REPORT
SOIL VAPOR SURVEY

PROPERTY AT
1020 TERRA BELLA AVENUE
MOUNTAIN VIEW, CALIFORNIA 94043

PROJECT NO. 103.22001

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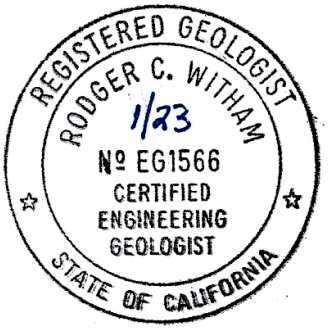

CONTENTS

TABLE

PLATES

APPENDICES

REPORT
SOIL VAPOR SURVEY
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1.0 INTRODUCTION

At the request of Terra Bella II LLC, Essel Environmental and Emergency Response (Essel) performed a soil vapor survey at the property located at 1020 Terra Bella Avenue in Mountain View, California (site). Essel understands that Terra Bella II LLC plans to redevelop the property with affordable housing and has requested the soil vapor survey following the findings of a September 2020 Phase I Environmental Site Assessment of the property (Essel, 2020). The purpose of the soil vapor survey was to evaluate the potential for vapor intrusion health risk into a future building at the site. The scope of work included advancing six small-diameter borings at the property to install temporary soil-vapor probes and collect soil-gas samples for laboratory analysis.

1.1 Site Location and Description

The Site is located on the northwestern corner of the intersection of Terra Bella Avenue and San Rafael Avenue in Mountain View. The irregularly-shaped property encompasses an area of approximately 20,473 square feet (0.47 acre) and is developed with a vacant residential-dwelling and an asphalt-paved parking lot. The single-story residential dwelling is located near the southern edge of the property and an unpaved area is located adjacent to the west of the building. The remaining portion of the site to the north of the dwelling is paved with asphalt. Several recreational vehicles are parked on this portion of the site and these motor homes are occupied by tenants.

Adjacent and immediate surrounding properties are commercial. A self-storage facility (Public Storage) is adjacent to the west and north of the site and further to the north is U.S. Highway 101. San Rafael Avenue bounds the eastern side of the site and beyond are buildings occupied by Falcon Roofing. Terra Bella Avenue bounds the southern side of the site and commercial businesses (Discount Glass, FujiFilm Wako Diagnostics, and Kodiak Robotics) are present on the south side of Terra Bella Avenue. Plate 1 shows the site location relative to surrounding physical and cultural features and Plate 2 shows the features at the site.

1.2 Previous Environmental Work

A number of environmental investigations and assessments were performed at the site between 2001 and 2017. Summaries of the work performed and the results of the investigations are provided in the following sections.

1.2.1 E_2C, Inc.

E_2C, Inc. (2001) performed a shallow soil and ground water investigation at the site in December 2001. E_2C, Inc. reported on the site history from 1980 to the early 1990s. In 1980, the site

contained a residence, a detached building, and the remaining portion of the site was covered with grass. Varsity Towing used the property to store towed vehicles in the mid- to late 1980s and circa 1990; an ambulance company used the property to store vehicles and equipment and to house ambulance crews. The site was reportedly paved in the early 1990s for the ambulance company operations.

On December 7, 2001, E_2C, Inc. advanced hydropunch borings HP-1 through HP-4 to depths of 12 to 14 feet below the ground surface to collect samples of soil and ground water. Ground water was encountered in the borings at 7½ to 10 feet below the ground surface under a confining clay unit and subsequently rose to 3½ to 7½ feet below grade in the borings. E_2C, Inc. collected one soil sample from each boring at 1 to 2 feet below grade and collected a ground-water sample from each boring. The soil and water samples were analyzed in a laboratory for total petroleum hydrocarbons as gasoline (TPHg) and as diesel (TPHd); volatile organic compounds (VOCs) including benzene, toluene, ethylbenzene, total xylenes (BTEX), and methyl tertiary butyl ether (MTBE), which are components of gasoline; and the metals chromium, copper, lead, nickel, and zinc.

