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Via Email/U.S. Mail

October 7, 2019

Michelle King, Zoning Administrator
Noren Caliva-Lepe, Senior Planner
Community Development Department, City of Sunnyvale
456 W. Olive Avenue
Sunnyvale, CA 94086

Re: Special Development Permit for 1390 Borregas Avenue Mechanical Facility
File #2019-7071

Dear Ms. King and Ms Caliva-Lepe:

Allen Matkins represents Google LLC, which is the applicant in the above-referenced matter. We are writing to respond to the arguments and assertions made in the comment letter on this matter submitted by Aaron M. Messing of the law firm Adams Broadwell Joseph & Cardozo, dated September 24, 2019 (the "Adams Broadwell" letter). The intent of this letter is to assist the City in deciding how to proceed with Google's pending application, and nothing herein constitutes a waiver, concession or agreement with any legal argument or assertion made in the Adams Broadwell letter.

1. **The Scope of the Project Is Sufficiently Described for Purposes of Processing the Pending Application**

Adams Broadwell contends that the City improperly defined the project at issue by failing to describe and assess the environmental impacts that may be associated with future office/R&D development projects (including their related underground piping) that have not been CEQA-assessed or approved yet, and that may or may not be served by the Mechanical Facility. Adams Broadwell mis-reads the legal import of a Categorical Exemption determination under CEQA.

For CEQA compliance, City staff recommends processing the proposed Mechanical Facility by reference to the CEQA Categorical Exemption for "In-Fill Development Projects." 14 CCR § 15332 ("Infill Project Exemption"). If the project falls within the four corners of this exemption, then further CEQA analysis is not required. "When a project comes within a categorical exemption,

no environmental review is required unless the project falls within an exception to the categorical exemption." *Aptos Residents Assn. v. County of Santa Cruz* (2018) 20 Cal.App.5th 1039, 1046; *see also City of Pasadena v. State* (1993) 14 CA4th 810. For the City to make a categorical exemption coverage determination, the only "[e]vidence that is required is that which is appropriate to the CEQA stage in issue." *Muzzy Ranch Co. v. Solano County Airport Land Use Comm'n* (2007) ("*Muzzy Ranch*") 41 Cal.4th 372, 388 (finding that the CEQA common sense exemption applied to the project under review). Here, the "evidence that is required" is a consideration of whether the five enumerated criteria specified in the Infill Project Exemption apply to the Mechanical Facility. If the criteria are met, the Secretary for Resources has, as stated in 14 CCR § 15300, already determined that such a project is exempt from further CEQA review, unless an "exception to the exemption" applies (discussed in Section 7 of this letter, *infra*).

Additional analysis of the proposed project is not required. The California Supreme Court, in discussing this issue in the *Muzzy Ranch* case which involved the application of the common sense exemption, found that "[u]nder CEQA, a public agency is not always 'required to make a detailed analysis of the impacts of a project on [future] housing and growth.' [] 'Nothing in the CEQA Guidelines, or in the cases, requires more than a general analysis of projected growth. The detail required in any particular case necessarily depends on a multitude of factors, including, but not limited to, the nature of the project, the directness or indirectness of the contemplated impact and the ability to forecast the actual effects the project will have on the physical environment.'" *Muzzy Ranch*, *supra* at 388, quoting *Napa Citizens for Honest Government v. Napa County Bd. of Supervisors* (2001) 91 CA4th, 342, 369.

For this project, the City knows that the Mechanical Facility is designed to serve up to 3.7 million square feet of building space, but more detail beyond that is not known at this juncture. These pipeline alignments will be assessed as an integral feature of the proposed building projects that they will be a part of because, like any other key building feature, they would not be built but for approval of the proposed building structure. What is known, however, is that the City intends for the Moffett Park Specific Plan area to be built out with office/R&D development, and that development will require heating and cooling services such as will be provided by the proposed project.

The potential environmental impacts of those off-site pipeline placements and the buildings that they will serve will be subject to their own CEQA analysis. Whether those projects will be approved or not will turn on their own merits and their own project-specific CEQA analysis. As noted by the Supreme Court in *Muzzy Ranch* (quoting *Napa*), "it is relevant, although by no means determinative, that future effects will themselves require analysis under CEQA." *Muzzy Ranch,* 41 Cal4th at 388. Here, future office/R&D projects may or may not be approved, but Google has every intention of proceeding now with construction of the Mechanical Facility regardless.

For these reasons, Adams Broadwell fails in its assertion that future office building projects and the Mechanical Facility pipelines that will serve them must be captured in an all-encompassing CEQA analysis. It is enough that the City has already generally described the purpose of the proposed project (serve 3.7 msf), and it is legally determinative that the proposed project itself falls within the four corners of the Infill Project Exemption. No further CEQA analysis is required.

2. The Project Description Accurately States the Critical Elements of the Proposed Project

The Adams Broadwell letter accurately recounts the proposed Project components: "three buildings: a heating building (housing electric/switchgear elements and heat pumps); a cooling building (housing chillers, cooling towers, and a diesel generator), and an ancillary building housing a control room and multipurpose space, located on a 82,285 square foot lot for housing the equipment, four thermal water storage tanks (one hot water tank and three cold water tanks)." Adams Broadwell letter at pp. 8-9. These are properly described as the critical elements of the proposed Project.

Section III.A of the Adams Broadwell letter lists additional project description specifics of interest to Adams Broadwell. Please see Exhibit A incorporated herein by reference, which addresses these items, except for items that are addressed elsewhere herein (*e.g.*, "noise calculations" addressed in section 5.b, *infra*). Adams Broadwell requests for information regarding impacts associated with off-site piping and offsite office/R&D development are addressed in section 1 of this letter, *supra*.

3. The Mechanical Facility is Consistent with Applicable Zoning Designation and Regulations

The Infill Project Exemption may be applied where "[t]he project is consistent with the applicable general plan designation and all applicable general plan policies as well as with applicable zoning designation and regulations." 14 CCR§ 15332(a). The City's analysis regarding the application of the Infill Project Exemption provides as follows:

> The General Plan designates the site as being within the Moffett Park Specific Plan (MPSP), an industrial plan area located in the northern part of Sunnyvale. The Zoning designation of the site is Moffett Park Specific Plan – Industrial (MP-I), which limits allows office, warehouse and general industrial development at a standard floor area ratio (FAR) of 35%. The proposed mechanical facility is considered to be an industrial use that is compatible with uses found in the sub-district, and results in an FAR of 2.2% (only the employee-generating ancillary building counts towards FAR). Staff further finds that the

> project meets applicable goals and policies of the MPSP and other applicable codes and policies, as described in the project findings.

Report to the Zoning Administrator re File No. 19-0988 ("Staff Report"), Attachment 4, at pg. 1. The staff report further provides:

> While the proposed use is not specifically listed in Sunnyvale Municipal Code (SMC) Section 19.29.050, SMC 19.98.220 allows consideration of uses that are not more objectionable or intensive than other uses listed in the zoning district. Staff finds that the proposed use is no more intense than other industrial uses found in the MP-I zoning district and that sufficient land use controls are in place to help reduce potential impacts to the neighborhood. Therefore, staff finds the use to be appropriate at this site.

Staff Report, at pg. 2.

The Adams Broadwell letter mistakenly claims that the proposed Project is not consistent with the applicable zoning designation and regulations because "... the Staff Report claims that the Project falls under the "Public utility building and service facilities" category within the Sunnyvale Zoning Code and claims the definition for that category applies to the Project." Adams Broadwell at p. 17. To the contrary, as set forth above, the Staff Report concluded that the zoning designation, Moffett Park Specific Plan – Industrial (MP-I), allows office, warehouse and general industrial development, and the proposed Project is considered to be an industrial use that is compatible with uses found in the sub-district, consistent with SMC 19.98.220. Accordingly, no further response to Adams Broadwell's inapposite arguments regarding public utility building and service facilities is needed.

The Adams Broadwell letter further claims that the proposed Project is not consistent with the applicable zoning designation and regulations because the proposed Project provides less than the minimum amount of parking lot shading required by the Zoning Code. Adams Broadwell at pp. 21-22. To the contrary, the Staff Report contains recommended findings that directly address this concern, and which conclude that the parking lot, as proposed, substantially conforms to the zoning regulations:

> Staff further finds that the requested deviation for parking lot shading meets the objectives of the MPSP, as the intent of the requirement is met by reducing impervious surfaces from 80% to 42%, increasing landscaping from 20% to 44% of the site and increasing the number of trees on site from 24 to over 50 trees throughout the site. The applicant will also apply a cool pavement material to the parking

> spaces and drive aisle, which reflects solar heat away from the ground.

Staff Report, Attachment 3, at pg. 1. The cool pavement material is not a "mitigation", as suggested by Adams Broadwell, but rather is a project component that, in consideration together with other project features, supports the staff conclusion that the objectives of the MPSP are met by the proposed Project. No variance from the zoning regulations is proposed or necessary.

Accordingly, the proposed Project is consistent with the zoning designation and regulations, permitting application of the Infill Project Exemption.

4. The Mechanical Facility is Not Larger than Five Acres

Adams Broadwell, in keeping with its "scope of the project" argument, claims that the project site is substantially larger than the five acre maximum that is allowed under the Infill Project Exemption. 14 CCR § 15332(b). The project site, as noted in the City staff report, is in fact "just under 1.9 acres in size." Staff Report, Attachment 4, at pg. 1. Although Adams Broadwell does not dispute the proposed size of the Mechanical Facility, its letter would have the City additionally count "any underground pipelines or associated structures that will be constructed between the Project site and the other Google buildings it is designed to serve." Adams Broadwell letter at p. 20.

As explained in section 1 of this letter, *supra*, the underground pipelines that would connect the Mechanical Facility to other buildings in the area will be part of those proposed structures, if and when such buildings are proposed and considered for approval by the City. Those proposed structures may choose to connect to the Mechanical Facility, and if they do, those proposed connections will be CEQA-assessed in conjunction with the CEQA assessment of the proposed building projects. It is premature and too speculative at this juncture to know which buildings will connect to the Mechanical Facility, and by which route or alignment. The "project," as Adams Broadwell would have the City define it, does not have any of the details that would lend itself to CEQA analysis. What is known, however, is that Google, upon receipt of all required permits, will build the Mechanical Facility in preparation for servicing as yet unspecified future office R&D development projects. The Mechanical Facility project site is less than five acres, and therefore meets this Infill Development Exemption criterion.

