 has been converted to µg/m³, as appropriate, using the following equations: (1) µg/m³ = mg/m³ x 1,000; (2) µg/m³ = ppbv x MW / 24.45; or (3) µg/m³ = ppmv x MW / 0.02445. The measured GLC is assumed to be representative of an annualized GLC.

[7] The 1-hour GLC has been calculated from the annual GLC using the following equation: 1-hour GLC = Annual GLC x (1 / scalar), where scalar = 0.6. This scalar value is generally used to convert a 1-hour value to a 24-hour value.

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CAS Number	Chemical Name	Chemical Category	Ambient Sampling Location with Maximum Result	HARP2 Input [Annual] ($\mu g/m^3$)[6]	HARP2 Input [1-Hour] ($\mu g/m^3$)[7]
108-88-3	Toluene	Other Organics	FS55	5.6151	9.3585
91-57-6	2-Methylnapthalene	PAH	Outside AAA	0.0160	0.0267
86-73-7	Fluorene	PAH	Outside AAA	0.0028	0.0047
91-20-3	Naphthalene	PAH	Outside AAA	0.0310	0.0517
85-01-8	Phenanthrene	PAH	Outside AAA	0.0047	0.0078
463-58-1	Carbonyl Sulfide (COS)	Sulfur Compounds	Rattlesnake	81.0828	135.1380

SHRA Results

The RAST output is provided in Tables 6 and 7. Additionally, since the RAST output is based on a composite of results from four different sampling locations, Figure 5 presents the contribution of results from each location to the totals shown in Table 6.

Table 6: RAST Output

Exposure Assumptions	Cancer Risk (in one million)	Non-Cancer Chronic Risk (dimensionless)	Non-Cancer Acute Risk (dimensionless)
Residential	436.43	9.36 Target Organ: Central Nervous System	–
Worker	152.41	9.36 Target Organ: Central Nervous System	–
N/A	–	–	0.35 Target Organ: Immune System

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Table 7: RAST Output by Source

		Residential Exposure Assumptions				Worker Exposure Assumptions					
CAS Number	Chemical Name	Cancer Risk	% of Total	Non-Cancer Chronic Risk	% of Total	Cancer Risk	% of Total	Non-Cancer Chronic Risk	% of Total	Non-Cancer Acute Risk	% of Total
75-07-0	Acetaldehyde	23.55	5.40%	–	–	8.22	5.40%	–	–	–	–
67-64-1	Acetone	–	–	–	–	–	–	–	–	–	–
107-02-8	Acrolein	–	–	–	–	–	–	–	–	–	–
4170-30-3	Crotonaldehyde	–	–	–	–	–	–	–	–	–	–
50-00-0	Formaldehyde	52.01	11.92%	–	–	18.16	11.92%	–	–	–	–
78-93-3	MEK & Butyraldehyde	–	–	–	–	–	–	–	–	–	–
123-38-6	Propionaldehyde	–	–	–	–	–	–	–	–	–	–
7429-90-5	Aluminum	–	–	–	–	–	–	–	–	–	–
7440-39-3	Barium	–	–	–	–	–	–	–	–	–	–
7440-50-8	Copper	–	–	–	–	–	–	–	–	–	–
7439-96-5	Manganese	–	–	0.4444	4.75%	–	–	0.4444	4.75%	–	–
7440-02-0	Nickel	2.40	0.55%	–	–	0.84	0.55%	–	–	0.0325	9.39%
7440-62-2	Vanadium	–	–	–	–	–	–	–	–	–	–
7440-66-6	Zinc	–	–	–	–	–	–	–	–	–	–
67-63-0	2-Propanol (IPA)	–	–	–	–	–	–	–	–	–	–
71-43-2	Benzene	343.70	78.75%	–	–	120.03	78.75%	–	–	0.3136	90.61%
74-83-9	Bromomethane	–	–	0.7921	8.47%	–	–	0.7921	8.47%	–	–
74-87-3	Chloromethane	–	–	–	–	–	–	–	–	–	–
67-56-1	Methanol	–	–	–	–	–	–	–	–	–	–
75-09-2	Methylene chloride	12.26	2.81%	0.0129	0.14%	4.28	2.81%	0.0129	0.14%	–	–
108-88-3	Toluene	–	–	–	–	–	–	–	–	–	–
91-57-6	2-Methylnapthalene	–	–	–	–	–	–	–	–	–	–