The laboratory analytical results showed that no TPHg, VOCs, BTEX, or MTBE were detected in the four shallow soil samples; TPHd was detected at low concentrations (11 and 14 milligrams per kilogram) in two of the four samples; and the five metals were detected in the four soil samples at naturally occurring (background) concentrations. The four ground-water samples did not contain detectable TPHg, BTEX, MTBE, or the five metals; a trace concentration of one VOC (1,1-dichloroethane, a cleaning/degreasing solvent) was detected in one water sample (southeastern boring HP-4) and TPHd was found at moderately high concentrations (180 to 850 micrograms per liter) in the four borings. E_2C, Inc. concluded that most of the detected compounds in the soil and ground-water samples were not at concentrations of concern and that the TPHd detected in the ground water may have originated from an off-site source. E_2C, Inc. did not recommend further investigation at the time. Plate 2 shows the approximate locations of borings HP-1 through HP-4.

1.2.2 Professional Service Industries, Inc.

Professional Service Industries, Inc. (PSI, 2014) performed a Phase I Environmental Site Assessment (ESA) of the site in November 2014. At the time of the assessment, the site contained two single-story buildings on the southern portion of the site and an asphalt paved area between, to the west, and to the north of the buildings. Saviano Company, a paving, grading, and sealcoating business that specializes in tennis courts, occupied the site at the time and, according to PSI, had operated on the property since 2000 or 2001. Saviano Company used the larger southernmost building as an office and the smaller second building for storage; PSI reported that the office building was a former residence, and the storage building was formerly a detached garage. Historical records indicated that the site was undeveloped land in 1939 and later contained several small structures, possibly residences, until the early 1970s. PSI reported that later the site was used to store equipment, was used by a towing company to store towed vehicles, was used for storing automobiles, and was in current use by the Saviano Company. PSI noted a variety of hazardous materials and petroleum products were associated with the Saviano Company operation and that housekeeping at the site was poor to fair; however, did not observe evidence of significant releases of these materials. PSI did not identify on-site or off-site

concerns during the ESA and found no recognized environmental conditions associated with the site.

1.2.3 Terraphase Engineering, Inc.

Terraphase Engineering, Inc. (Terraphase, 2017) performed a Phase I ESA and a limited subsurface investigation at the site in May and June 2017. At the time of the Phase I ESA, the unoccupied site contained a 1,029-square foot building formerly used as a residence and office; a 412-square-foot building formerly used as a detached garage and later for storage; and a 125-square-foot wooden shed used for storage. The remaining portion of the property was paved with asphalt and concrete or was landscaped. Historical records reviewed by Terraphase indicated that the site was agricultural (orchard) from at least 1939 through 1956 and that the buildings at the site in 2017 appear to have been constructed sometime between 1956 and 1963. City directory listings indicated the property was residential to at least 1975, was used by towing companies from at least 1986 until after 1991, and was occupied by the Saviano Company from circa 2000/2001 to 2014 of 2015.

Terraphase reviewed hazardous materials records from the City of Mountain View and Santa Clara County dating from 1993 through 2015 and relating to the Saviano Company. The Saviano Company handled hazardous materials and generated and disposed of hazardous wastes including flammable liquids and gases, thinners, solvents, paints, and petroleum products. Environmental records of nearby properties showed gasoline and diesel fuel releases that impacted the ground water occurred at a paving company located less than 600 feet south-southwest and upgradient (with respect to the direction of ground-water flow) from the site and that the fuel impact to the ground water had migrated off the paving company property toward the site. Environmental records also showed regional ground-water contamination by chlorinated solvents that Terraphase indicated also had the potential to affect the site. Terraphase concluded that the former release of gasoline and diesel fuel at the upgradient paving company had the potential to have migrated to the site and; therefore, was a recognized environmental condition. Terraphase also concluded that the chlorinated-solvent-contaminated ground water in the general area had the potential to impact the site and result in a vapor encroachment condition; and this potential was also a recognized environmental condition. Terraphase recommended that a limited subsurface investigation be performed to evaluate potential impact from on-site historical activities and from the identified off-site ground-water contamination.