5. Approval of the Mechanical Facility Will Not Result in Significant Effects Relating to Air Emissions or Noise

As correctly noted by the Adams Broadwell letter, the Infill Project Exemption requires a finding that approval of the project would not result in any significant effects relating to . . . noise [or] air quality . . ." 14 CCR§ 15332(d). Adams Broadwell takes issue with the City's analysis of

these potential effects, asserting that incomplete data resulted in an incomplete analysis. These two issue areas are considered in turn below.

a. Air Emissions

The Adams Broadwell letter relies heavily on an analysis submitted by Phyllis Fox, Ph.D., PE in finding that the air emission calculations underestimated construction and operation emissions. To address these concerns, please see the supplemental analysis that has been prepared by James A. Reyff with the consulting firm of Illingworth & Rodkin, Inc., attached hereto as Exhibit B (hereafter, the "Reyff Report"). Without conceding the validity of the Project's original air emission analysis that was the subject of the Dr. Fox's analysis, the Reyff Report nonetheless recalculates its emission estimates to account for Dr. Fox's comments. The revised analysis includes, by way of example, calculation of emissions in accordance with the actual projected schedule for this Project instead of using the CalEEMod default settings; adjustment of baseline emissions to reflect a vacant project site instead of a fully utilized 26,880 square foot light industrial land use; and an assumption that the assumed hours per year that the emergency diesel generator would operate would be doubled to 100 hours. Much more detail about the revised analysis is included in the Reyff Report. In the end, however, the revised "annual and average daily operational emissions" still result in constituent-specific emissions that do not even come close to exceeding the BAAQMD significance thresholds. See "Revised Table 2 of the Air Quality Analysis," Reyff Report, page 7. The proposed Project will not result in any significant effects relating to air quality.

b. Noise

The complaint stated in the Adams Broadwell letter with respect to the noise issue is the asserted lack of information regarding the equipment that will be used for the Project or information relating to baseline noise levels or noise receptors. Without this information, Adams Broadwell claims that the noise analysis is incomplete. Adams Broadwell letter at pp. 28-29. In response, please see Exhibit C, "Arup Response to Acoustics Comments in CEQA Challenge Letter," October 7, 2019. This supplemental information includes equipment level detail, ambient background noise levels, and additional analysis that further supports the conclusion that the Project will not result in significant effects relating to noise.

6. Mechanical Facility Can be Adequately Served by All Required Public Utilities

Adams Broadwell does not take issue with the finding by the City that the project site is already served by all required utilities. Their question, it appears, is whether the Project will be "adequately" served by said utilities. Adams Broadwell offers no substantial evidence to the contrary.

To add to the City's finding that the site is already adequately served, Google offers the findings of its project engineers that all utility demands will be met. See attached Exhibit D (statement regarding utility service). Based on these representations, and knowing that the site is already served by all required utilities, the City is well within its rights to find that proposed Project meets Infill Project Exemption criterion 14 CCR § 15332(e).

7. The Exceptions to the Exemptions Do Not Apply in this Matter

a. Unusual Circumstances Exception

Contrary to Adam Broadwell's claims, there is no reasonable possibility that the Mechanical Facility will have a significant effect on the environment due to "unusual circumstances."

Adams Broadwell appears to assert three "unusual circumstances":

i. there is an "absence of analysis with regard to the presence of a UPS battery system in the Project, which has the potential for fires or explosions if caution and mitigation is not undertaken."

The asserted "unusual circumstance" here is apparently the "presence of a UPS battery." Use of onsite battery power is hardly an "unusual circumstance" in today's modern building environment. Moreover, Adams Broadwell fails to explain why there is a "reasonable possibility" that the project's use of the UPS battery will result in fires or explosions. To the contrary, Adams Broadwell notes that such events can be avoided with proper care and management.

ii. the proposed project would be "the first central utility plant in Moffett Park."

A central utility plant is a common feature in the urban environment and has been for decades. The fact that it may be the first central utility plant in the 1,156-acre area that is designated by the City as "Moffett Park" does not make it an "unusual circumstance." Adams Broadwell vaguely refers to the "complex nature of the Project and the level of disturbance to nearby infrastructure" that results from this asserted "unusual circumstance," but provides no additional analysis. Presumably, Adams Broadwell is relying on its assertions of impact referenced elsewhere in its letter, all of which have been debunked by this response. There is therefore no "unusual circumstance" or any resulting significant environmental impact associated with the construction of the proposed central utility plant.

iii. the "'contamination of the subsurface of the Project site' is an unusual circumstance for infill projects, one that is likely to result in significant environmental effects because of the presence of PCE and vinyly chloride in the

subsurface pose potential inhalation health risks to constructions workers and other who come in close proximity to the contaminants."

Although there is the potential for soil contamination in the greater area, this is not an "unusual circumstance" for any development project in the City of Sunnyvale or the South Bay at-large. The potential for subsurface contamination in the region has been known for years. Relevant to this Project, however, soil contamination has not been identified at the Project site. As they are elsewhere in the region, PCE and vinyl chloride concentrations measured in the soil vapor at the site have been detected, but not at levels that present a human health risk to the construction workers or future occupants of the planned facility. Nonetheless, standard construction and building management practices have been developed over the years to address this potential, and are reflected in the project description commitments made by Google in its Updated Phase 1 ESA. For a point-by-point discussion of the Adams Broadwell allegations, please see Exhibit E, "Response to Comments by Adams Broadwell Joseph & Cardozo for the Google Mechanical Facility," prepared by Cornerstone Earth Group, October 1, 2019.

The standard best management and construction practices that have been incorporated by Google into its proposed project are not "mitigation measures" as asserted by Adams Broadwell. Instead, they are standard measures widely used in the building industry to minimize the potential for exposure to or aggravation of potentially contaminated conditions. Project design features designed to reduce or avoid environmental impacts are commonly not treated as a mitigation measure that would preclude use of a categorical exemption. *See* line of cases listed in Kostka and Zischke, "Practice under the California Environmental Quality Act," 2nd Edition, Continuing Education of the Bar (March 2019) (hereafter, "Zischke Treatise"), p. 5-70.1.[1]

b. Cumulative Impacts Exception

Adams Broadwell asserts that cumulative impacts will result from approval of the proposed Mechanical Facility because it is allegedly one "of successive projects of the same type in the same place" (quoting the exception to exemption rule for cumulative impacts, 14 CCR § 15300.2(b)).

In support of this assertion, Adams Broadwell suggests that the proposed project "is one of potentially three central utility plants currently planned within one block of one another." Adams Broadwell letter at p. 33. Without conceding the correctness of this statement by Adams Broadwell,

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[1] In the context of reviewing an EIR, one court found that it would be "nonsensical" to require analysis of impacts based on a project design that was made devoid of proposed minimization measures, and then to consider use of those same measures as "mitigation." *Lotus v. Department of Transportation* (2014) 223 Cal.App.4th 645, FN 8.

even if three central utility plants were built within one block of one another, there is no evidence offered in the Adams Broadwell letter that the combined air quality emissions and vaguely referenced "public health" impacts from the three facilities would be significant. Even if the air emissions from the three projects together were triple that of the proposed Project, it would still be at a level that is well below anything that could be characterized as a "significant" emission under CEQA. See Exhibit B, Table 2.

As noted by Zischke: "Speculation that significant cumulative impacts will occur simply because other projects may be approved in the same area is insufficient to trigger this exception [to the categorical exemption]. Listing other projects in the area that might cause significant cumulative impacts is not evidence that the proposed project will have adverse impacts or that the impacts are cumulatively considerable. *Hines v. California Coastal Comm'n* (2010) 186 CA4th 830, 857." Zischke Treatise, at p. 5-69.

8. CEQA Guidelines Appendix F and the Asserted "Obligation" to Prepare a Subsequent EIR to the Moffett Plan EIR Are Inapplicable

The Adams Broadwell letter argues that the City failed to prepare a CEQA Guidelines Appendix F analysis of the project's energy consumption impacts. This requirement, however, and all other analyses required under the CEQA statute and Guidelines (except for the Categorical Exemption analysis), are inapplicable and unenforceable to the project at hand. CEQA does not apply to any class of projects that the Secretary for Natural Resources has designated as exempt. Pub.Res.Code § 21080(b)(9). The Infill Project Exemption is one of those classes of projects that the Secretary has designated as categorically exempt. 14 CCR § 15332. Thus, a negative declaration, EIR, and all other analyses required under CEQA (including Appendix F), are only required in the case of a categorically exempt project where one of the "exceptions to the exemptions" apply. As described in section 7 of this letter, no such exception applies to the proposed Project.

Adams Broadwell also makes the curious argument that the City would be required to prepare a supplemental analysis to the Moffett Park Specific Plan EIR if the City were relying upon the environmental analysis in that EIR. But then Adams Broadwell admits that "the City is not relying" upon the Specific Plan EIR. Without addressing whether a subsequent or supplemental analysis to the Moffett Park Specific Plan EIR would in fact be required *if* the City were relying on that document for processing the proposed Project, the admission by Adams Broadwell that the City is not relying on the Moffett Park EIR renders this entire argument moot.

For all these reasons, Google encourages the City to proceed with consideration of the Mechanical Facility by reference to the Infill Project Exemption and urges the City to approve the project.

Very truly yours,

James T. Burroughs

Enclosures

cc: Andy Springer, Google
Sallie Lim, Google
Joe South, Sares Regis @ Google
Emily Murray, Allen Matkins

Exhibit A

Additional Project Description Specifics

Your ref
Our ref 266490
File ref

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October 7, 2019

Comments on the September 24, 2019 Letter Regarding Agenda Item No. 19-0988, Special Development Permit for 1390 Borregas Avenue Mechanical Facility

Dear Ms. Caliva-Lepe,

I have reviewed the comments provided in the letter dated September 24, 2019, from Mr. Aaron Messing of Adams Broadwell Joseph & Cardozo in regard to the 1390 Borregas Mechanical Facility ("Project"). In reviewing, I have noted several instances where additional information can be provided to address the concerns of Mr. Messing; these are noted below. Arup has been a consultant working with Google on the project, and all details provided are based on the design as submitted to the City of Sunnvale as the basis for the determination of categorical exemption from CEQA.

In the comments below, page numbers referenced refer to the page numbers in Mr. Messing's letter. Responses are provided in italics below each statement.