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		Residential Exposure Assumptions				Worker Exposure Assumptions					
CAS Number	**Chemical Name**	**Cancer Risk**	**% of Total**	**Non-Cancer Chronic Risk**	**% of Total**	**Cancer Risk**	**% of Total**	**Non-Cancer Chronic Risk**	**% of Total**	**Non-Cancer Acute Risk**	**% of Total**
86-73-7	Fluorene	–	–	–	–	–	–	–	–	–	–
91-20-3	Naphthalene	2.52	0.58%	–	–	0.88	0.58%	–	–	–	–
85-01-8	Phenanthrene	–	–	–	–	–	–	–	–	–	–
463-58-1	Carbonyl Sulfide (COS)	–	–	8.1083	86.65%	–	–	8.1083	86.65%	–	–

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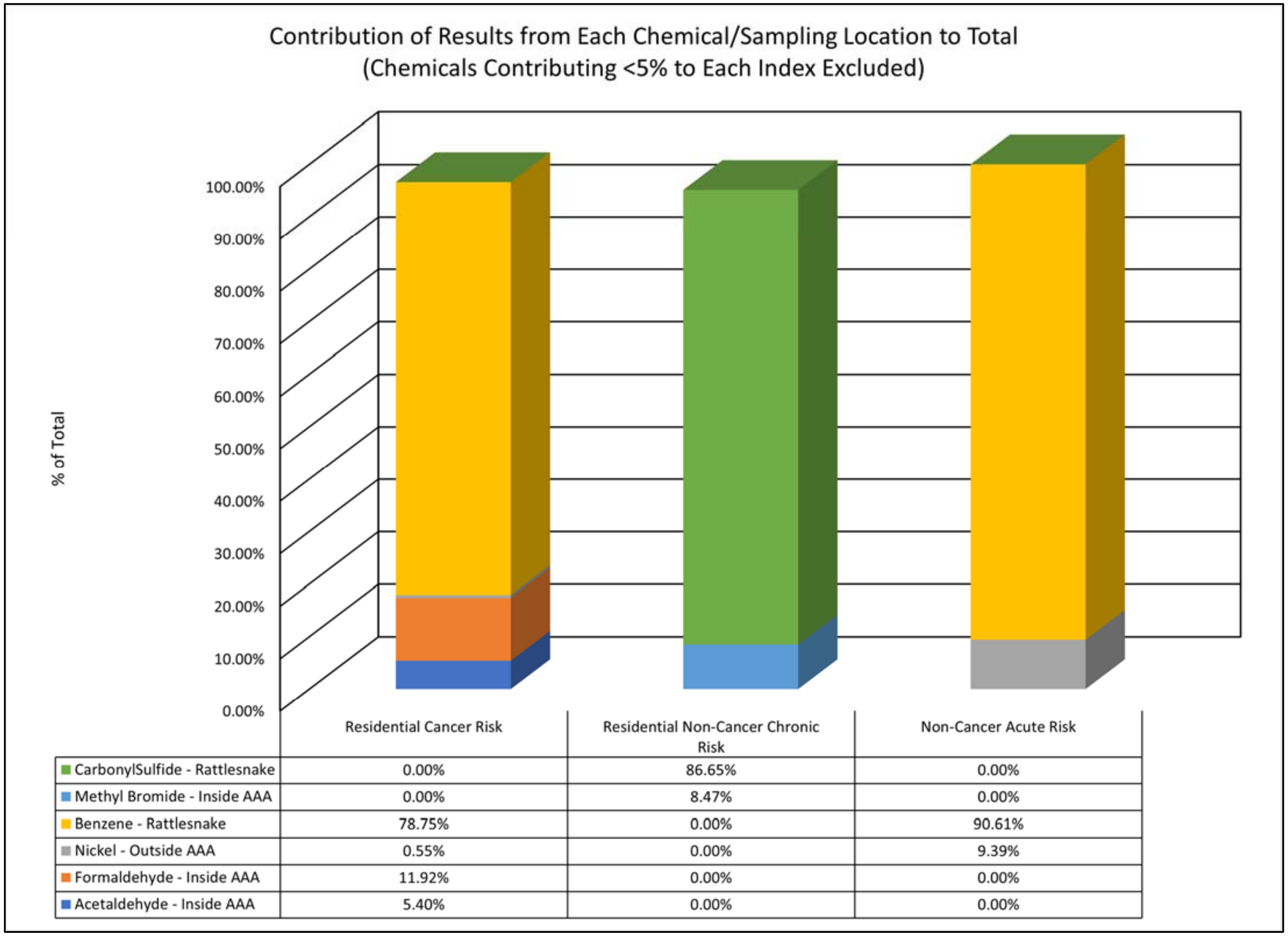
Figure 5: Contribution of Results from Each Sampling Location to Total