Terraphase performed the limited subsurface investigation in May 2017. Borings SB-01 and SB-04 were advanced to depths of 15 and 10 feet below the ground surface, respectively and borings SB-2 and SB-3 were hand-augered to 1 foot below grade. In addition, temporary soil vapor probes SV-01 and SV-04 were installed to a depth of 5 feet below the ground surface adjacent to borings SB-01 and SB-04. The locations of the borings and vapor probes are shown on Plate 2.

Sediments encountered in the two deeper borings included sandy clay, clay, and silty sand and ground water was encountered in borings SB-01 and SB-04 at depths of 12 and 10 feet below the ground surface, respectively. Terraphase collected one soil sample from each boring at ½ to 1 foot below grade, collected grab ground-water samples from borings SB-01 and SB-04, and collected soil vapor samples from vapor probes SV-01 and SV-04. Soil samples were submitted to a laboratory and analyzed for total petroleum hydrocarbons as diesel (TPHd) and as motor oil

(TPHmo), VOCs, and the 17 inorganic metals and metalloids listed in Title 22 of the California Code of Regulations (Title 22 metals). The ground water and soil-vapor samples were analyzed for VOCs.

Terraphase reported that all detected concentrations in the soil samples were less than the health-risk-based residential environmental screening levels (ESLs) developed in 2016 by the San Francisco Bay Regional Water Quality Control Board and arsenic was at concentrations less than the regional background level. Trace concentrations of three volatile organic compounds, the previously detected cleaning/degreasing solvent 1,1-dichloroethane and also the petroleum fuel constituents 1,2,4-trimethylbenzene and 1,3,5-trimethylbenzene were detected in northern boring SB-01. No VOCs were detected in central boring SB-04.

A number of VOCs were detected in soil vapor probes SV-01 and SV-04 with generally higher concentrations detected at northern vapor probe SV-01. Detected compounds included primarily petroleum fuel constituents BTEX, MTBE, naphthalene, heptane, hexane, cyclohexane, and the trimethylbenzenes; included the solvents methyl isobutyl ketone, methyl ethyl ketone, ethyl acetate, and acetone; and included carbon disulfide, which is used in the manufacture of rubber and plastics. Except for naphthalene, none of the detected compounds were greater than the corresponding ESLs for vapor intrusion risk that were current in 2017. Naphthalene was detected at a concentration slightly higher than the then-applicable ESL. Table 1 presents the results of analysis of the samples collected from vapor probes SV-01 and SV-04.

1.2.4 Essel

Essel (2020) performed a Phase I ESA of the site in September 2020. At the time of the assessment, the site was occupied by the southern single-story residential building (constructed in 1953) that was vacant and surrounded by temporary fencing. The portion of the site north of the building was reported to be an asphalt-paved parking lot that was used by recreational vehicles. Historical and client-provided records reviewed by Essel indicates the site was agricultural land, including orchard, from at least 1939 to circa 1950 and was residential from about 1953 through 1986. Towing companies used the site to store vehicles from 1986 to at least 1991 and the paving/grading/sealcoating Saviano Company operated at the site from 1993 to 2015. The Saviano Company stored, handled, and disposed of hazardous materials and wastes that included antifreeze, oils and auto fluids, paints, waste oil and waste antifreeze, thinner, kerosene, and grease.

Essel did not observe evidence of significant releases of hazardous materials or wastes on the site; however, noted that the 2017 subsurface investigation (Terraphase, 2017) detected concentrations of VOCs in soil vapor with the petroleum constituent naphthalene at a concentration greater than the applicable health-risk-based environmental screening level. Based on the findings of the 2017 subsurface investigation, Essel concluded that a vapor encroachment condition and, hence, a recognized environmental condition was present in connection with the site.