- Page 9: "…the brief Project description…omits…explanation of how the individual components interact to provide heating and cooling to adjacent buildings and the function of each component."
  Cooling is generated by electric centrifugal chillers located within the cooling building. When excess chilled water is created, it can be stored in the three chilled water tanks on the property. A subset of the chillers are equipped with heat recovery that provides hot water which combines with hot water produced via air source heat pumps on top of the heating building. When excess heating hot water is created, it can be stored in the heating hot water storage tank on the property. Distribution pumps circulate heating and cooling water through underground pipes that connect to each office building. Cooling towers circulate condenser water via pumps to the chillers as a means of heat rejection. Evaporative cooling towers cool the water, some of which is evaporated, which serves as heat rejection.
- Page 9: "…the brief Project description…omits…description of cooling tower design, cycles of concentration, circulating water treatment method(s) and flowrate,

circulating water quality, amount and quality of cooling tower blowdown, and blowdown disposal/treatment methods."
8,200 tons of evaporative cooling towers are located on the cooling building roof and circulate condenser water to the centrifugal chillers. Makeup water is provided from the City of Sunnyvale potable water system, and will achieve a minimum of 6 cycles of concentration when operating with potable water. Chemical-free water treatment is specified for the cooling towers as part of the basis of design, and blowdown water will be disposed to the sewer main in Borregas Ave.

- Page 9: "…the brief Project description…omits…Diesel generator specification sheet and proposed emission controls, if any (e.g., DPF or SCR)"
  The proposed generator is a 1 MW CAT C32 diesel generator designed to Tier 2 EPA emissions performance. No supplementary exhaust filtration is proposed at this time.
- Page 9: "…the brief Project description…omits…peak and total annual electricity demand in MWh/yr"
  Annual energy consumption for the mechanical facility at full operation is anticipated to be 6,000 MWh/yr. The projected peak demand is estimated to be 4.2 MW based on a simulation of annual energy use consistent with methods required for California Title 24 performance-based compliance.
- Page 9: "…the brief Project description…omits…Design of and MW output of solar panels"
  Solar panels are proposed to be building integrated façade PV on the heating and cooling building with standard panels coated with architectural glass. Bifacial or high efficiency roof-mounted panes are proposed for the ancillary building. The total system capacity is proposed to be 158 kW, with annual production of 153 MWh.
- Page 9: "…the brief Project description…omits…Battery composition (e.g., lithium-ion) and vendor specification sheet"
  Batteries are integral to the UPS device. No additional stand-alone batteries are proposed at this time. UPS and standby generation design is in accordance with NEC Article 702 and Article 480. UL Listing 1778 also applies to UPS devices, and fire protection for the UPS is designed in accordance with NFPA 111.
- Page 9: "…the brief Project description…omits…Battery facility layout"
  Facility layout yet to be determined. No stand-alone batteries are proposed; batteries integral to UPS are only anticipated.
- Page 9: "…the brief Project description…omits…Total water demand and water quality for cooling towers…"
  Tower water use is anticipated to be 9.7 MGY. Makeup water is proposed to be potable water from the City of Sunnyvale water system. Quality is provided by the City in the annual water quality report.
- Page 9: "…the brief Project description…omits…Water treatment methods and residuals disposal"
  Water treatment is not proposed on-site for wastewater. Chemical-free cooling tower water filtration is proposed for condenser water as a basis of design.

- Page 9: "…the brief Project description…omits…Wastewater disposal method(s) and location"
  Wastewater disposal is via the sewer main in Borregas Ave.
- Page 10: "…the brief Project description…omits…Manufacturer-provided electricity demand for all equipment."
  The total connected load for equipment at the 1390 Borregas Mechanical Facility based on manufacturer provided is estimated to be 5.8 kVA. Estimation is based on approach required by the local electric utility, Pacific Gas and Electric, for service connection application.

Yours sincerely,

Rob Best
Senior Engineer

Exhibit B

Reyff Report

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M E M O

Date: October 7, 2019

To: **Ms. Noren Caliva-Lepe**
Principal Planner
Community Development Department
City of Sunnyvale
456 W Olive Ave
Sunnyvale, CA 94086

From: James A. Reyff
Illingworth & Rodkin, Inc.
429 E. Cotati Ave
Cotati, CA 94931

RE: 1390 Borregass CUP Project Air Quality Analysis - Sunnyvale, CA

SUBJECT: Response to Comments Job#19-107

This memo addresses comments made by Adams Broadwell Joseph & Cardoza (Adams Broadwell) regarding the air quality analysis for the 1390 Borregas Avenue Mechanical Facility in Sunnyvale, CA. Illingworth & Rodkin, Inc. prepared an air quality analysis for this project, dated May 29, 2019. The September 24, 2019 letter from Adams Broadwell includes comments made by Phyllis Fox, PhD, PE.

Comment: Construction emissions underestimated.

Response:

The City relies on construction emission thresholds recommended by the Bay Area Air Quality Management District (BAAQMD) and included in their CEQA BAAQMD Air Quality Guidelines, dated May 2017. These thresholds are based on average daily emissions of reactive organic gases, nitrogen oxides, the exhaust portion of respirable particulate matter (PM10) and the exhaust portion of fine particulate matter (PM2.5). The guidelines do not include quantified thresholds for fugitive PM10 or PM2.5 but recommend that best management practices be applied.

Project construction and operational emissions were predicted using the CalEEMod that was developed by California Air Quality Management Districts, including the BAAQMD. Given the construction detail known at the time of the analysis, the air quality analysis used the CalEEMod model with default settings for construction of a light duty industrial site that would have 1.5 acres of disturbance. Use of CalEEMod with default settings is appropriate. With default settings, CalEEMod generates a construction schedule for each phase, equipment usage assumptions by type, quantity, size, load factor, number of hours per day, and daily vehicle trips for both workers and vendor truck trips. The CalEEMod default schedule is based on the most intensive construction schedule where construction activity is assumed to occur over the shortest period possible and all equipment is used continuously for the entire workday. CalEEMod assumes construction equipment fleet emissions based on the year of construction emissions analyzed, where CalEEMod uses projections from the California Air Resources Board's OFFROAD model. Since the construction fleet is not known, no tier level for the equipment was assigned in CalEEMod. Typically, construction activity is less intensive and spread out over a longer duration. Since the thresholds are based on average daily emissions rates, using a shorter, more intensive construction schedule tends to yield a higher rate of emissions.

An alternative and much more conservative analysis was conducted with CalEEMod to incorporate the actual projected schedule for the project. That analysis includes the actual projected workdays for each phase and overestimates emission by assuming that those would be equally intensive as the CalEEMod shorter default schedule. In addition, the import/export of 10,000 cubic yards of fill material was included in this analysis. A revised version Table 2 of the air quality analysis is provided. Note that while the emissions from construction activity in this analysis increase, the number of construction days also increase such that the rate of average daily emissions is similar to the original air quality analysis computations. The average daily emissions are based on the total emissions divided by the total number of workdays and compared against the significance thresholds used by the City.

Furthermore, the project is much smaller than the project screening size identified in the BAAQMD Air Quality Guidelines as having significant air quality emissions from construction[1]. The guidelines identify a "General Light Industry" or "Heavy General Industry" project of 11 acres as having the potential to have significant construction period emissions. The project is less than 2 acres, and therefore, can be concluded to have less than significant emissions without modeling the project.

Comment: Fugitive Emissions from construction not computed.

The Commenter claims that fugitive dust emissions were not modeled and there are no requirements for measures that represent BAAQMD-recommended best management practices to control fugitive dust emissions.

Response:

<u>Best Management Practices to Control Emissions from Construction</u>

[1] BAAQMD. 2017. *CEQA Air Quality Guidelines.* May. See Table 3-1, pp3.2 and 3-3.

The City of Sunnyvale requires construction projects to include BAAQMD-recommended best management practices for construction projects. In 2017, Sunnyvale adopted an update to the City's Land Use and Transportation Element (LUTE) of its General Plan. The LUTE combined the long-range planning requirements of both land use and circulation elements into one chapter of the General Plan. An environmental impact report (EIR) prepared for the LUTE evaluated the environmental impacts associated with development of the City based on the land use and transportation elements established in the LUTE. Air quality and greenhouse gas emissions associated with construction and operation of the LUTE were addressed in that EIR. [2] (LUTE DEIR). Projects constructed in Sunnyvale are subject to the mitigation measures contained in the LUTE DEIR. Impacts and mitigation measures pertaining to the proposed DEIR were identified. This included project-specific impacts. The focus of this air quality study is to address impacts associated with criteria air pollutants and toxic air contaminant (TAC) exposure associated with project construction and exposure of project occupants to TAC sources near the project site (i.e., within 1,000 feet). The LUTE DEIR identified significant and unavoidable impacts with respect to temporary construction period emissions (Impact 3.5.3). As mitigation, the LUTE MM3.5.3 requires that prior to the issuance of grading or building permits, the City of Sunnyvale shall ensure that the BAAQMD basic construction mitigation measures from Table 8-1 of the BAAQMD 2011 CEQA Air Quality Guidelines (or subsequent updates) are noted on the construction documents.[3] The proposed Mechanical Facility project will meet this construction requirement in connection with obtaining its final grading and building permits.

Fugitive Dust Emissions

The air quality study addresses exhaust particulate matter emissions. Exhaust emissions of particulate matter (i.e., PM10 and PM2.5) were computed and compared against appropriate thresholds recommended in the BAAQMD CEQA Air Quality Guidelines and used by the City. When recommending significance thresholds for project construction, the BAAQMD specifically did not identify quantitative emission thresholds for fugitive dust. Rather BAAQMD recommended that the level of significance be tied to the appropriate level of dust control (e.g., application of Best Management Practices). As previously described, the project would incorporate best management practices to reduce PM10 and PM2.5 emissions per the thresholds and guidance provided in the BAAQMD CEQA Air Quality Guidelines. These measures include site watering of exposed surfaces, limiting vehicles speeds on unpaved portions of the site, covering of any haul trucks, and clean-up of spilt or tracked dirt on roadways. These measures would substantially reduce fugitive dust emissions. Note that the project construction site is only 1.5 acres; therefore, extensive grading would not occur.

Comment: Operational emissions omitted or underestimated

The Commenter claims that operational emissions were underestimated because they did not include emissions from cooling towers, diesel fuel tanks, wastewater treatments (presumably from cooling towers) and underestimated diesel generator operation.

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2 City of Sunnyvale. 2016. *Land Use and Transportation Element Draft Environmental Impact Report* (SCH No.2012032003). August.

3 Note that the BAAQMD Basic Construction Mitigation Measures Recommended for ALL Proposed Projects is listed as Table 8-2 in the BAAQMD 2017 CEQA Air Quality Guidelines.