	Residential Cancer Risk	Residential Non-Cancer Chronic Risk	Non-Cancer Acute Risk
CarbonylSulfide - Rattlesnake	0.00%	86.65%	0.00%
Methyl Bromide - Inside AAA	0.00%	8.47%	0.00%
Benzene - Rattlesnake	78.75%	0.00%	90.61%
Nickel - Outside AAA	0.55%	0.00%	9.39%
Formaldehyde - Inside AAA	11.92%	0.00%	0.00%
Acetaldehyde - Inside AAA	5.40%	0.00%	0.00%

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CONCLUSION

Our review as presented in this Air Toxics Study of the emissions reporting and SHRA identified the following:

- A PS calculated from as-reported air toxics emissions for CY2017 and CY2018 may have been greater than 10. PAH emissions reported in these two years were reported in the aggregate rather than speciated, and therefore may have been overly conservative.
- Screening-level health risk based on ambient air monitoring indicates a cancer risk of 436 cases per million individuals, a non-cancer chronic hazard index of 9, and a non-cancer acute hazard index of 0.3. Data from the SCAQMD Multiple Air Toxics Exposure Study (MATES IV), which measures regional levels of air toxics, indicates that the background cancer risk in the vicinity of the AAA facility and surrounding area is around 400-500 cases per million. This is consistent with the screening cancer risk estimated based on measured air toxics, therefore it could not be concluded that a local air toxic hot spot exists based on the sampling results, either from the AAA facility or from another source.
- The vast majority (~80%) of the total cancer risk was contributed by the air monitoring results observed at the Rattlesnake Reservoir air monitoring station.
- The monitoring data collected near the facility boundary may include contributions from other local sources, such as vehicles traveling to and from the facility, and vehicles used within the facility. A facility HRA under the Air Toxics "Hot Spots" Program (AB2588) would not include tail pipe emissions from motor vehicles and therefore could yield much lower health impacts than estimated using sampling data.

Should you have any questions or concerns, please contact me at (949) 416-0963.

Sincerely,

James J. Adams
Senior Engineer
Yorke Engineering, LLC
JAdams@YorkeEngr.com

cc: Noam Duzman, Rutan Tucker, LLP
Keith Gilbert, Ninyo & Moore
Pete Carmichael, City of Irvine
Greg Wolffe, Yorke Engineering, LLC
Bipul Saraf, Yorke Engineering, LLC

Enclosures:

1. Attachment A – TAC Emissions
2. Attachment B – Measured GLC

ATTACHMENT A – TAC EMISSIONS

Table A.1: CY2015-19 TAC Emissions

CAS Number	Chemical Name	CY2015 Annual Emissions (lb/yr)	CY2016 Annual Emissions (lb/yr)	CY2017 Annual Emissions (lb/yr)	CY2018 Annual Emissions (lb/yr)	CY2019 Annual Emissions (lb/yr)	PAH (+/-)
71556	Methyl chloroform {1,1,1-Trichloroethane}				3.29E+01	3.58E+01	
95636	1,2,4-Trimethylbenzene		2.40E-01				
91576	2-Methyl naphthalene	2.02E+00	1.47E+00			5.84E+01	PAH(-)
83329	Acenaphthene	1.91E-01	1.39E-01			1.38E+00	PAH(-)
208968	Acenaphthylene	1.04E-02	7.57E-03			6.42E+00	PAH(-)
75070	Acetaldehyde		2.32E-01				
107028	Acrolein		1.83E-01				
120127	Anthracene	5.23E-02	3.00E-02			2.46E-01	PAH(-)
7440382	Arsenic	2.59E-02	1.80E-02	5.22E-01	5.24E-01	5.46E-01	
56553	Benz[a]anthracene	2.00E-02	1.40E-02			1.89E-01	PAH(+)
50328	Benzo[a]pyrene	5.33E-04	3.88E-04			7.00E-03	PAH(+)
205992	Benzo[b]fluoranthene	1.76E-03	1.28E-03			7.60E-02	PAH(+)
192972	Benzo[e]pyrene	4.45E-03	3.24E-03			6.00E-03	PAH(-)
191242	Benzo[g,h,i]perylene	4.40E-04	3.21E-04			3.00E-02	PAH(-)
207089	Benzo[k]fluoranthene	5.09E-04	3.71E-04			3.10E-02	PAH(+)
71432	Benzene	3.57E+00	2.50E+00	2.76E+02	2.72E+02	2.96E+02	
7440417	Beryllium			4.70E-02	4.49E-02	4.00E-02	
7440439	Cadmium	1.90E-02	1.30E-02	3.32E-01	3.26E-01	3.45E-01	
218019	Chrysene	8.22E-02	5.90E-02			2.65E-01	PAH(+)
18540299	Chromium, hexavalent (and compounds)	2.30E-02	1.60E-02	3.16E-01	3.11E-01	3.38E-01	
53703	Dibenz[a,h]anthracene	8.57E-05	6.25E-05			0.00E+00	PAH(+)
100414	Ethyl benzene		5.34E-01				
206440	Fluoranthene	5.33E-02	3.84E-02			5.42E-01	PAH(-)

CAS Number	Chemical Name	CY2015 Annual Emissions (lb/yr)	CY2016 Annual Emissions (lb/yr)	CY2017 Annual Emissions (lb/yr)	CY2018 Annual Emissions (lb/yr)	CY2019 Annual Emissions (lb/yr)	PAH (+/-)
86737	Fluorene	4.59E-01	3.30E-01			3.53E+00	PAH(-)
50000	Formaldehyde	4.23E+01	3.06E+01	1.81E+02	1.87E+02	2.02E+02	
110543	Hexane		3.40E-01				
193395	Indeno[1,2,3-cd]pyrene	1.09E-04	7.94E-05			5.00E-03	PAH(+)
7439921	Lead	2.87E-02	2.00E-02	5.67E-01	5.70E-01	5.95E-01	
7439965	Manganese		2.26E-01				
75092	Methylene chloride {Dichloromethane}	1.53E-02	1.10E-02	2.20E-02	2.56E-02	2.00E-03	
108383	m-Xylene		3.00E-01				
91203	Naphthalene	8.55E-01	6.33E-01	5.30E-02	5.15E-02	6.83E+01	PAH(+)
7664417	Ammonia	6.37E+02	5.74E+02	3.01E+03	2.89E+03	6.47E+02	
7440020	Nickel	2.94E+00	2.15E+00	1.72E-01	1.60E-01	1.62E-01	
1151	PAHs, total, w/o individ. components reported [Treated as B(a)P for HRA]	1.99E-02	1.70E-02	1.36E+02	1.37E+02	2.00E-02	PAH(+)
127184	Perchloroethylene {Tetrachloroethene}	1.50E-01	1.09E-01				
198550	Perylene	1.34E-02	9.79E-03			2.70E-02	PAH(-)
85018	Phenanthrene	6.88E-01	5.01E-01			6.77E+00	PAH(-)
129000	Pyrene	1.57E-01	1.14E-01			6.61E-01	PAH(-)
108883	Toluene		2.12E+00				
75694	Trichlorofluoromethane {Freon 11}	2.53E-02	1.80E-02				
1330207	Xylenes (mixed)		1.49E+00				

ATTACHMENT B – MEASURED GLC

Table B.1: Measured GLC[8]