2.0 FIELD AND LABORATORY WORK

In view of the findings of the September 2020 Phase I ESA, Essel subsequently recommended performing a soil vapor survey to evaluate potential vapor intrusion risk for a future residential

development. Essel (2022) proposed a scope of work for the soil vapor survey in March 2022 and Terra Bella II LLC authorized the work on April 29, 2022. Field work for this investigation included advancing six borings, installing soil-vapor probes in the borings, and collecting soil-vapor samples for laboratory analysis. Laboratory work included analyzing the soil-vapor samples for volatile organic compounds. The following sections provide descriptions of the field and laboratory tasks performed.

2.1 Permit and Utility Clearance

A drilling permit is not required in Santa Clara County for borings that are less than 50 feet in depth. Essel notified USA North 811 of the planned subsurface investigation; this notification occurred more than 48 hours before drilling began. Essel also subcontracted with Ground Penetrating Radar Systems, Inc. (GPRS) to clear boring locations with respect to on-site subsurface utilities. On May 11, 2022, GPRS used electromagnetic and ground-penetrating radar equipment to identify and mark subsurface utilities and other obstructions at the site relative to the proposed boring locations.

2.2 Locations of Borings and Soil Vapor Probes

The borings for soil-vapor probes SV-1 through SV-6 were advanced at locations across the site to provide a representative characterization of the property. Vapor probes SV-1 through SV-4 were placed in the northern parking lot, vapor probe SV-5 was placed in the unpaved area near the southwestern corner of the site, and vapor probe SV-6 was placed a short distance to the north of the existing single-story residence. Plate 2 shows the locations of the six vapor probes relative to site features.

2.3 Drilling Borings and Classifying Soil

Environmental Control Associates (ECA), Inc. of Aptos, California (C-57 license number 695970) used a Geoprobe 5410, truck-mounted, direct-push drill rig to advance borings on May 11, 2022. The borings for soil vapor probes SV-1 through SV-6 were advanced to a total depth of 7 feet below the ground surface using a 2½-inch-outside-diameter, hollow steel rod. The drilling equipment was decontaminated between each boring by washing with soapy water and rinsing with clean tap water.

Continuous soil cores were collected from the borings using the hollow steel rod fitted with a 1¾-inch-outside-diameter by 4-foot-long, clear plastic sleeve. The plastic sleeve was removed from the core barrel after each sampling interval and replaced with a clean plastic sleeve for the next lower sampling interval. Soil cores contained in the plastic sleeves were examined to identify and describe the subsurface sediments. Laboratory analysis of soil samples was not part of the scope of work for this investigation.

Soil encountered during drilling was described and classified using the Unified Soil Classification System (USCS). Logs of borings for vapor probes SV-1 through SV-6 present descriptions of the sediments encountered in the boreholes. The USCS and boring logs are included in Appendix A (Plates A-1 through A-7).

2.4 Soil Vapor Probe Installation and Sampling

Temporary soil-vapor probes were constructed in the boreholes. Each temporary vapor probe consisted of a stone filter screen inserted into ¼-inch-diameter Teflon tubing. The filter screen was suspended at a depth of 6½ feet below the ground surface. The probes were completed by placing 6 inches of clean sand (Monterey #3) below and 6 inches of clean sand above the filter screen. Granular bentonite crumbles (Benseal) were placed on top of the sand in 1-foot-thick lifts; the first lift was placed dry and each succeeding lift was hydrated with clean water to provide an airtight seal above the sand and filter screen and around the tubing to the ground surface. The top end of the tubing was capped with a valve to prevent atmospheric air from entering the probe hole. The vapor probes were installed at least 2 hours before vapor sampling took place to allow subsurface conditions to equilibrate and the hydrated bentonite seal to set.

