



HEALTH RISK ASSESSMENT FOR MAGNOLIA CROSSING II CITY OF RIVERSIDE, RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

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CERTIFICATION STATEMENT

I, Dale Schneeberger, certify that I am currently a California State-licensed Professional Geologist (PG) and that this Health Risk Assessment was prepared in accordance with standard environmental and geologic practice by the licensed professional(s) whose signature and seal appear below. This study has been performed in a professional manner in accordance with generally accepted practices, using the degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, either expressed or implied, is made.

March 27, 2024

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SECTION 1. Project Description and Summary

1.1. Introduction

HANA Resources, Inc. (HANA) was retained by Warmington Residential California to prepare an updated Health Risk Assessment Report for the proposed Magnolia Crossing II Project (Project). This study analyzes the potential health risk impacts of the proposed development Project located near the intersection of 91 freeway and Van Buren Street in the City of Riverside, Riverside County, California. The purpose of this study is to analyze the project's health impacts resulting from toxic air contaminants related to both temporary construction activity and long-term operation of the Project.

1.2. Project Summary

1.2.1. Location and Setting

The Project covers 6.44 acres in the City of Riverside, Riverside County, CA (**Exhibit I**, *Project Vicinity Map*). The project is located near the intersection of 91 freeway and Van Buren Street and is on the APNs 234-140-018, 234-140-019 and 234-150-046 (**Exhibit II**, *Project Location Map*). The project site is located on the United States Geological Survey (USGS) Riverside West Quadrangle, 7.5-Minute Topographic map. The surface elevation of the site ranges from approximately 798 to 813 feet above mean sea level (MSL). The project area is located within Section 18 in Township 3 South-Range 5 West, San Bernardino Meridian.

1.2.2. Proposed Project

The proposed Project is for the multi-family development project at 3510 Van Buren Blvd. The project is in line with the General Plan Land Use Designation of the MU-V-SP-Mixed Use-Village and Specific Plan (Magnolia Avenue) Overlay Zone. The proposed Project is planned at 23.14 du/ac, consistent with the general plan and zoning allowed under MU-V-SP. A part of the site has a General Plan designation of MDR (parcel 3), however the site will be involved in a Density Bonus agreement for the proposed below-market-rate housing that is planned on-site. No homes are planned on Parcel 3 (3469 Myers Street), and it is only included to allow a secondary access point. The discretionary and ministerial components of the Project will allow the property owner, Warmington Residential, establishment of a Mixed-Use development on the property (Exhibit III, Concept Plan Map).

The Mixed-Use Development will have the following:

- 23 three-story buildings that include 149 units,
- 331 parking spaces (298 garage spaces (two per household) and 33 guest spaces),
- 280,431 square feet lot area,
- 240,723 square feet floor area,
- 80,129 square feet of common open space, and
- 24,774 square feet of private open space.

Identified necessary improvements for the proposed Project include removing the existing structures and trees, moderate grading operation, construction of retaining walls, wet/dry utilities, street work, landscaping, and flatwork.