CAS Number	Chemical Name	Chemical Category	Currently in HARP2?	Result Units	Outside AAA Result	Inside AAA Result	FS55 Result	Rattlesnake Result	MW
75-07-0	Acetaldehyde	Aldehydes	Yes	ppbv µg/m^3	8.07 No Sample	'– 3.48	12.8 1.30	18.8 1.49	44.05
67-64-1	Acetone	Aldehydes	Yes	ppbv µg/m^3	9.34 No Sample	6.46 21.2	9.42 5.44	13.0 8.48	58.08
107-02-8	Acrolein	Aldehydes	Yes	µg/m^3	No Sample	0.016	0.024	0.042	–
4170-30-3	Crotonaldehyde	Aldehydes	Yes	µg/m^3	No Sample	0.182	–	0.048	–
50-00-0	Formaldehyde	Aldehydes	Yes	µg/m^3	No Sample	3.66	0.465	0.649	–
78-93-3	MEK & Butyraldehyde	Aldehydes	Yes	µg/m^3	No Sample	2.21	0.597	0.786	–
123-38-6	Propionaldehyde	Aldehydes	Yes	µg/m^3	No Sample	1.06	0.374	0.335	–
100-52-7	Benzaldehyde	Aldehydes	No	µg/m^3	No Sample	0.469	0.127	0.155	–
66-25-1	Hexaldehyde	Aldehydes	No	µg/m^3	No Sample	0.361	0.115	0.168	–
78-85-3	Methacrolein	Aldehydes	No	µg/m^3	No Sample	0.776	0.133	0.159	–
620-23-5	m-Tolualdehyde	Aldehydes	No	µg/m^3	No Sample	0.105	0.049	0.056	–
110-62-3	Valeraldehyde	Aldehydes	No	µg/m^3	No Sample	0.556	0.187	0.295	–
7429-90-5	Aluminum	Metals	Yes	mg/m^3	0.0017	0.00096	0.00042	0.00043	–
7440-39-3	Barium	Metals	Yes	mg/m^3	0.000049	0.000038	0.000035	0.000048	–
7440-50-8	Copper	Metals	Yes	mg/m^3	0.00022	0.0002	0.00031	0.00017	–
7439-96-5	Manganese	Metals	Yes	mg/m^3	0.00004	0.00003	0.000012	0.000018	–
7440-02-0	Nickel	Metals	Yes	mg/m^3	0.0000039	–	–	–	–
7440-62-2	Vanadium	Metals	Yes	mg/m^3	0.0000062	0.0000037	–	–	–
7440-66-6	Zinc	Metals	Yes	mg/m^3	0.000079	0.000073	0.000061	0.000067	–

[8] '–' in a result field indicates a result below the detection limit. Acetaldehyde and acetone were tested using two test methods: EPA Method TO-15 (ppbv) and EPA Method TO-11 (µg/m^3). The results from the aldehyde test (Method TO-11) are assumed to better represent ambient concentrations of these two chemicals.

CAS Number	Chemical Name	Chemical Category	Currently in HARP2?	Result Units	Outside AAA Result	Inside AAA Result	FS55 Result	Rattlesnake Result	MW
7440-70-2	Calcium	Metals	No	mg/m^3	0.0019	0.0013	0.00078	0.0011	–
7439-89-6	Iron	Metals	No	mg/m^3	0.0025	0.0016	0.00074	0.001	–
7439-95-4	Magnesium	Metals	No	mg/m^3	0.00098	0.00057	0.00027	0.00031	–
7439-98-7	Molybdenum	Metals	No	mg/m^3	–	–	0.00001	–	–
7440-23-5	Sodium	Metals	No	mg/m^3	0.00078	0.00025	0.00081	0.0007	–
7440-32-6	Titanium	Metals	No	mg/m^3	0.00014	0.000083	0.000033	0.000044	–
67-63-0	2-Propanol (IPA)	Other Organics	Yes	ppbv	–	–	35.6	24.9	60.1
71-43-2	Benzene	Other Organics	Yes	ppbv	0.97	–	1.53	1.59	78.11
74-83-9	Bromomethane	Other Organics	Yes	ppbv	0.94	1.02	–	–	94.94
74-87-3	Chloromethane	Other Organics	Yes	ppbv	–	0.88	–	–	50.49
67-56-1	Methanol	Other Organics	Yes	ppbv	10.8	10.5	29.8	12.9	32.04
75-09-2	Methylene chloride	Other Organics	Yes	ppbv	–	–	1.49	–	84.93
108-88-3	Toluene	Other Organics	Yes	ppbv	–	–	1.49	0.86	92.14
64-17-5	Ethanol	Other Organics	No	ppbv	14	11.5	106	95.69	–
141-78-6	Ethyl Acetate	Other Organics	No	ppbv	–	–	0.91	–	–
91-57-6	2-Methylnapthalene	PAH	Yes	$\mu g/m^3$	0.016	0.011	0.0068	0.0073	–
86-73-7	Fluorene	PAH	Yes	$\mu g/m^3$	0.0028	–	–	–	–
91-20-3	Naphthalene	PAH	Yes	$\mu g/m^3$	0.031	0.015	0.016	0.017	–
85-01-8	Phenanthrene	PAH	Yes	$\mu g/m^3$	0.0047	–	–	–	–
463-58-1	Carbonyl Sulfide (COS)	Sulfur Compounds	Yes	ppmv	–	–	0.03	0.033	60.075