The soil-vapor-probe purging and sampling system consisted of a 6-liter purging Summa canister, a 1-liter sampling Summa canister, and a manifold containing a valve, vacuum gauges, flow controller, and moisture filter. The laboratory had evacuated each Summa canister to a negative pressure (vacuum) of approximately 30 inches of mercury. The manifold assemblies were connected to the tubing of the soil probes, the 1-liter sampling canister, and the 6-liter purge canister with Swagelok fittings. Separate and cleaned manifolds were used in each purge and sample system. To check for possible leaks in the above-ground vapor sampling assembly, a shut-in test was performed by drawing a vacuum through the closed manifold assemblies using the purge canister. The shut-in tests were performed for a minimum period of 1 minute and no changes in vacuum were noted indicating the assemblies were airtight.

Following the shut-in test, the valves on the well tubing and purge canister ends of the manifold were opened and the valve on the 6-liter purging Summa canister was opened to purge the vapor probes. The vapor probes were purged at a controlled flow rate of 100 to 200 milliliters per minute and purging stopped when the downhole negative pressure in the vapor probe reached 5 inches of mercury. A limited volume of air, equivalent to at least the air in the probe tubing and the void space around the sand grains at the bottom of the probe (one volume), was purged from each vapor probe. The elevated downhole vacuum indicated vapor flow from a low permeability geologic unit.

After purging, the valves on the manifolds and purging canister were closed and a plastic container (i.e., shroud) was placed over the sampling assembly. As a leak check, the volatile compound 1,1-difluoroethane (1,1-DFA) was sprayed onto a tissue, which was placed inside the shroud to provide a tracer gas during sampling. The valves on the manifold and the 1-liter sampling Summa canister were then opened to begin sampling. Soil-vapor samples were collected at a controlled flow rate between 100 and 200 milliliters per minute. Sampling was completed when the vacuum gauges indicated that the downhole negative pressure in the vapor probe was at 15 inches of mercury. The downhole low-flow conditions prevented collection of a full liter at each vapor probe.

At the completion of sampling, the valve on each 1-liter sampling canister was closed and the manifold assembly was disconnected from the purging and sampling canisters. Essel prepared a Chain-of-Custody form for the vapor samples and this form accompanied the samples to the laboratory. A copy of the Chain-of-Custody form is included in Appendix B.

After sampling, the Teflon tubing of vapor probes SV-1 through SV-6 was removed from the boreholes. A few inches of the hydrated bentonite were also removed from the boreholes and concrete patch was placed in the holes to match the surface grade.

2.5 Laboratory Analyses

The six soil vapor samples were delivered to McCampbell Analytical, Inc. (McCampbell [Laboratory Certificate No. 1644]) in Pittsburg, California for analysis. McCampbell analyzed the samples for VOCs using United States Environmental Protection Agency (USEPA) Method TO-15.

3.0 RESULTS OF INVESTIGATION

3.1 Geology and Ground Water

The borings for soil vapor probes SV-1 through SV-4 and SV-6 were advanced in the paved drive and parking area of the site. This area is surfaced with 2- to 3-inch-thick asphalt overlying sand to silty sand fill that varies from 3 to 5 inches thick. In the soil core from vapor probe SV-4, fill/disturbed soil was observed to extend to a depth of 2¼ feet below the ground surface and earth materials included a shallow sand unit, an underlying high plasticity silty clay, a second thin sand layer and a 2-inch-thick layer of silty clay containing glass fragments. In the above-described borings and the boring for vapor probe SV-5, silty clay with minor amounts of sand and gravel was observed from the base of the fill materials to the 7-foot total depth of the borings. The stiff to hard, high plasticity clay was noted to be brownish black, grayish black, gray, dusky brown, brownish gray or olive gray in color. A zone of white irregular-shaped deposits and coatings on sand grains and gravel clasts was observed in the soil cores at variable depths between 3½ and 7 feet below the ground surface. Trace amounts of partly decomposed plant roots and small to minute shell fragments were also observed in the soil cores.

No ground water was encountered in the borings to the 7-foot depth. As noted in Sections 1.2.1 and 1.2.3, E_2C, Inc. encountered ground water in borings at 7½ to 10 feet below the ground surface in 2001 and Terraphase encountered ground water in borings at 10 to 12 feet below grade in 2017.