Exhibit I: Project Vicinity Map

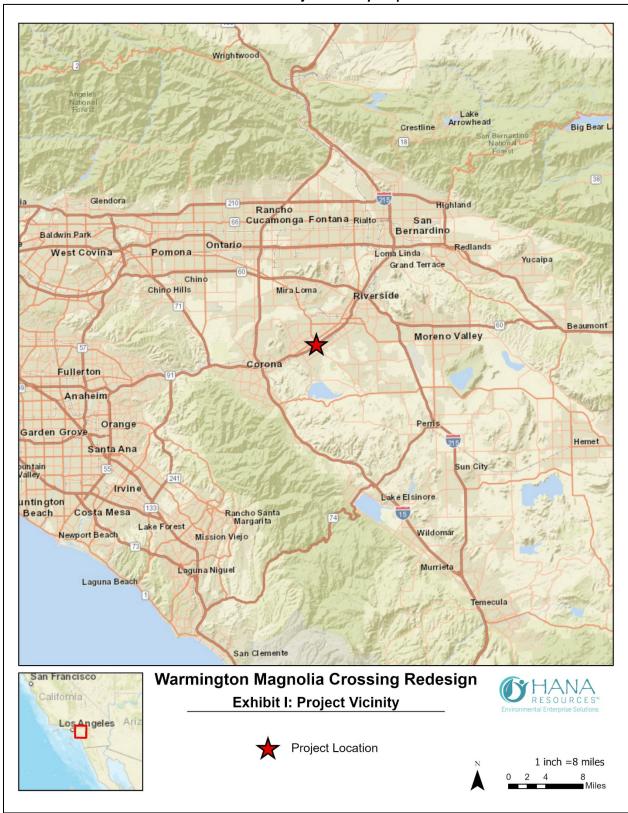




Exhibit II: Project Location Map

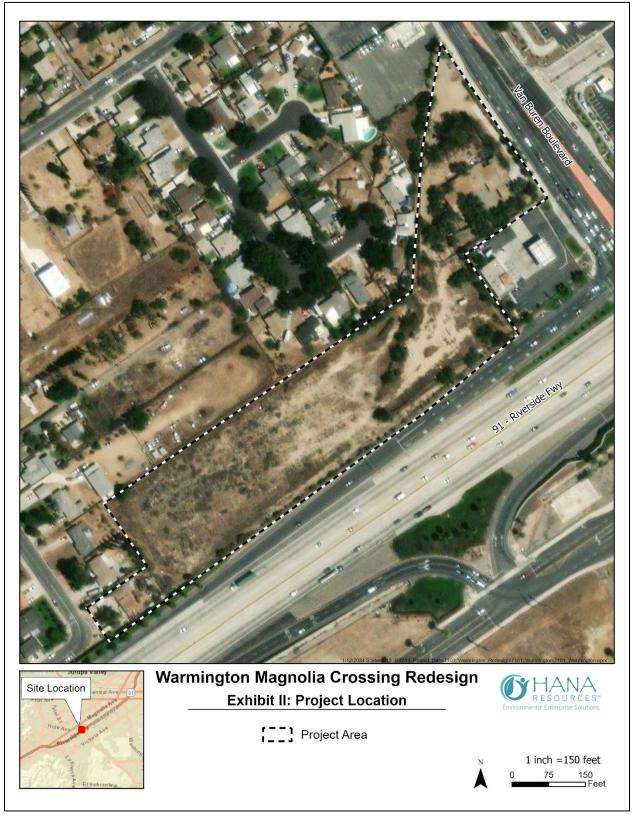




Exhibit III: Site Plan Map





SECTION 2. Air Quality Background

2.1. Local Climate and Meteorology

Much of the air quality background and regulatory information is taken from the Gas Station Health Risk Assessment for Magnolia Crossings Commercial Development Project prepared by Rincon (2020) for the project located immediately northeast of this Project (Magnolia Crossing II) across Van Buren Boulevard. The was done to maintain parody between the two project documents given their close proximity. Changes, additions, or deletions were made as appropriate.

The project site is in the South Coast Air Basin (SCAB), which is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east, and includes all of Orange County and the non-desert portions of Los Angeles, Riverside, and San Bernardino Counties, in addition to the San Gorgonio Pass area in Riverside County. The regional climate in the SCAB is semi-arid and is characterized by warm summers, mild winters, infrequent seasonal rainfall, moderate daytime onshore breezes, and moderate humidity. Air quality in the SCAB is primarily influenced by meteorology and a wide range of emissions sources, such as dense population centers, substantial vehicular traffic, and industry.

Stationary and mobile sources are the primary sources of air pollutant emissions in the SCAB. Stationary sources can be divided into two major subcategories: point and area sources. Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat. Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products. Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. Onroad sources may be legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, and self-propelled construction equipment. The natural environment can also generate air pollutants, such as when high winds suspend fine dust particles.