Response:

Cooling Towers

Cooling towers would be a source of particulate matter emissions, in the form of $PM_{2.5}$ and PM_{10}. As the Commenter correctly pointed out, those emissions are not computed by CalEEMod and were not included in the air quality analysis. However, the Commenter exaggerates the emissions potential emissions from these cooling towers by claiming that they would range up to 11 tons per year.

Particulate matter emissions from cooling towers are a result of evaporation of liquid water entrained in the discharge air stream and carried out of the tower as "drift" droplets that contain dissolved solids in the water. Drift droplets that evaporate can produce PM_{10} emissions. PM_{10} is generated when the drift droplets evaporate and leave fine particulate matter formed by crystallization of dissolved solids.

PM_{10} and $PM_{2.5}$ emissions from project cooling towers, were calculated based on a worst-case drift rate from the cooling tower of 0.33 gallons per minute (gpm) using information provided by the project applicant engineers and a total dissolved solids (TDS) concentration of 2,322 parts per million (ppm) in the circulating water based on use of City of Sunnyvale potable with a TDS of 387 ppm and use of six cycle of concentration for the recirculating water4. Based on the total drift rate and TDS concentration, the PM_{10} emissions were estimated as 9.2 pounds per day and annual emissions of 1.7 tons per year. $PM_{2.5}$ emissions are assumed to be the same as the PM_{10} emissions.

The emissions of particulate matter from cooling towers are quite small and well below operational emissions thresholds, identified in Table 1 for PM10 and PM2.5 of the air quality analysis. Those emissions would not cause or contribute to violations of ambient air quality standards.

ROG Emissions from Diesel Evaporation Associated with Diesel Emergency Generators

The ROG emission associated with the transfer (filling) and storage of diesel fuel would be negligible and was not included in the operational emissions for the project. The air quality study did not quantify these emissions because they are considered too small to substantially contribute to project reactive organic gas (ROG) emissions. Diesel fuel has a low volatility, and therefore, evaporative emissions of ROG are very low.

It is clear that the storage and transfer of diesel fuel are insignificant sources of emissions since the Bay Area Air Quality Management District (BAAQMD) Regulation 2-1-123.3 exempts storage of fuel oils with a gravity of 40 API or lower and having a capacity of 10,000 gallons or less. According to CARB, the average range of API gravity for Ultra Low Diesel Fuel (ULSD) is from 37.5 to 39.5.[5] Additionally, per the BAAQMD permitting requirements for a Gasoline Dispensing Facility (BAAQMD Form G-101B), "equipment used for the storage and dispensing of diesel fuel and kerosene is exempt from permit requirements." That is, the storage and

[4] City of Sunnyvale water quality report (https://sunnyvale.ca.gov/civicax/filebank/blobdload.aspx?blobid=23738).
[5] CARB, January 8, 2009. Diesel Fuel Comparison Fuel Study Workshop.

dispensing of diesel fuel is considered to be an insignificant emission source. This is also the reason why diesel fuel dispensers at commercial fueling stations do not have evaporative controls on the fueling nozzles, unlike the gasoline fuel nozzles. Emissions from the normal transfer, evaporation, and spillage of diesel fuel is an insignificant contributor of ROG emissions.

The exact size of the diesel storage tank is not known. For this response, the use an approximate 660-gallon diesel storage tank for the 1,000-kW generator is a reasonable estimate. The storage tanks would be of a horizontal rectangular configuration and located under the generator. The tanks would be considered fixed-roof tanks. Each storage tank has sufficient capacity to supply fuel to its associated generator to run for 24 hours in the event of a power failure. For generator operation of up to 50 hours per year, each storage tank would require filling about two times per year. Emissions from these tanks for filling, storage, and operation would result in insignificant ROG emissions.

To further emphasize the insignificant nature of potential ROG emissions from these tanks, ROG emission from the project tanks were roughly computed based on emissions from a similar 10,000-gallon diesel storage tank. Based on emissions from a similar 10,000-gallon sub-base diesel storage tank with similar operational conditions, the ROG emissions were calculated as 4.98 pounds per year[6]. Scaling these emissions to a 660-gallon storage tank yields an estimated annual emission rate of one-third of a pound per year (negligible in terms of pounds per day). These ROG emissions are clearly an insignificant contributor to the project's ROG emissions.

NOx from Diesel Delivery Trucks

The project would receive diesel fuel deliveries for the emergency generator once or twice per year at most. The emissions would be negligible. Furthermore, the CalEEMod modeling includes emissions from project traffic generation that includes some truck trips.

Emergency Diesel Generator Emissions Underestimated

Note that generator air pollutant emissions are included in Table 2 under "2021 Project Operational Emissions," as these were modeled using CalEEMod.

The air quality analysis assumed 50 hours of generator operation per year. This is the limit imposed by BAAQMD for normal testing and maintenance. The project generator would be tested for about one hour or less per month. Unless there is a power outage, the generator would likely run less than 20 hours per year for testing and maintenance. During the last year, Google reported the longest outage at any of their facilities to total 8.5 hours. The use of 50 hours per year is considered a conservative estimate of annual generator use for this analysis. Testing is typically conducted a a low load rate and emergency use might include a high load rate, depending on the load demand from the facility. The modeling used the CalEEMod default rate for an emergency generator of 0.73 (73% of full load), which is a reasonable factor for computing emissions from annual use. The Commenter cites BAAQMD policy for computing the potential to emit emissions to address the applicability of District permitting regulations such as New Source Review and Title V Major Facility Review. This policy uses 100 hours per year. The District continues to use 50

[6] Using the U.S. EPA Tanks 4.09d emissions model for storage tank emissions.

hours per year for addressing emission offsets and the applicability of the District's Toxics New Source Review regulation. In preparing a CEQA analysis, this study provides a reasonable analysis of possible environmental effects. This analysis does not include speculative emergency conditions, which are unlikely to occur and cannot be predicted with a reasonable certainty.

Furthermore, the generator emissions, when combined with other project emissions, were well below significance thresholds. By doubling the assumed hours per year operation of the generator to 100 hours would not change that conclusion as the project emissions would continue to be well below the thresholds, at about 5 percent of the threshold.

Air Pollutant Emission from Water Usage and Energy

There are no project air pollutant emissions attributable to water or energy usage. Any emissions associated with the treatment and conveyance of water is addressed by the sources that provide that water. Similarly, with off-site energy production, those emissions are addressed by other projects. The BAAQMD CEQA Air Quality Guidelines and the CalEEMod model do not include indirect emissions from water usage or electricity generated off site.

Emissions from Electricity Generation Omitted

The default energy provider for Sunnyvale is Silicon Valley Clean Energy (SVCE) that will provide electricity generated by 100-percent carbon free sources. In addition, the project's applicant has a carbon neutral policy, as explained in the air quality analysis. It is speculative for the to assume that the project would opt-out of using SVCE carbon-free electricity and also violate their corporate carbon neutral policy for this small project.

Improper Baseline for Operational Emissions

The air quality analysis assumed that the existing 26,880-square foot light industrial land use would operate if the project were not constructed. This is a reasonable baseline as the project site is not likely to remain vacant. In any case, Table 2 of the air quality analysis has been updated to reflect only the project emissions and not include adjustments for existing or baseline emissions. This adjustment does not change the conclusions that project operational emissions are well below the significance thresholds.

Comment: Air Quality Impacts were Not Evaluated

Commenter claims that the air quality analysis should have modeled the emissions from the project to assess whether the project would exceed an ambient air quality standard or contribute to an existing or projected air quality violation.

Response:

Since project emissions are below the significance thresholds contained in the BAAQMD *CEQA Air Quality Guidelines*, they are considered to not be considerable in terms of causing or contributing to a violation of an ambient air quality standard.

Comment: Cumulative Impacts

Response:

The BAAQMD CEQA Guidelines (page 2-1) recognize that no single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project's contribution to the cumulative impact is considerable, then the project's impact on air quality is considered significant. This project by itself does not cause or contribute measurably to a violation of ambient air quality impact. In essence, the air quality analysis addresses cumulative impacts from the project upon local and regional air quality.

Revised Table 2 of the Air Quality Analysis

As shown in the revised Table 2 of the Air Quality Analysis (below), neither construction nor operational emissions would not exceed the BAAQMD significance thresholds. *Attachment 1* includes the CalEEMod modeling output.

Table 2 Annual and Average Daily Operational Emissions

Scenario	ROG	NOx	PM_{10}	$PM_{2.5}$	CO2e
2019-22 Project Construction (tons)	0.75 tons	5.31 tons	0.25 tons	0.24 tons	692MT
2019-20 Project Construction (lbs./day)[1]	3 lbs.	20 lbs.	0.9 lbs.	0.9 lbs.	--
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.[2]	*54* lbs. [2]	*NA*
2022 Project Operational Emissions Cooling Tower Emissions	0.16 tons	0.24 tons	0.02 tons 1.7 tons 1.72 tons	0.01 tons 1.70 tons 1.71tons	78 MT
BAAQMD Thresholds (tons /year)	*10 tons*	*10 tons*	*15 tons*	*10 tons*	*660 MT*[4]
Exceed Threshold?	**No**	**No**	**No**	**No**	**No**
Project Operational Emissions (*lbs/day*)[3]	1 lbs.	1 lbs.	9 lbs.	9 lbs.	--
BAAQMD Thresholds (pounds/day)	*54* lbs.	*54* lbs.	*82* lbs.	*54* lbs.	*NA*
Exceed Threshold?	**No**	**No**	**No**	**No**	
Stationary Sources (emergency generator engine) of GHG Emissions (metric tons)	--	--	--	--	24 MT
BAAQMD Thresholds (metric tons /year)	**NA**	**NA**	**NA**	**NA**	**6,600 MT**[4]
Exceed Threshold?					**No**

[1] Assumes 544 construction workdays [2] Applies to only exhaust portion for construction. [3] Assumes 365-day operation.
[4] BAAQMD 2020 threshold adjusted for 2030 (40% lower)

Attachment 1: Alternative CalEEMod Emissions Analysis

Attachment 1

1390 Borregas Mechanical Facility Proposed

Santa Clara County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Light Industry	23.37	1000sqft	1.50	23,370.00	0
Parking Lot	6.00	Space	0.00	2,400.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	58
Climate Zone	4			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	290	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

1390 Borregas Mechanical Facility Proposed - Santa Clara County, Annual

Project Characteristics - PG&E rate only for water usage

Land Use - Area approximated from Google Earth

Vehicle Trips - Based on trip generation rate for usable part of building 1,350sf

Energy Use - Based on electricity projection

Water And Wastewater - WTP treatment, Added 600,000 annual gallons for outside water usage