3.2 Results of Laboratory Analyses

Types and Concentrations of Contaminants

A total of 33 VOCs were variously detected in one or more of the six soil-vapor samples. Detected compounds included:

- the gasoline fuel constituents BTEX, MTBE, tert-amyl methyl ether, cyclohexane, ethanol, 4-ethyltoluene, heptane, hexane, naphthalene, 1,2,4-trimethylbenzene, and 1,3,5-trimethylbenzene; and
- the chlorinated solvents 1,1-dichloroethane, carbon tetrachloride, and vinyl chloride; and

- the non-chlorinated solvents acetone, ethyl acetate, 2-hexanone, 2-butanone (methyl ethyl ketone), 4-methyl-2-pentanone (methyl isobutyl ketone), methylene chloride, and tetrahydrofuran; and
- the refrigerant trichlorofluoromethane (Freon 11); and
- the water and sewage chlorination byproduct chloroform; and
- the combustion product acrolein, formed during burning of tobacco, wood, plastics, gasoline and diesel, and also used as a biocide in agricultural water; and
- the fumigant/herbicide/insecticide constituents bromomethane, chloromethane, 1,2-dibromoethane (ethylene dibromide, also an additive to leaded gasoline) and 1,3-dichlorobenzene; and
- various chemicals used to produce synthetic rubber, adhesives, plastics and resins, and coatings, such as paints and lacquers, including 1,3-butadiene, carbon disulfide, methyl methacrylate, styrene, and vinyl acetate.

A greater number of individual compounds were detected in vapor probes SV-1 (26), SV-2 (22), and SV-4 (20) located in the northern and western portions of the site and generally higher concentrations of compounds were detected in the samples from northern and western vapor probes SV-1 and SV-4. Anomalously high concentrations of ethylbenzene and xylenes, which ranged from 4,620 to 26,700 micrograms per cubic meter ($\mu g/m^3$), were found in vapor probe SV-5 located near the southwestern corner of the site. No other notably higher concentrations of VOCs were detected in the six soil vapor samples. The leak check tracer compound 1,1-DFA was not detected in the six soil vapor samples indicating little or no ambient air leakage (and consequent possible dilution of contaminant concentrations) into the sampling systems.

The types of VOCs detected in soil vapor samples from vapor probes SV-1 through SV-6 are largely the same as those detected by Terraphase in 2017. In addition, contaminant concentrations detected in Terraphase vapor probes SV-01 and SV-04 were generally equivalent to the corresponding contaminant concentrations detected in Essel vapor probes SV-1 and SV-3, which were in close proximity to the Terraphase vapor probes.

Comparison to Screening Levels

The detected VOC concentrations were compared to current corresponding environmental screening levels (ESLs) developed by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB, 2019) and, if not available, to corresponding screening levels (SLs) of the California Department of Toxic Substances Control (DTSC, 2020) or regional screening levels (RSLs) published by the USEPA (2021). The screening levels are the lowest concentrations of individual contaminants at which a potential vapor intrusion human health risk to occupants of residential properties might be present. The SFBRWQCB's ESLs are direct vapor intrusion screening levels. The DTSC's vapor intrusion SLs and the USEPA's vapor intrusion RSLs are calculated from the two agencies' ambient air SLs and RSLs using a factor of 0.03, which is the soil vapor to indoor air attenuation factor through concrete building foundations recommended by the California Environmental Protection Agency (2020).

Eight VOCs were detected at concentrations greater than the corresponding screening levels, with one or more of the eight VOCs present in each of the six vapor probes. These exceedances included benzene in five of the six vapor probes; ethylbenzene, vinyl chloride, and 1,3-butadiene in two vapor probes; and m,p-xylenes, o-xylenes, chloroform, and ethylene dibromide in one vapor probe. All other VOCs detected were less than the current corresponding screening levels. The screening levels published by the SFBRWQCB and the DTSC were revised downward in 2019 and 2020; therefore, in addition to naphthalene, benzene and ethylbenzene detected in Terraphase's vapor probes in 2017 are greater than one or both agencies' current screening levels. Table 1 presents the results of laboratory analysis of soil-vapor samples SV-1 through SV-6 and Terraphase soil-vapor samples SV-01 and SV-04. The table also presents the corresponding ESLs, SLs, and RSLs. Appendix B contains a copy of the laboratory analytical report for the samples collected from vapor probes SV-1 through SV-6.