2.2. Toxic Air Contaminants

A toxic air contaminant (TAC) is an air pollutant that may cause or contribute to an increase in mortality or serious illness or which may pose a present or potential hazard to human health. TACs may result in long-term health effects such as cancer, birth defects, neurological damage, asthma, or genetic damage, or short-term acute effects such as eye watering, respiratory irritation, runny nose, throat pain, and headaches. TACs are considered either carcinogenic or non-carcinogenic based on the nature of the health effects associated with exposure. For carcinogenic TACs, potential health impacts are evaluated in terms of overall relative risk expressed as excess cancer cases per one million exposed individuals. Non-carcinogenic TACs differ in that there is generally assumed to be a safe level of exposure below which no negative health impact is believed to occur. These levels are determined on a pollutant-by-pollutant basis.

TACs include both organic and inorganic chemical substances. One of the main sources of TACs in California is diesel engines that emit exhaust containing solid material known as diesel particulate matter; however, TACs may be emitted from a variety of common sources, including gasoline stations, motor vehicles, dry cleaners, industrial operations, painting operations, and research and teaching facilities.



TACs commonly associated with gasoline dispensing stations include the organic compounds of benzene, toluene, and xylene. In particular, benzene is a known human carcinogen and can result in short-term acute and long-term chronic health impacts (United States Environmental Protection Agency [U.S. EPA] n.d.). Between 1990 and 2005, benzene in California's air was reduced by over 75 percent due to implementation of control technologies, such as vapor recovery systems, and reductions of benzene levels in gasoline (CARB 2005). Today, gasoline dispensing facilities account for a relatively small fraction of total benzene emissions. However, near source exposure resulting from gasoline dispensing facilities, particularly very high throughput retail or wholesale facilities, can result in elevated health risks to nearby sensitive receptors.

2.3. Air Quality Regulation

Federal and state governments have established ambient air quality standards for the protection of public health. The U.S. EPA is the federal agency designated to administer air quality regulation, while the CARB is the state equivalent in the California Environmental Protection Agency (CalEPA). County-level Air Quality Management Districts (AQMDs) provide local management of air quality. The CARB has established air quality standards and is responsible for the control of mobile emission sources, while the local AQMDs are responsible for enforcing standards and regulating stationary sources. The SCAQMD is the designated air quality control agency in the SCAB.

2.3.1. Toxic Air Contaminants

In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health (Assembly Bill [AB] 1807: Health and Safety Code Sections 39650–39674). The Legislature established a two-step process to address the potential health effects from TACs. The first step is the risk assessment (or identification) phase. The second step is the risk management (or control) phase of the process.

The California Air Toxics Program establishes the process for the identification and control of TACs and includes provisions to make the public aware of significant toxic exposures and for reducing risk. Additionally, the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, 1987, Connelly Bill) was enacted in 1987 and requires stationary sources to report the types and quantities of certain substances routinely released into the air. The goals of the Air Toxics "Hot Spots" Act are to collect emission data, identify facilities having localized impacts, ascertain health risks, notify nearby residents of significant risks, and reduce those significant risks to acceptable levels. The Children's Environmental Health Protection Act, California Senate Bill 25 (Chapter 731, Escutia, Statutes of 1999), focuses on children's exposure to air pollutants. The act requires CARB to review its air quality standards from a children's health perspective, evaluate the statewide air quality monitoring network, and develop any additional air toxic control measures needed to protect children's health.

The SCAQMD regulates TAC emissions in the SCAB. SCAQMD's Rule 1401, New Source Review of Toxic Air Contaminants, establishes limits for maximum individual cancer risk, cancer burden, and non-cancer acute and chronic hazard indices from new permit units, relocations, or modifications to existing permit units emitting various TACs. Benzene, including benzene from gasoline, is included on SCAQMD's list of TACs subject to cancer risk and non-cancer hazard index limits.