Construction Phase - Updated to more closely reflect timeline schedule

Grading - includes 10,000cy offhauling

Demolition - square footage of demolition

Construction Off-road Equipment Mitigation - BMPs

Stationary Sources - Emergency Generators and Fire Pumps -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	4.00	163.00
tblConstructionPhase	NumDays	200.00	503.00
tblConstructionPhase	PhaseEndDate	1/21/2020	10/1/2020
tblConstructionPhase	PhaseEndDate	10/27/2020	3/18/2022
tblConstructionPhase	PhaseEndDate	11/10/2020	1/14/2021
tblConstructionPhase	PhaseEndDate	11/24/2020	1/22/2021
tblConstructionPhase	PhaseStartDate	1/16/2020	2/18/2020
tblConstructionPhase	PhaseStartDate	1/22/2020	4/15/2020
tblConstructionPhase	PhaseStartDate	10/28/2020	1/1/2021
tblConstructionPhase	PhaseStartDate	11/11/2020	1/11/2021
tblEnergyUse	LightingElect	3.08	0.00
tblEnergyUse	NT24E	3.70	257.57
tblEnergyUse	NT24NG	6.67	0.00
tblEnergyUse	T24E	1.48	0.00

tblEnergyUse	T24NG	19.71	0.00
tblGrading	AcresOfGrading	61.13	16.88
tblGrading	MaterialExported	0.00	10,000.00
tblLandUse	LotAcreage	0.54	1.50
tblLandUse	LotAcreage	0.05	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	290
tblStationaryGeneratorsPumpsEF	CH4_EF	0.07	0.07
tblStationaryGeneratorsPumpsEF	ROG_EF	2.2480e-003	2.2477e-003
tblStationaryGeneratorsPumpsUse	HorsePowerValue	0.00	1,250.00
tblStationaryGeneratorsPumpsUse	HoursPerYear	0.00	50.00
tblStationaryGeneratorsPumpsUse	NumberOfEquipment	0.00	1.00
tblVehicleTrips	ST_TR	1.32	0.41
tblVehicleTrips	SU_TR	0.68	0.41
tblVehicleTrips	WD_TR	6.97	0.41
tblWater	AerobicPercent	87.46	100.00
tblWater	AerobicPercent	87.46	100.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	AnaerobicandFacultativeLagoonsPercent	2.21	0.00
tblWater	IndoorWaterUseRate	5,404,312.50	40,000,000.00
tblWater	OutdoorWaterUseRate	0.00	600,000.00
tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

1390 Borregas Mechanical Facility Proposed - Santa Clara County, Annual

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0132	0.1354	0.0860	1.6000e-004	8.7600e-003	7.1200e-003	0.0159	1.4900e-003	6.6500e-003	8.1500e-003	0.0000	14.8664	14.8664	3.1300e-003	0.0000	14.9447
2020	0.3221	2.9425	1.9187	4.0600e-003	0.4113	0.1363	0.5476	0.2118	0.1289	0.3407	0.0000	351.5661	351.5661	0.0696	0.0000	353.3066
2021	0.3702	1.8827	1.7856	3.2100e-003	0.0154	0.0921	0.1075	4.1800e-003	0.0888	0.0930	0.0000	267.5172	267.5172	0.0451	0.0000	268.6437
2022	0.0465	0.3551	0.3592	6.6000e-004	3.1200e-003	0.0162	0.0194	8.5000e-004	0.0157	0.0165	0.0000	54.6696	54.6696	8.8600e-003	0.0000	54.8910
Maximum	**0.3702**	**2.9425**	**1.9187**	**4.0600e-003**	**0.4113**	**0.1363**	**0.5476**	**0.2118**	**0.1289**	**0.3407**	**0.0000**	**351.5661**	**351.5661**	**0.0696**	**0.0000**	**353.3066**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2019	0.0132	0.1354	0.0860	1.6000e-004	4.7600e-003	7.1200e-003	0.0119	8.9000e-004	6.6500e-003	7.5400e-003	0.0000	14.8663	14.8663	3.1300e-003	0.0000	14.9447
2020	0.3221	2.9425	1.9187	4.0600e-003	0.2003	0.1363	0.3366	0.0995	0.1289	0.2284	0.0000	351.5658	351.5658	0.0696	0.0000	353.3063
2021	0.3702	1.8827	1.7856	3.2100e-003	0.0154	0.0921	0.1075	4.1800e-003	0.0888	0.0930	0.0000	267.5169	267.5169	0.0451	0.0000	268.6435
2022	0.0465	0.3551	0.3592	6.6000e-004	3.1200e-003	0.0162	0.0194	8.5000e-004	0.0157	0.0165	0.0000	54.6696	54.6696	8.8600e-003	0.0000	54.8910
Maximum	**0.3702**	**2.9425**	**1.9187**	**4.0600e-003**	**0.2003**	**0.1363**	**0.3366**	**0.0995**	**0.1289**	**0.2284**	**0.0000**	**351.5658**	**351.5658**	**0.0696**	**0.0000**	**353.3063**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**49.01**	**0.00**	**31.14**	**51.74**	**0.00**	**24.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	12-17-2019	3-16-2020	0.4486	0.4486
2	3-17-2020	6-16-2020	1.0058	1.0058
3	6-17-2020	9-16-2020	1.1851	1.1851
4	9-17-2020	12-16-2020	0.6644	0.6644
5	12-17-2020	3-16-2021	0.6752	0.6752
6	3-17-2021	6-16-2021	0.5233	0.5233
7	6-17-2021	9-16-2021	0.5232	0.5232
8	9-17-2021	12-16-2021	0.5179	0.5179

9	**12-17-2021**	**3-16-2022**	0.4767	0.4767
10	**3-17-2022**	**6-16-2022**	0.0104	0.0104
		Highest	1.1851	1.1851

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1037	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.2000e-004	5.2000e-004	0.0000	0.0000	5.6000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	791.9146	791.9146	0.0792	0.0164	798.7769
Mobile	2.4200e-003	0.0108	0.0308	1.1000e-004	0.0104	9.0000e-005	0.0105	2.7800e-003	9.0000e-005	2.8700e-003	0.0000	10.1774	10.1774	3.3000e-004	0.0000	10.1857
Stationary	0.0513	0.2293	0.1308	2.5000e-004		7.5400e-003	7.5400e-003		7.5400e-003	7.5400e-003	0.0000	23.7998	23.7998	3.3400e-003	0.0000	23.8832
Waste						0.0000	0.0000		0.0000	0.0000	5.8827	0.0000	5.8827	0.3477	0.0000	14.5741
Water						0.0000	0.0000		0.0000	0.0000	14.1521	28.7471	42.8992	0.0516	0.0314	53.5373
Total	**0.1574**	**0.2401**	**0.1619**	**3.6000e-004**	**0.0104**	**7.6300e-003**	**0.0180**	**2.7800e-003**	**7.6300e-003**	**0.0104**	**20.0347**	**854.6395**	**874.6742**	**0.4821**	**0.0478**	**900.9578**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.1037	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.2000e-004	5.2000e-004	0.0000	0.0000	5.6000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	791.9146	791.9146	0.0792	0.0164	798.7769
Mobile	2.4200e-003	0.0108	0.0308	1.1000e-004	0.0104	9.0000e-005	0.0105	2.7800e-003	9.0000e-005	2.8700e-003	0.0000	10.1774	10.1774	3.3000e-004	0.0000	10.1857
Stationary	0.0513	0.2293	0.1308	2.5000e-004		7.5400e-003	7.5400e-003		7.5400e-003	7.5400e-003	0.0000	23.7998	23.7998	3.3400e-003	0.0000	23.8832
Waste						0.0000	0.0000		0.0000	0.0000	5.8827	0.0000	5.8827	0.3477	0.0000	14.5741
Water						0.0000	0.0000		0.0000	0.0000	14.1521	28.7471	42.8992	0.0516	0.0314	53.5373
Total	**0.1574**	**0.2401**	**0.1619**	**3.6000e-004**	**0.0104**	**7.6300e-003**	**0.0180**	**2.7800e-003**	**7.6300e-003**	**0.0104**	**20.0347**	**854.6395**	**874.6742**	**0.4821**	**0.0478**	**900.9578**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

1390 Borregas Mechanical Facility Proposed - Santa Clara County, Annual

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	12/17/2019	1/13/2020	5	20	
2	Grading	Grading	2/18/2020	10/1/2020	5	163	Number of days with grading work
3	Building Construction	Building Construction	4/15/2020	3/18/2022	5	503	Based on schedule assuming work every day
4	Paving	Paving	1/1/2021	1/14/2021	5	10	used model default
5	Architectural Coating	Architectural Coating	1/11/2021	1/22/2021	5	10	used model default

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 16.88

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 35,055; Non-Residential Outdoor: 11,685; Striped Parking Area: 144 (Architectural Coating – sqft)

OffRoad Equipment

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Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Rubber Tired Dozers	1	8.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Grading	Graders	1	6.00	187	0.41
Grading	Rubber Tired Dozers	1	6.00	247	0.40
Grading	Tractors/Loaders/Backhoes	1	7.00	97	0.37
Building Construction	Cranes	1	6.00	231	0.29
Building Construction	Forklifts	1	6.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	1	6.00	97	0.37
Building Construction	Welders	3	8.00	46	0.45
Paving	Cement and Mortar Mixers	1	6.00	9	0.56
Paving	Pavers	1	6.00	130	0.42
Paving	Paving Equipment	1	8.00	132	0.36
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	5	13.00	0.00	122.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	3	8.00	0.00	1,250.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	7	11.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	5	13.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	2.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.2800e-003	0.0000	7.2800e-003	1.1000e-003	0.0000	1.1000e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0126	0.1247	0.0819	1.3000e-004		7.0700e-003	7.0700e-003		6.6100e-003	6.6100e-003	0.0000	11.7789	11.7789	3.0000e-003	0.0000	11.8538
Total	**0.0126**	**0.1247**	**0.0819**	**1.3000e-004**	**7.2800e-003**	**7.0700e-003**	**0.0144**	**1.1000e-003**	**6.6100e-003**	**7.7100e-003**	**0.0000**	**11.7789**	**11.7789**	**3.0000e-003**	**0.0000**	**11.8538**