4.0 FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS

4.1 Findings

Following is a summary of the findings of this environmental investigation.

- Three Phase I ESAs were performed at the site in 2014, 2017, and 2020. Interpretation or availability of historical records resulted in differences in the reported timeline of site uses. Based on Essel's current review of the Phase I ESA reports and client-provided records, the site was agricultural land, including orchard, from at least 1939 to circa 1950 and was residential from about 1953 through 1986. Towing companies used the site to store vehicles from 1986 to at least 1991 and the paving/grading/sealcoating Saviano Company operated at the site from 1993 to 2015. The site was vacant from 2015 through at least 2017 and has been occupied by recreational vehicles with tenants since at least 2020. The present-day single-story building on the site is reported to have been constructed in 1953 as a residence and a second smaller structure that is not currently on the property was constructed at approximately the same time and was used as a detached garage.

    - Environmental records, dating from 1993 to 2015 indicate the Saviano Company stored, handled, and disposed of hazardous materials and wastes that included compressed gases, antifreeze, oils and auto fluids, paints, paint thinners, solvents, waste oil and waste antifreeze, kerosene, and grease. None of the Phase I ESAs noted on-site evidence of significant petroleum product or hazardous materials releases.

    - Two of the three Phase I ESAs concluded that a recognized environmental condition was present at the site and recommended subsurface investigations be performed.

- Investigations to evaluate contaminant impacts to soil and ground water were conducted in 2001 and 2017. Very low concentrations of diesel petroleum hydrocarbons were detected in the shallow soil, three volatile organic compounds (VOCs) were found at trace concentrations in the shallow ground water, and moderately high concentrations of diesel petroleum hydrocarbons, attributed potentially to an off-site source, were also

detected in the ground water. No other potential contaminants were detected at concentrations of concern.

- Investigation to assess subsurface soil-vapor concentrations was performed in May 2017 and several petroleum-fuel- and solvent-related VOCs were detected; however, only naphthalene, a gasoline and diesel fuel constituent, was found at a concentration greater than the then-current health-risk-based screening level.

- On May 11, 2022, Essel sampled soil-vapor probes SV-1 through SV-6, which were installed at locations spaced across the site. A variety of volatile organic chemicals that were/are constituents of petroleum fuels; fumigants, herbicides, or insecticides; paints, paint thinners, or paint strippers; solvent cleaners/degreasers, a refrigerant, a byproduct of chlorination of water or wastewater; and chemicals used to produce synthetic rubber, adhesives, plastics and resins, and coatings, such as paints and lacquers, were detected in the six vapor probes. Many of the compounds and concentrations detected by Essel in 2022 are the same compounds and approximately equivalent concentrations detected by Terraphase in 2017.

    - Generally, a greater number of compounds and higher concentrations of the compounds were detected in northern and western vapor probes SV-1, SV-2, and SV-4 and in northern Terraphase vapor probe SV-01 relative to the more southerly located vapor probes.

    - During the current investigation, unusually high concentrations of ethylbenzene and xylenes were detected in the vapor sample collected from southwestern vapor probe SV-5. No other VOCs were detected in the six soil-vapor probes at anomalously high concentrations.

    - Eight VOCs, including benzene, ethylbenzene, m,p-xylenes, o-xylenes, 1,3-butadiene, chloroform, ethylene dibromide, and vinyl chloride, were found in one or more of the six (SV-1 through SV-6) soil-vapor samples at concentrations greater than corresponding threshold concentrations (screening levels) at which a potential vapor-intrusion human-health risk may be present in a future residential building on the site.