2.4. Sensitive Receptors

SCAQMD Risk Assessment Procedures define receptors as any location outside the boundaries of a facility at which a person could experience repeated, continuous exposure. The procedures further note that sensitive receptors include any residence (e.g., private homes, condominiums, apartments, and living quarters), schools (including preschools and daycare centers), health facilities (e.g., hospitals, retirement and nursing homes, long-term care hospitals, hospices), as well as prisons, dormitories, or similar live-in housing where children, chronically ill individuals, or other sensitive persons could be exposed to TACs (SCAQMD 2017). Sensitive receptors in the vicinity of the project site include residences immediately southwest, west, northwest, and north of the Project site. SCAQMD Risk Assessment Procedures also recommend assessment of potential health risks at nearby occupational receptors.

The proposed Project as currently designed does not include the use or handling of any hazardous materials such as would be expected at dry cleaning establishments, petroleum fueling station (gasoline and diesel), automotive repair facility, and/or other commercial or industrial activities that routinely use or store hazardous materials. Typical potentially hazardous materials to be used at the Project site would include those associated with household or commercial cleaning agents, paints, and other architectural coatings. These are normally acquired/purchased without the need for regulatory agency permits and/or documentation and are typically considered over-the-counter materials. Paints and other architectural coatings would be applied during construction and are addressed in the Air Quality/Greenhouse Gas analysis. Routine maintenance (e.g., interior/exterior maintenance painting, exterior repairs, etc.) is also included in the Air Quality/Greenhouse Gas analysis but too infrequent to pose any significant environmental hazard.

Development of the property northeast of the Project across Van Buren Boulevard includes a fuel dispensing facility (gas station). The potential health risk impacts associated with this activity have been addressed in the Gas Station Health Risk Assessment prepared by Rincon Consultants, Inc. (Rincon 2020). The results of this assessment are taken from the report and described below in Section 3. The references cited from their report are included in Section 5 References of this document for ease of reference by the reader but have not been validated for accuracy or appropriateness to their study.

A review of the State Water Resources Control Board GeoTracker website provides additional information regarding nearby service stations as follows:

- A fuel dispensing station, Chevron Station #9-4702, is located at the northeast corner of the
 proposed Project area, at the intersection of the Riverside Freeway (91) and Van Buren Boulevard.
 A leak under a fuel dispenser was discovered and addressed. A fuel dispenser was removed and
 replaced, and the case was closed. A closure letter was issued by the County of Riverside
 Department of Environmental Health dated April 12, 1999.
- Across Van Buren Boulevard to the east of Chevron Station #9-4702 was a former Texaco Service Station at the intersection of Van Buren Boulevard and the offramp of the Riverside Freeway (91). The facility was decommissioned, and all facility equipment and structures were removed. A release of fuel hydrocarbons was discovered during abandonment activities, the site was remediated, and a closure letter was issued by the County of Riverside Department of Environmental Health dated June 17, 2003. The site is now occupied by a small shopping center and fast-food restaurants (Magnolia Crossings).



The proposed Project's southeastern boundary is situated along the Riverside Freeway (91). Other residential and commercial developments are similarly situated on both sides along this corridor to the northeast and southwest of the proposed Project. Emissions from this freeway include combustion gases from gasoline and diesel fueled vehicles. Of potential concern is the diesel exhaust particles that are emitted from the exhaust pipes of the diesel trucks as they travel by the proposed Project. These particles can be very small in size, typically ranging from between 1- and 3-microns (DieselNet, 2002).