3.2 Demolition - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-004	0.0105	2.0600e-003	3.0000e-005	9.2000e-004	4.0000e-005	9.6000e-004	2.4000e-004	4.0000e-005	2.8000e-004	0.0000	2.5855	2.5855	1.2000e-004	0.0000	2.5885
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	2.0000e-003	1.0000e-005	5.7000e-004	0.0000	5.7000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5020	0.5020	1.0000e-005	0.0000	0.5023
Total	**5.6000e-004**	**0.0106**	**4.0600e-003**	**4.0000e-005**	**1.4900e-003**	**4.0000e-005**	**1.5300e-003**	**3.9000e-004**	**4.0000e-005**	**4.3000e-004**	**0.0000**	**3.0875**	**3.0875**	**1.3000e-004**	**0.0000**	**3.0909**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2700e-003	0.0000	3.2700e-003	5.0000e-004	0.0000	5.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0126	0.1247	0.0819	1.3000e-004		7.0700e-003	7.0700e-003		6.6100e-003	6.6100e-003	0.0000	11.7788	11.7788	3.0000e-003	0.0000	11.8538
Total	**0.0126**	**0.1247**	**0.0819**	**1.3000e-004**	**3.2700e-003**	**7.0700e-003**	**0.0103**	**5.0000e-004**	**6.6100e-003**	**7.1100e-003**	**0.0000**	**11.7788**	**11.7788**	**3.0000e-003**	**0.0000**	**11.8538**

3.2 Demolition - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	3.0000e-004	0.0105	2.0600e-003	3.0000e-005	9.2000e-004	4.0000e-005	9.6000e-004	2.4000e-004	4.0000e-005	2.8000e-004	0.0000	2.5855	2.5855	1.2000e-004	0.0000	2.5885
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.6000e-004	1.9000e-004	2.0000e-003	1.0000e-005	5.7000e-004	0.0000	5.7000e-004	1.5000e-004	0.0000	1.5000e-004	0.0000	0.5020	0.5020	1.0000e-005	0.0000	0.5023
Total	**5.6000e-004**	**0.0106**	**4.0600e-003**	**4.0000e-005**	**1.4900e-003**	**4.0000e-005**	**1.5300e-003**	**3.9000e-004**	**4.0000e-005**	**4.3000e-004**	**0.0000**	**3.0875**	**3.0875**	**1.3000e-004**	**0.0000**	**3.0909**

3.2 Demolition - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					5.9500e-003	0.0000	5.9500e-003	9.0000e-004	0.0000	9.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5700e-003	0.0943	0.0660	1.1000e-004		5.1900e-003	5.1900e-003		4.8400e-003	4.8400e-003	0.0000	9.4805	9.4805	2.4400e-003	0.0000	9.5414
Total	**9.5700e-003**	**0.0943**	**0.0660**	**1.1000e-004**	**5.9500e-003**	**5.1900e-003**	**0.0111**	**9.0000e-004**	**4.8400e-003**	**5.7400e-003**	**0.0000**	**9.4805**	**9.4805**	**2.4400e-003**	**0.0000**	**9.5414**

3.2 Demolition - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	7.9700e-003	1.6300e-003	2.0000e-005	8.9000e-004	3.0000e-005	9.2000e-004	2.3000e-004	2.0000e-005	2.6000e-004	0.0000	2.0936	2.0936	1.0000e-004	0.0000	2.0960
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.4000e-004	1.4600e-003	0.0000	4.6000e-004	0.0000	4.7000e-004	1.2000e-004	0.0000	1.3000e-004	0.0000	0.3979	0.3979	1.0000e-005	0.0000	0.3981
Total	**4.2000e-004**	**8.1100e-003**	**3.0900e-003**	**2.0000e-005**	**1.3500e-003**	**3.0000e-005**	**1.3900e-003**	**3.5000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**2.4915**	**2.4915**	**1.1000e-004**	**0.0000**	**2.4942**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.6800e-003	0.0000	2.6800e-003	4.1000e-004	0.0000	4.1000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.5700e-003	0.0943	0.0660	1.1000e-004		5.1900e-003	5.1900e-003		4.8400e-003	4.8400e-003	0.0000	9.4804	9.4804	2.4400e-003	0.0000	9.5414
Total	**9.5700e-003**	**0.0943**	**0.0660**	**1.1000e-004**	**2.6800e-003**	**5.1900e-003**	**7.8700e-003**	**4.1000e-004**	**4.8400e-003**	**5.2500e-003**	**0.0000**	**9.4804**	**9.4804**	**2.4400e-003**	**0.0000**	**9.5414**

3.2 Demolition - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.3000e-004	7.9700e-003	1.6300e-003	2.0000e-005	8.9000e-004	3.0000e-005	9.2000e-004	2.3000e-004	2.0000e-005	2.6000e-004	0.0000	2.0936	2.0936	1.0000e-004	0.0000	2.0960
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.4000e-004	1.4600e-003	0.0000	4.6000e-004	0.0000	4.7000e-004	1.2000e-004	0.0000	1.3000e-004	0.0000	0.3979	0.3979	1.0000e-005	0.0000	0.3981
Total	**4.2000e-004**	**8.1100e-003**	**3.0900e-003**	**2.0000e-005**	**1.3500e-003**	**3.0000e-005**	**1.3900e-003**	**3.5000e-004**	**2.0000e-005**	**3.9000e-004**	**0.0000**	**2.4915**	**2.4915**	**1.1000e-004**	**0.0000**	**2.4942**

3.3 Grading - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3776	0.0000	0.3776	0.2034	0.0000	0.2034	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1100	1.2295	0.5260	1.1500e-003		0.0558	0.0558		0.0513	0.0513	0.0000	100.9751	100.9751	0.0327	0.0000	101.7916
Total	**0.1100**	**1.2295**	**0.5260**	**1.1500e-003**	**0.3776**	**0.0558**	**0.4334**	**0.2034**	**0.0513**	**0.2547**	**0.0000**	**100.9751**	**100.9751**	**0.0327**	**0.0000**	**101.7916**

3.3 Grading - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.1900e-003	0.1814	0.0371	4.9000e-004	0.0106	5.9000e-004	0.0112	2.9100e-003	5.6000e-004	3.4800e-003	0.0000	47.6693	47.6693	2.1800e-003	0.0000	47.7238
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1700e-003	1.5600e-003	0.0163	5.0000e-005	5.1700e-003	3.0000e-005	5.2000e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4346	4.4346	1.1000e-004	0.0000	4.4373
Total	**7.3600e-003**	**0.1829**	**0.0535**	**5.4000e-004**	**0.0158**	**6.2000e-004**	**0.0164**	**4.2900e-003**	**5.9000e-004**	**4.8900e-003**	**0.0000**	**52.1038**	**52.1038**	**2.2900e-003**	**0.0000**	**52.1611**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1699	0.0000	0.1699	0.0915	0.0000	0.0915	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1100	1.2295	0.5260	1.1500e-003		0.0558	0.0558		0.0513	0.0513	0.0000	100.9750	100.9750	0.0327	0.0000	101.7915
Total	**0.1100**	**1.2295**	**0.5260**	**1.1500e-003**	**0.1699**	**0.0558**	**0.2257**	**0.0915**	**0.0513**	**0.1428**	**0.0000**	**100.9750**	**100.9750**	**0.0327**	**0.0000**	**101.7915**

3.3 Grading - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	5.1900e-003	0.1814	0.0371	4.9000e-004	0.0106	5.9000e-004	0.0112	2.9100e-003	5.6000e-004	3.4800e-003	0.0000	47.6693	47.6693	2.1800e-003	0.0000	47.7238
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.1700e-003	1.5600e-003	0.0163	5.0000e-005	5.1700e-003	3.0000e-005	5.2000e-003	1.3800e-003	3.0000e-005	1.4100e-003	0.0000	4.4346	4.4346	1.1000e-004	0.0000	4.4373
Total	**7.3600e-003**	**0.1829**	**0.0535**	**5.4000e-004**	**0.0158**	**6.2000e-004**	**0.0164**	**4.2900e-003**	**5.9000e-004**	**4.8900e-003**	**0.0000**	**52.1038**	**52.1038**	**2.2900e-003**	**0.0000**	**52.1611**

3.4 Building Construction - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1899	1.3827	1.2331	2.0600e-003		0.0744	0.0744		0.0719	0.0719	0.0000	169.7419	169.7419	0.0315	0.0000	170.5297
Total	**0.1899**	**1.3827**	**1.2331**	**2.0600e-003**		**0.0744**	**0.0744**		**0.0719**	**0.0719**	**0.0000**	**169.7419**	**169.7419**	**0.0315**	**0.0000**	**170.5297**

3.4 Building Construction - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4800e-003	0.0426	0.0113	1.0000e-004	2.4600e-003	2.1000e-004	2.6700e-003	7.1000e-004	2.0000e-004	9.1000e-004	0.0000	9.7780	9.7780	4.5000e-004	0.0000	9.7892
Worker	3.4200e-003	2.4500e-003	0.0257	8.0000e-005	8.1600e-003	5.0000e-005	8.2100e-003	2.1700e-003	5.0000e-005	2.2200e-003	0.0000	6.9953	6.9953	1.7000e-004	0.0000	6.9996
Total	**4.9000e-003**	**0.0450**	**0.0371**	**1.8000e-004**	**0.0106**	**2.6000e-004**	**0.0109**	**2.8800e-003**	**2.5000e-004**	**3.1300e-003**	**0.0000**	**16.7733**	**16.7733**	**6.2000e-004**	**0.0000**	**16.7888**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1899	1.3827	1.2331	2.0600e-003		0.0744	0.0744		0.0719	0.0719	0.0000	169.7417	169.7417	0.0315	0.0000	170.5295
Total	**0.1899**	**1.3827**	**1.2331**	**2.0600e-003**		**0.0744**	**0.0744**		**0.0719**	**0.0719**	**0.0000**	**169.7417**	**169.7417**	**0.0315**	**0.0000**	**170.5295**