- Based on boring logs available from the 2001, 2017, and the current investigation, earth materials underlying the site consist of silty clay from the base of the pavement to 7½ to 10 feet below the ground surface, and silt or silty sand beneath the clay to the maximum depth explored of 15 feet below grade. Ground water in 2001 was 7½ to 10 feet below grade and in 2017 was 10 to 12 feet below grade.

4.2 Conclusions and Recommendations

Essel has reviewed reports of previous Phase I ESAs and subsurface environmental investigations and recently performed a soil vapor survey at the property at 1020 Terra Bella Avenue in Mountain View, California. The results of the earlier assessments and investigations suggest little contaminant impact to soil underlying the site, minimal impact to ground water by volatile organic compounds, and a modest impact to the ground water by diesel petroleum hydrocarbons.

Essel concludes that the contaminants detected in soil and ground water do not present a potential risk to human health or the environment. The results of the 2017 and current soil-vapor investigations suggest a potential vapor intrusion health risk might be present to occupants of a future residential building, although the presence of low permeability clay from the ground surface to at least 7½ feet below grade might inhibit movement of significant vapors to the ground surface and into a future building. The types of volatile organic compounds detected in the 2017 and current soil-vapor surveys are consistent with the products and wastes used at the site by the Saviano Company and possibly earlier agricultural use. Some of the compounds detected in the soil vapor are also typically present in soil vapor in urban environments.

In view of the presence of several VOCs in soil vapor at concentrations that pose a potential vapor intrusion health risk to future residential occupants, Essel makes the following recommendations, which are based on the assumption that the site will be developed with a multi-family residential structure.

- Collect indoor and outdoor air samples within and adjacent to the existing single-story building to evaluate the approximate indoor air impact from subsurface VOCs in a future building. Although the foundation of the residence might not be the same as a future building, the data can be used to assess the need for a vapor barrier or mitigation system for a future structure.

- Consider and plan for installation of a vapor barrier or vapor barrier/vapor venting system beneath the future building, pending the results of the indoor/outdoor air sampling.

- Prepare a site management plan for the planned redevelopment. This plan would address health and safety measures to be taken during construction; additional characterization of soil, as needed, to be disposed off-site; dust control measures, air monitoring as might be required or desired; and contingency measures to be taken if unanticipated subsurface conditions, such as wells, septic tanks, underground storage tanks, buried debris or building materials, or fill are encountered.

Limitations to this investigation are included in Appendix C.

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APPENDIX A

LOGS OF BORINGS

APPENDIX B

CHAIN-OF-CUSTODY FORM
AND
LABORATORY ANALYTICAL REPORT
FOR
SOIL-VAPOR SAMPLES

APPENDIX C

LIMITATIONS

LIMITATIONS

The environmental investigation described in this report has been conducted in accordance with current regulatory guidance and the standards of environmental and geological practice performed in the general project area. No warranty, expressed or implied, is made regarding the professional opinions presented in the report.

Essel Environmental & Emergency Response's descriptions, conclusions, and recommendations in the report, with respect to environmental conditions, are based on a limited number of sampling points and chemical analyses. Field observations made during the investigation and the samples collected and submitted for testing are considered to be representative of the area evaluated. Subsurface soil and ground-water conditions; however, may vary between and beyond sampling or observation points. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with this type of investigation.

The interpretations and opinions contained in this report are based on the results of laboratory tests and analyses intended to detect the presence and concentration of specific chemical or physical constituents in samples collected from the subject site. Chemical testing was conducted by an analytical laboratory that is certified by the state of California to perform the analyses requested for this investigation. Essel Environmental & Emergency Response is not associated with the laboratory that performed the analyses and claims no responsibility for any inaccuracy in laboratory results.

This document is intended to be used in its entirety. No portion of the document, by itself, is designed to completely represent every aspect of the project. Essel Environmental & Emergency Response should be contacted if the reader requires any additional information, or has questions regarding content, interpretations presented, or completeness of this document.

This report, furthermore, is intended for the exclusive use by the client. Any use of the contents of this report by parties other than the client is undertaken at those parties' sole risk.