Since the proposed Project is an infill project, it would not experience any significant increase in these emissions as compared to the surrounding developments. However, the California Air Resources Board (CARB) has developed a *Technical Advisory* that identifies effective strategies that can be implemented to reduce exposure to near-roadway pollution at infill development to help protect public health. One such feasible strategy to remove pollution from the indoor air space that could be incorporated into the Project design would be to utilize indoor high efficiency filtration. Studies show that particle filtration systems and devices, specifically high-efficiency filtration with mechanical ventilation or portable high efficiency air cleaners, can be highly effective for reducing indoor pollution concentrations. High efficiency filters in ventilation systems can remove 50-99 percent of particles in the air (Technical Advisory, 2017).



SECTION 3. Impact Analysis

3.1. Methodology

Rincon incorporated the Hotspots Analysis and Reporting Program (HARP 2) model to evaluate the potential impacts of TACs emitted during operation of the proposed gas station (Rincon 2020). Potential health risks to nearby sensitive receptors from the emission of TACs during operations at the proposed gasoline fueling facility were analyzed in accordance with the SCAQMD's *Risk Assessment Procedures for Rules 1401, 1401.1 and 212* (SCAQMD 2017), CAPCOA's *Gasoline Service Station Industrywide Risk Assessment Guidelines* (CAPCOA 1997 and ARB CAPCOA 2022), and the OEHHA *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments* (OEHHA 2015).

According to the SCAQMD's Risk Assessment Procedures, benzene, naphthalene, and ethylbenzene are the only TACs with cancer toxicity values from gasoline dispensing facilities, with benzene accounting for nearly 85 percent of cancer risk from gasoline (Rincon 2020). As noted in the Rincon report, the SCAQMD Risk Assessment Procedures conclude that chronic and acute non-cancer health effects do not need to be calculated for gasoline dispensing facilities (SCAQMD 2017). Consequently, Rincon's risk analysis only evaluated cancer risk associated with exposure to benzene, ethylbenzene, and naphthalene emissions.

Under the maximum permitted cancer risk of 10 in one million, maximum acute and chronic hazard indices are much lower than SCAQMD's acute and chronic threshold of 1.0. While the gas station may include diesel fueling, benzene concentrations in diesel fuel are on the order of 0.02 percent by volume (International Agency on Research for Cancer 1989). As a result, benzene emissions from diesel fuel vapors are not substantial, and this source is not considered in this analysis (Rincon 2020).

3.1.1. Air Dispersion Modeling

Air dispersion modeling (HARP 2) was performed by Rincon using the latest compiled version of the U.S. EPA's AERMOD atmospheric dispersion modeling system. SCAQMD's 2017 Risk Assessment Procedures include a methodology for modeling benzene, ethylbenzene, and naphthalene emission sources commonly associated with gasoline dispensing stations (Appendix X of SCAQMD 2017). In accordance with this methodology, benzene emissions were modeled (Rincon 2020). Refer to Rincon's report for the specific details of the model assumptions, input parameters and results.

3.1.2. Risk Analysis

Risk contours were developed to ensure that the area of maximum impact from the operation of the gas station was captured. Receptors were placed in a Cartesian grid 440 meters by 400 meters, centered on the project site with a grid spacing of 20 meters (Rincon 2020). Included in their analysis were two residential receptors located west/southwest of the project site (Magnolia Crossings Development) across Van Buren Boulevard that includes this Project.

The Rincon (2020) risk analysis included the following considerations. Residential cancer risks were calculated for a 30-year exposure duration using the Risk Management Policy (RMP) using the Derived Method, selecting HARP 2's Inhalation, Soil Ingestion, Dermal, Mother's Milk, and Homegrown Produce pathways, pursuant to SCAQMD's Supplemental Guidelines for Preparing Risk Assessments for the Air Toxics "Hot Spots" Information and Assessment Act (2020). A 25-year exposure duration for worker



receptors was modeled. Pursuant to OEHHA, cancer burden uses a 70-year exposure duration and only evaluates residential exposure. In this analysis, cancer burden was calculated by estimating the number of residents that could be exposed to an incremental excess cancer risk of one in one million and multiplying the number of exposed residents by the estimated incremental excess cancer risk of the MEIR) at the 70-year exposure duration. The number of residents that could be exposed to an incremental excess cancer risk was estimated by counting the number of residences in or touching the one in one million risk isopleth at the 70-year exposure duration and assumed that each residence contains 3.28 individuals, the average household size in the city of Riverside (California Department of Finance 2020).