3.4 Building Construction - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.4800e-003	0.0426	0.0113	1.0000e-004	2.4600e-003	2.1000e-004	2.6700e-003	7.1000e-004	2.0000e-004	9.1000e-004	0.0000	9.7780	9.7780	4.5000e-004	0.0000	9.7892
Worker	3.4200e-003	2.4500e-003	0.0257	8.0000e-005	8.1600e-003	5.0000e-005	8.2100e-003	2.1700e-003	5.0000e-005	2.2200e-003	0.0000	6.9953	6.9953	1.7000e-004	0.0000	6.9996
Total	**4.9000e-003**	**0.0450**	**0.0371**	**1.8000e-004**	**0.0106**	**2.6000e-004**	**0.0109**	**2.8800e-003**	**2.5000e-004**	**3.1300e-003**	**0.0000**	**16.7733**	**16.7733**	**6.2000e-004**	**0.0000**	**16.7888**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2365	1.7795	1.6834	2.8800e-003		0.0893	0.0893		0.0862	0.0862	0.0000	236.9197	236.9197	0.0423	0.0000	237.9771
Total	**0.2365**	**1.7795**	**1.6834**	**2.8800e-003**		**0.0893**	**0.0893**		**0.0862**	**0.0862**	**0.0000**	**236.9197**	**236.9197**	**0.0423**	**0.0000**	**237.9771**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.7000e-003	0.0536	0.0143	1.4000e-004	3.4300e-003	1.2000e-004	3.5500e-003	9.9000e-004	1.1000e-004	1.1100e-003	0.0000	13.5213	13.5213	5.9000e-004	0.0000	13.5361
Worker	4.4200e-003	3.0600e-003	0.0328	1.0000e-004	0.0114	7.0000e-005	0.0115	3.0300e-003	7.0000e-005	3.0900e-003	0.0000	9.4247	9.4247	2.1000e-004	0.0000	9.4300
Total	**6.1200e-003**	**0.0567**	**0.0471**	**2.4000e-004**	**0.0148**	**1.9000e-004**	**0.0150**	**4.0200e-003**	**1.8000e-004**	**4.2000e-003**	**0.0000**	**22.9460**	**22.9460**	**8.0000e-004**	**0.0000**	**22.9661**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2365	1.7795	1.6834	2.8800e-003		0.0893	0.0893		0.0862	0.0862	0.0000	236.9194	236.9194	0.0423	0.0000	237.9768
Total	**0.2365**	**1.7795**	**1.6834**	**2.8800e-003**		**0.0893**	**0.0893**		**0.0862**	**0.0862**	**0.0000**	**236.9194**	**236.9194**	**0.0423**	**0.0000**	**237.9768**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.7000e-003	0.0536	0.0143	1.4000e-004	3.4300e-003	1.2000e-004	3.5500e-003	9.9000e-004	1.1000e-004	1.1100e-003	0.0000	13.5213	13.5213	5.9000e-004	0.0000	13.5361
Worker	4.4200e-003	3.0600e-003	0.0328	1.0000e-004	0.0114	7.0000e-005	0.0115	3.0300e-003	7.0000e-005	3.0900e-003	0.0000	9.4247	9.4247	2.1000e-004	0.0000	9.4300
Total	**6.1200e-003**	**0.0567**	**0.0471**	**2.4000e-004**	**0.0148**	**1.9000e-004**	**0.0150**	**4.0200e-003**	**1.8000e-004**	**4.2000e-003**	**0.0000**	**22.9460**	**22.9460**	**8.0000e-004**	**0.0000**	**22.9661**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0453	0.3438	0.3500	6.1000e-004		0.0162	0.0162		0.0156	0.0156	0.0000	49.9337	49.9337	8.7000e-003	0.0000	50.1511
Total	**0.0453**	**0.3438**	**0.3500**	**6.1000e-004**		**0.0162**	**0.0162**		**0.0156**	**0.0156**	**0.0000**	**49.9337**	**49.9337**	**8.7000e-003**	**0.0000**	**50.1511**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3000e-004	0.0107	2.8300e-003	3.0000e-005	7.2000e-004	2.0000e-005	7.5000e-004	2.1000e-004	2.0000e-005	2.3000e-004	0.0000	2.8221	2.8221	1.2000e-004	0.0000	2.8250
Worker	8.7000e-004	5.8000e-004	6.3600e-003	2.0000e-005	2.4000e-003	1.0000e-005	2.4100e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.9139	1.9139	4.0000e-005	0.0000	1.9149
Total	**1.2000e-003**	**0.0113**	**9.1900e-003**	**5.0000e-005**	**3.1200e-003**	**3.0000e-005**	**3.1600e-003**	**8.5000e-004**	**3.0000e-005**	**8.8000e-004**	**0.0000**	**4.7360**	**4.7360**	**1.6000e-004**	**0.0000**	**4.7399**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0453	0.3438	0.3500	6.1000e-004		0.0162	0.0162		0.0156	0.0156	0.0000	49.9336	49.9336	8.7000e-003	0.0000	50.1510
Total	**0.0453**	**0.3438**	**0.3500**	**6.1000e-004**		**0.0162**	**0.0162**		**0.0156**	**0.0156**	**0.0000**	**49.9336**	**49.9336**	**8.7000e-003**	**0.0000**	**50.1510**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.3000e-004	0.0107	2.8300e-003	3.0000e-005	7.2000e-004	2.0000e-005	7.5000e-004	2.1000e-004	2.0000e-005	2.3000e-004	0.0000	2.8221	2.8221	1.2000e-004	0.0000	2.8250
Worker	8.7000e-004	5.8000e-004	6.3600e-003	2.0000e-005	2.4000e-003	1.0000e-005	2.4100e-003	6.4000e-004	1.0000e-005	6.5000e-004	0.0000	1.9139	1.9139	4.0000e-005	0.0000	1.9149
Total	**1.2000e-003**	**0.0113**	**9.1900e-003**	**5.0000e-005**	**3.1200e-003**	**3.0000e-005**	**3.1600e-003**	**8.5000e-004**	**3.0000e-005**	**8.8000e-004**	**0.0000**	**4.7360**	**4.7360**	**1.6000e-004**	**0.0000**	**4.7399**

3.5 Paving - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.8700e-003	0.0387	0.0443	7.0000e-005		2.0800e-003	2.0800e-003		1.9100e-003	1.9100e-003	0.0000	5.8825	5.8825	1.8600e-003	0.0000	5.9291
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8700e-003**	**0.0387**	**0.0443**	**7.0000e-005**		**2.0800e-003**	**2.0800e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**5.8825**	**5.8825**	**1.8600e-003**	**0.0000**	**5.9291**

3.5 Paving - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.4000e-004	1.4900e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4268	0.4268	1.0000e-005	0.0000	0.4270
Total	**2.0000e-004**	**1.4000e-004**	**1.4900e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4268**	**0.4268**	**1.0000e-005**	**0.0000**	**0.4270**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	3.8700e-003	0.0387	0.0443	7.0000e-005		2.0800e-003	2.0800e-003		1.9100e-003	1.9100e-003	0.0000	5.8825	5.8825	1.8600e-003	0.0000	5.9291
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**3.8700e-003**	**0.0387**	**0.0443**	**7.0000e-005**		**2.0800e-003**	**2.0800e-003**		**1.9100e-003**	**1.9100e-003**	**0.0000**	**5.8825**	**5.8825**	**1.8600e-003**	**0.0000**	**5.9291**

3.5 Paving - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0000e-004	1.4000e-004	1.4900e-003	0.0000	5.2000e-004	0.0000	5.2000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4268	0.4268	1.0000e-005	0.0000	0.4270
Total	**2.0000e-004**	**1.4000e-004**	**1.4900e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.2000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4268**	**0.4268**	**1.0000e-005**	**0.0000**	**0.4270**

3.6 Architectural Coating - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788
Total	**0.1235**	**7.6300e-003**	**9.0900e-003**	**1.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.2766**	**1.2766**	**9.0000e-005**	**0.0000**	**1.2788**

3.6 Architectural Coating - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0657	0.0657	0.0000	0.0000	0.0657
Total	**3.0000e-005**	**2.0000e-005**	**2.3000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0657**	**0.0657**	**0.0000**	**0.0000**	**0.0657**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1224					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.0900e-003	7.6300e-003	9.0900e-003	1.0000e-005		4.7000e-004	4.7000e-004		4.7000e-004	4.7000e-004	0.0000	1.2766	1.2766	9.0000e-005	0.0000	1.2788
Total	**0.1235**	**7.6300e-003**	**9.0900e-003**	**1.0000e-005**		**4.7000e-004**	**4.7000e-004**		**4.7000e-004**	**4.7000e-004**	**0.0000**	**1.2766**	**1.2766**	**9.0000e-005**	**0.0000**	**1.2788**

3.6 Architectural Coating - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	3.0000e-005	2.0000e-005	2.3000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0657	0.0657	0.0000	0.0000	0.0657
Total	**3.0000e-005**	**2.0000e-005**	**2.3000e-004**	**0.0000**	**8.0000e-005**	**0.0000**	**8.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**0.0000**	**0.0657**	**0.0657**	**0.0000**	**0.0000**	**0.0657**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.4200e-003	0.0108	0.0308	1.1000e-004	0.0104	9.0000e-005	0.0105	2.7800e-003	9.0000e-005	2.8700e-003	0.0000	10.1774	10.1774	3.3000e-004	0.0000	10.1857
Unmitigated	2.4200e-003	0.0108	0.0308	1.1000e-004	0.0104	9.0000e-005	0.0105	2.7800e-003	9.0000e-005	2.8700e-003	0.0000	10.1774	10.1774	3.3000e-004	0.0000	10.1857

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Light Industry	9.58	9.58	9.58	27,974	27,974
Parking Lot	0.00	0.00	0.00		
Total	9.58	9.58	9.58	27,974	27,974

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
General Light Industry	9.50	7.30	7.30	59.00	28.00	13.00	92	5	3
Parking Lot	9.50	7.30	7.30	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
General Light Industry	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740
Parking Lot	0.610498	0.036775	0.183084	0.106123	0.014413	0.005007	0.012610	0.021118	0.002144	0.001548	0.005312	0.000627	0.000740

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	791.9146	791.9146	0.0792	0.0164	798.7769
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	791.9146	791.9146	0.0792	0.0164	798.7769
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Light Industry	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	6.01941e+006	791.8041	0.0792	0.0164	798.6655
Parking Lot	840	0.1105	1.0000e-005	0.0000	0.1115
Total		**791.9146**	**0.0792**	**0.0164**	**798.7769**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Light Industry	6.01941e+006	791.8041	0.0792	0.0164	798.6655
Parking Lot	840	0.1105	1.0000e-005	0.0000	0.1115
Total		**791.9146**	**0.0792**	**0.0164**	**798.7769**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1037	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.2000e-004	5.2000e-004	0.0000	0.0000	5.6000e-004
Unmitigated	0.1037	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.2000e-004	5.2000e-004	0.0000	0.0000	5.6000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0122					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0914					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.2000e-004	5.2000e-004	0.0000	0.0000	5.6000e-004
Total	**0.1037**	**0.0000**	**2.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.2000e-004**	**5.2000e-004**	**0.0000**	**0.0000**	**5.6000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0122					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0914					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	3.0000e-005	0.0000	2.7000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	5.2000e-004	5.2000e-004	0.0000	0.0000	5.6000e-004
Total	**0.1037**	**0.0000**	**2.7000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**5.2000e-004**	**5.2000e-004**	**0.0000**	**0.0000**	**5.6000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	42.8992	0.0516	0.0314	53.5373
Unmitigated	42.8992	0.0516	0.0314	53.5373