ATTACHMENT 2 – SCAQMD COMMENT LETTER

SCREENING HEALTH RISK ASSESSMENT (SHRA) AND AIR TOXICS PRIORITIZATION SCORE FOR ALL AMERICAN ASPHALT (FACILITY ID 082207), SCAQMD

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
South Coast AQMD (909) 396-2000 • www.aqmd.gov

Via Email and Certified Mail, return receipt requested -

August 13, 2021

Pete Carmichael
City of Irvine
Director, Community Development
1 Civic Center Plaza
Irvine, CA 92606

Subject: Screening Health Risk Assessment (SHRA) and Air Toxics Prioritization Score for All American Asphalt (Facility ID 082207)

Dear Mr. Carmichael:

Thank you for providing the "Screening Health Risk Assessment (SHRA) and Air Toxics Prioritization Score All American Asphalt (SCAQMD Facility ID 082207)" document dated June 22, 2021. Following our review, we held an online meeting with City of Irvine staff and consultants on July 14, 2021 to discuss the document. During this meeting, South Coast AQMD staff conveyed our initial thoughts on the document.

The document provided to us is comprised of two main parts: priority score calculations based on emissions reported by All American Asphalt in Irvine (AAA Irvine) to South Coast AQMD, and a "screening health risk assessment" based on limited monitoring data. Our overall conclusion is that the screening analysis should not be used to determine the potential impacts from the AAA Irvine facility on the surrounding community.

First, the priority score calculated in the SHRA report is based on emissions reported annually to South Coast AQMD using approved screening level estimates with 'default' emission factors. South Coast AQMD has already required the facility to prepare a more robust Air Toxics Inventory Report using site-specific source tests. This more comprehensive analysis is expected to provide a more reliable estimate of potential impacts of the facility on the community.

Second, the air monitoring data used in this report shows pollutant levels that do not correspond to levels found in other more comprehensive studies, either regionally or locally. This may in part be due to the limited nature of the air sampling, and variation is expected from longer term studies. In addition, no analysis was conducted in this report to determine whether the pollutant levels found in these samples could be correlated with emissions from the AAA Irvine facility.

Detailed comments are provided as an attachment to this letter. We look forward to continuing to work with the City and other stakeholders on this issue.

Sincerely,

Victoria Moaveni
Program Supervisor, AB 2588 Program
Planning, Rule Development, Area Sources

ATTACHMENT

Emissions Reporting for AAA Irvine and Prioritization Scores

The reported emissions from the AAA Irvine facility for calendar year 2015 through 2019 are presented in the SHRA. As noted in the document, detailed reporting of toxic air contaminants is required through quadrennial reporting under the AB 2588 program, which supplements more abbreviated annual emissions reporting required by South Coast AQMD Rule 301. For the range of reporting years for this facility, the quadrennial reporting year is 2016. In general, it is not appropriate to calculate a priority score for an annual reporting year and compare it with a priority score from a quadrennial reporting year as the AB 2588 program requires more toxic air contaminants to be reported. The priority scores calculated using quadrennial emission reports tend to be higher than non-quadrennial years.

The SHRA notes "inconsistent reporting of PAH compounds, which were reported as both a group of compounds as well as the 18 individual compound species during the 5-year period reviewed". South Coast AQMD staff noted this and other reporting inconsistencies during our audit of the facility's submitted emission reports, which led us to require the facility to prepare and submit a more detailed Air Toxics Inventory Report for the AB 2588 Program.[1] Those annual and quadrennial emission reports submitted by the facility relied on commonly used and approved 'default' emission factors.[2] For the AAA Irvine facility, South Coast AQMD is requiring the facility to conduct two site-specific source tests: one at the asphalt rotary dryer and another for the crumb rubber process. The tests at the facility have been completed[3] and the results will be used to obtain an accurate Air Toxics Inventory Report for the facility. Following standard practice, once the Air Toxics Inventory Report is approved, South Coast AQMD will work with the facility to amend the previous annual and quadrennial emissions reports. The prioritization score will be recalculated for the facility to determine if a health risk assessment is required under South Coast AQMD Rule 1402.