3.2. Significance Thresholds

Significance thresholds for the emissions of TACs based on health risks associated with elevated exposure to such compounds have been developed by the SCAQMD. For carcinogenic compounds, cancer risk is assessed in terms of incremental excess cancer risk. A project would result in a potentially significant impact if it would generate an incremental excess cancer risk of 10 in one million (1 x 10-6) or a cancer burden of 0.5 excess cancer cases in areas exceeding the project-generated one in one million risk. Additionally, non-carcinogenic health risks are assessed in terms of a hazard index. A project would result in a potentially significant impact if it would result in a chronic and acute hazard index greater than 1.0 (SCAQMD 2015 and 2023).

3.3. Results

The results of the Rincon (2020) risk analysis for the gas station located across Van Buren Boulevard from the Project site indicates that the two residences located along the northeast property boundary fall within 1 in one million and 5 in one million isopleths for a 30-year residential exposure duration; that is, none exceeded the SCAQMD threshold of 10 in one million. The same is true for the 25-year worker exposure duration.

Similarly, applying the results of this risk analysis to the Chevron Station #9-4702 located at the northeast corner of the proposed Project area indicates that several of the proposed residential units fall within 1 in one million and 5 in one million isopleths for a 30-year residential exposure duration. None appear to exceed the SCAQMD threshold of 10 in one million, although the residential units immediately adjacent to the Chevron Station property are very close to this isopleth.

Other long-term operational TAC emissions include toxic substances such as cleaning agents in use onsite. Compliance with state and federal handling regulations would ensure that emissions remain below a level of significance. The use of such substances such as cleaning agents is regulated by the 1990 CAA Amendments as well as state-adopted regulations for the chemical composition of consumer products. Therefore, long-term operation of the project would not result in the exposure of sensitive receptors to substantial pollutant concentrations.

There is a potential residential exposure to diesel fuel exhaust particulates at the proposed Project. This potential exists due to its close proximity to the adjacent Riverside Freeway (91). The degree of exposure would not be expected to be greater than similar exposure experienced by other residential and commercial developments nearby. Limited dispersion of these particulates is greatly influenced by the daily wind directions, typically northeast to southwest depending on time of day. However, there are strategies to address this potential impact that can be incorporated into the proposed Project design.



SECTION 4. Conclusions

The proposed Project (Magnolia Crossing II) would not expose residents or off-site workers at adjacent land uses to significant excess cancer risks associated with loading, breathing, refueling, spillage, or hose permeation emissions of benzene, ethylbenzene, and naphthalene from the Chevron Station #9-4702 located at the northeast corner of the proposed Project area. This is further supported in that residents and workers at adjacent land uses would spend a substantial portion of their time indoors, separated from proposed emissions sources by walls and additional set-back distances. Therefore, the risk associated with this operation would be **less than significant**.

In addition, the potential exposure of residents and workers within the proposed Project to TAC emissions resulting from the long-term use of household and/or commercial cleaning agents, paints, and other architectural coatings, if used and handled in accordance with applicable state and federal regulations would be **less than significant**.

The proposed Project is located along a high-volume roadway, Riverside Freeway (91). As such, diesel particulate matter emitted from the exhaust pipes of trucks would be present. Limited dispersion of these particulates is greatly influenced by the daily wind directions, typically northeast to southwest depending on time of day. Minimum efficiency reporting value (MERV) 13 LEED filters can remove between 80% to 90% of 1- to 10-micron size particulates (those is the diesel range) from within the building structure. Incorporating these filters into the Project design would reduce the impact associated to less than significant.



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