AB 2588 Health Risk Assessments

AB 2588 is a key statewide program implemented by local air districts to address health risks from air emissions associated with existing permitted facilities. The AB 2588 program provides the public with information regarding potential health effects from toxic air contaminants emitted from existing permitted facilities, and sets forth a framework of escalating requirements for these facilities depending on their potential level of toxics risk.[4] South Coast AQMD implements AB 2588 requirements through its Rule 1402, which includes additional requirements beyond the state law, including a program to encourage facilities to voluntarily reduce risk, and to compel high risk facilities to reduce toxic emissions more quickly than state law requires.

An AB 2588 health risk assessment is a technical study that evaluates how toxic air contaminants are released from a facility, how they disperse throughout the community, and the potential for those toxic air contaminants to impact human health. This process focuses the analysis on a single facility's emissions, and its potential to impact the health risk of nearby communities. The AB 2588 Program relies on U.S. EPA-approved computer modeling methods to use the emissions from a facility to calculate the potential concentration of toxic air contaminants in the surrounding community. Following requirements from the state Office of Environmental Health Hazard Assessment, two different time periods are needed: an annual average and a maximum one-hour. The annual average concentration is used to evaluate the potential cancer and non-cancer chronic health risk for persons residing or working in certain areas. The hourly maximum concentration is used to evaluate the potential short-term acute health risk. Following are two options to obtain toxic air contaminant concentrations in the community.

Air monitoring

Air monitoring using standard instrumentation and approved methods is a useful tool to determine the concentration of pollutants in a community for the period when the monitors are in place. As an example, South Coast AQMD recently completed its fifth Multiple Air Toxics Exposure Study (MATES V) that uses repeated long-term monitoring campaigns to determine how toxic pollutant levels are changing across the region.[5] In addition, smaller scale and more

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[1] http://www.aqmd.gov/home/news-events/community-investigations/AAA-ab2588

[2] In the case of the rotary dryer, the primary source of emissions, the default emission factor used by the facility comes from US EPA's widely cited AP-42 guidance.

[3] Test results of the crumb rubber process have been submitted to South Coast AQMD and have been reviewed and approved; the rotary dryer results have not yet been submitted and will also need to be reviewed and approved before they can be used in the ATIR.

[4] Note that the AB 2588 process does not evaluate the impact of odors.

[5] http://www.aqmd.gov/home/air-quality/air-quality-studies/health-studies/mates-v

short-term monitoring campaigns are commonly used to determine pollutant levels in specific communities, as in the case of the community near the AAA Irvine facility.[6]

Nevertheless, there are certain disadvantages to using ambient monitoring for health risk assessments. As stated in the Office of Environmental Health Hazard Assessment's *Guidance Manual for Preparation of Health Risk Assessments*, "Ambient air monitoring is costly because good estimates of an annual average concentration typically require monitoring at least one day in six over a year. Because it is costly, monitoring is usually limited to a select number of pollutants, and a limited number of sites. There can be significant risks from some chemicals at or even below the monitoring detection limit, which can add considerable uncertainty to risk estimates if many of the measurements are below or near the detection limit. Monitoring measures not only facility emissions but also general ambient background as well. It can be difficult and expensive to distinguish between the two using monitoring, particularly if general ambient background levels are high relative to the contribution of facility emissions."[7]

Dispersion Modeling

Because of the limitations of using ambient monitoring, air dispersion modeling is prescribed for health risk assessments submitted under the AB 2588 Program. To perform air dispersion modeling, the facility's emissions must be accurately quantified in the form of an Air Toxics Inventory Report. The model incorporates site specific release parameters for the facility, along with community characteristics, including the terrain, meteorology, location of residences and other sensitive land uses, etc. Using all of these inputs, air dispersion modeling allows the prediction of concentrations of pollutants at many different locations or receptors, which is essential since a health risk assessment prepared for the AB 2588 Program must incorporate different health risk exposure estimates for different receptor types. For example, the general assumption for a residential receptor is for an extended exposure duration of 30 years including exposures to children, while for worker receptors are assumed to be adults exposed for a typical work schedule over 25 years.

SHRA Prepared for the City

The SHRA incorporates limited monitoring data to estimate health risks. Because the monitoring data was taken over a short time period, it is unclear if this data is representative of typical lifetime exposures in the community. Furthermore, no correlation is made between the monitoring data/health risk to the AAA Irvine facility.

Air Monitoring Data in SHRA

Only four locations were selected for monitoring: two of the locations were inside and outside the facility boundary, another taken at Fire Station 55, and one near the western boundary of Rattlesnake Reservoir. The Fire Station 55 location is likely prone to bias for some pollutants like benzene due to its proximity to Portola Parkway, which is subject to high vehicle traffic.[8] As described above, four locations sampled over a short period would not be sufficient for purposes of a health risk assessment under the AB 2588 Program, and cannot be used to determine the potential level of air toxics health risk from the AAA Irvine facility. The SHRA instead evaluates the potential health risk (using limited data) from all sources at the location of the monitors.

Heath Risk Estimates in SHRA

Heath risk estimates in the SHRA were calculated using a program (RAST) developed by the California Air Resources Board for AB 2588 health risk assessments, while using standard South Coast AQMD exposure assumptions. However, the health risks presented in the SHRA are based solely on the dataset described above, with all of the accompanying limitations. The SHRA also presents a single composite health risk results from the four sampling locations. Using different concentrations from different receptors to estimate residential health risk is not appropriate in the context of an AB 2588 health risk assessment. We also note that all of the monitoring locations are located close to sources that would be expected to influence monitored levels and may not reflect exposures in the community. Therefore, the risks calculated may provide an overestimate of risks in the community, and do not reflect risks solely attributable to the AAA Irvine facility.

The resulting cancer risk presented in the SHRA is 436 chances in-one-million. This screening calculation is higher than South Coast AQMD's recent MATES V results, where cancer risk was calculated for 2018 as approximately 367 and 388 chances in-one-million for ZIP codes 92602 and 92620, respectively. However, the method and process in

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[6] http://www.aqmd.gov/home/news-events/community-investigations/air-sampling-initiative

[7] https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf. See Section 4.1.

[8] For example, the primary source of benzene in our region is mobile sources, like cars and trucks, comprising more than 80% of total emissions (see MATES V, appendix VIII). Portola Parkway may have up to 19,000 vehicles per day traveling on it (https://www.octa.net/pdf/2019-ADT.pdf).

reaching those conclusions are very different. Nearly 80% of the cancer risk for the SHRA is based on a single benzene sample result at Rattlesnake Reservoir, while the MATES V study includes long term measurements of a broad list of toxic air contaminants at multiple locations, as well as a modeling analysis of all emissions sources in the air basin and their impact on all communities. The benzene concentration from this one sample (1.59 ppb) is much higher than the range of benzene concentrations measured by South Coast AQMD for MATES V across the air basin (~0.2 – 0.4 ppb at a 95th percentile confidence interval),[9] or the range of benzene measured by South Coast AQMD at nearby locations as part of its All American Asphalt Air Sampling Initiative (all samples <0.4 ppb). [10]

The chronic health risk presented in the SHRA is driven largely by the single sample for carbonyl sulfide at Rattlesnake Reservoir. The Fire Station 55 result is also very similar, while sample results taken inside and outside the facility boundary were below the detection limit, indicating that AAA is not the source of carbonyl sulfide detected in the other monitors. In addition, the concentration for carbonyl sulfide in the SHRA was based on a concentration that is a combination of both carbonyl sulfide and sulfur dioxide, not solely carbonyl sulfide. There are different health risk values associated with sulfur dioxide than carbonyl sulfide. Finally, there are many different sources for both benzene and carbonyl sulfide, including natural sources and vehicular emissions, so these sample results may not have any correlation to the facility.

[9] MATES V, appendix V

[10] Sampled benzene result is 1.59 ppb at Rattlesnake Reservoir compared to a range of 0.03 to 0.3 ppb measured by South Coast AQMD with the average concentration around 0.11 ppb.
See http://www.aqmd.gov/home/news-events/community-investigations/air-sampling-initiative