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	40 / 0.6	42.8992	0.0516	0.0314	53.5373
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**42.8992**	**0.0516**	**0.0314**	**53.5373**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Light Industry	40 / 0.6	42.8992	0.0516	0.0314	53.5373
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**42.8992**	**0.0516**	**0.0314**	**53.5373**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	5.8827	0.3477	0.0000	14.5741
Unmitigated	5.8827	0.3477	0.0000	14.5741

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	28.98	5.8827	0.3477	0.0000	14.5741
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**5.8827**	**0.3477**	**0.0000**	**14.5741**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Light Industry	28.98	5.8827	0.3477	0.0000	14.5741
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**5.8827**	**0.3477**	**0.0000**	**14.5741**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	0	50	1250	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (750 - 9999 HP)	0.0513	0.2293	0.1308	2.5000e-004		7.5400e-003	7.5400e-003		7.5400e-003	7.5400e-003	0.0000	23.7998	23.7998	3.3400e-003	0.0000	23.8832
Total	**0.0513**	**0.2293**	**0.1308**	**2.5000e-004**		**7.5400e-003**	**7.5400e-003**		**7.5400e-003**	**7.5400e-003**	**0.0000**	**23.7998**	**23.7998**	**3.3400e-003**	**0.0000**	**23.8832**

11.0 Vegetation

Exhibit C

Arup Response to Acoustics Comments in CEQA Challenge Letter

Memorandum

ARUP

To	Ms. Noren Caliva-Lepe Principal Planner Community Development Department City of Sunnyvale 456 W Olive Ave Sunnyvale, CA 94086	Date	October 7, 2019
Copies	Rob Best, Shane Myrbeck (Arup)	Reference number	
From	Erica Hoffman (Arup)	File reference	
Subject	Arup Response to Acoustics Comments in CEQA Challenge Letter		

Arup has reviewed the acoustics comments provided by Wilson Ihrig, included in the 9/24/19 CEQA challenge letter to the City of Sunnyvale, regarding our *1390 Borregas Mechanical Facility Noise Code Evaluation Update,* (Rev2, May 03, 2019). Wilson Ihrig's comments are divided into three sections, which are responded to individually below.

Section 1

The Wilson Ihrig report states that detailed sound data for the mechanical equipment used in the noise calculations is not provided. Equipment make/model and sound data are included in Arup's mechanical drawing equipment schedules, and are not duplicated in the acoustics report. We have included relevant sound data in Appendix A of this document for clarity.

Section 2

The Wilson Ihrig report states that while the City of Sunnyvale noise code does not apply to emergency generators, no analysis is given regarding their local impact. This is true; however, an acoustic enclosure for the generator was provided in Arup's Electrical 100% SD Narrative (2/22/19) and Drawings (3/7/19). This information is included in Appendix B of this document. The basis-of-design enclosure, manufactured by Cat, for the generator described in the 100% SD Electrical Narrative reduces noise levels to 75 dBA at a measurement distance of 7 meters (23 feet). See the Cat acoustic enclosure cutsheet in Appendix C. The generator is located on the roof of the heating building, over 50 feet from the nearest property line. Therefore, generator noise will be below the Code limit of 75 dBA as currently designed.

Section 3

The Wilson Ihrig report states that the Arup noise study fails to address construction noise. A summary of anticipated construction noise impacts to surrounding areas is shown below, based on typical

Memorandum

construction equipment noise levels and ambient noise levels measured at other sites in close proximity to 1390 Borregas. City of Sunnyvale Municipal Code Section 16.08.030 covers allowable hours of construction and construction noise limits. The code specifies the following:

Construction activity shall be permitted between the hours of seven a.m. and six p.m. daily Monday through Friday. Saturday hours of operation shall be between eight a.m. and five p.m. There shall be no construction activity on Sunday or federal holidays when city offices are closed.

No loud environmentally disruptive noises, such as air compressors without mufflers, continuously running motors or generators, loud playing musical instruments, radios, etc., will be allowed where such noises may be a nuisance to adjacent residential neighborhoods.

Exceptions:

(a) Construction activity is permitted for detached single-family residential properties when the work is being performed by the owner of the property, provided no construction activity is conducted prior to seven a.m. or after 7 p.m. Monday through Friday, prior to eight a.m. or after 7 p.m. on Saturday and prior to nine a.m. or after 6 p.m. on Sunday or national holidays when city offices are closed. It is permissible for up to two persons to assist the owner of the property so long as they are not hired by the owner to perform the work. For purposes in this section, "detached single-family residential property" refers only to housing that stands completely alone with no adjoining roof, foundation or sides.

(b) As determined by the chief building official:

1) No loud environmentally disruptive noises, such as air compressors without mufflers, continuously running motors or generators, loud playing musical instruments, radios, etc., will be allowed where such noises may be a nuisance to adjacent properties.

2) Where emergency conditions exist, construction activity may be permitted at any hour or day of the week. Such emergencies shall be completed as rapidly as possible to prevent any disruption to other properties.

3) *Where additional construction activity will not be a nuisance to surrounding properties, based on location and type of construction, a waiver may be granted to allow hours of construction other than as stated in this section. (Ord. 3006-13 §2)*

Arup has measured ambient background noise levels at several sites near 1390 Borregas. Typical daytime background noise levels vary between 50 and 57 dBA (15-min Leq). The nearest residential area is approximately 3,000 feet away from the site, on the other side of SR 237. Ambient noise levels at this residential area are predicted to be higher than the 1390 Borregas site noise due to its proximity to SR 237.

Based on typical peak construction equipment noise levels, we anticipate some audible peak events at the nearest residential receivers. Peak noise events will be audible above the background noise outdoors. Per Sunnyvale code, audible construction noise is permitted during specified hours, and noise levels are not explicitly restricted by code, except as noted above.

Memorandum

Appendix A: Outdoor Mechanical Equipment Sound Power Data (Arup 100% DD set, 5/31/19)

Air Sourced Heat Pumps

TAG	MANUFACTURER	MODEL NUMBER	…	SOUND POWER LEVEL (dB) 63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
HP - 01	CLIMACOOL	UCA		62	71	77	91	87	88	82	72
HP - 02	CLIMACOOL	UCA		62	71	77	91	87	88	82	72
HP - 03	CLIMACOOL	UCA		62	71	77	91	87	88	82	72
HP - 04	CLIMACOOL	UCA		62	71	77	91	87	88	82	72
HP - 05	CLIMACOOL	UCA		62	71	77	91	87	88	82	72
HP - 06	CLIMACOOL	UCA		62	71	77	91	87	88	82	72

Cooling Towers

TOWER TAG	CELL TAG	MANUFACTURER	MODEL NUMBER	…	SOUND POWER LEVEL 63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
CT - 01	CT - 01A	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 01	CT - 01B	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 02	CT - 02A	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 02	CT - 02B	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 03	CT - 03A	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 03	CT - 03B	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 04	CT - 04A	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 04	CT - 04B	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 05	CT - 05A	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 05	CT - 05B	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 06	CT - 06A	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69
CT - 06	CT - 06B	MARLEY	NC8412QCN6SGF		93	89	85	83	84	81	74	69

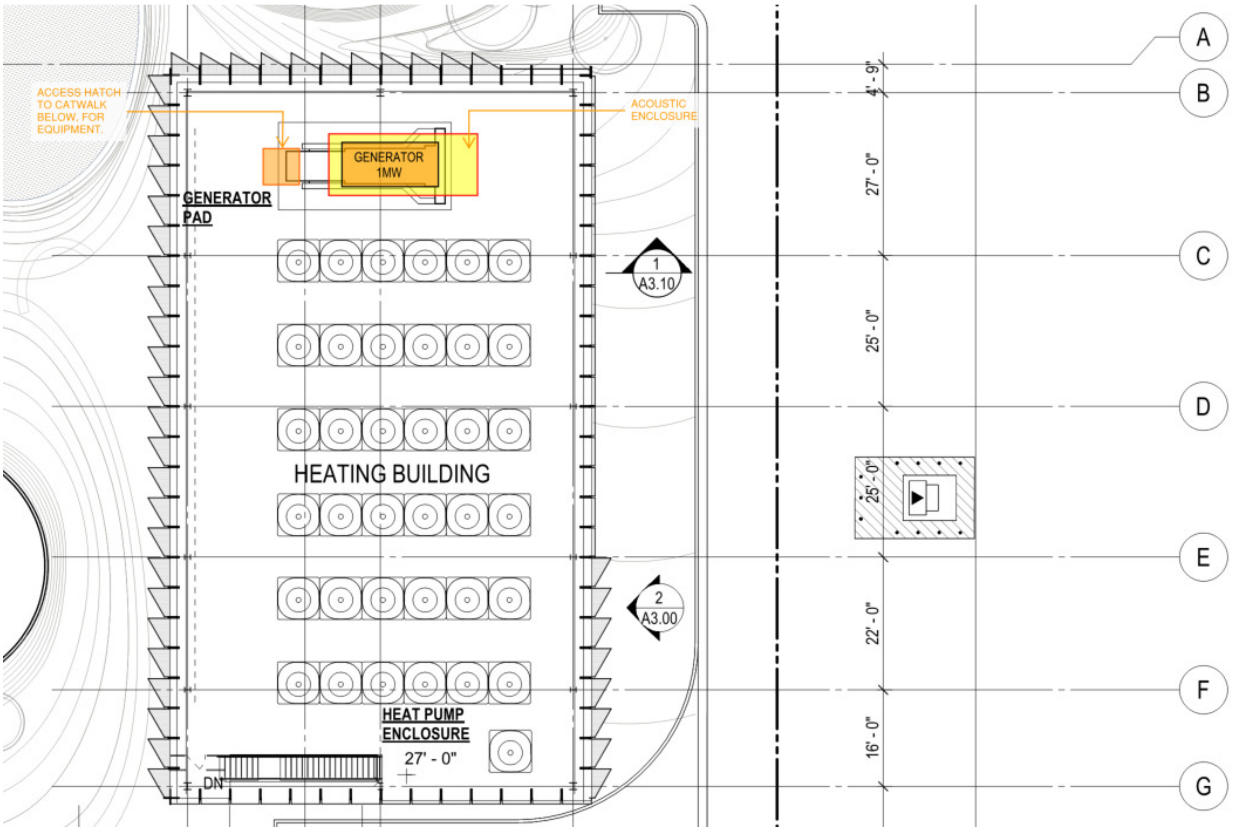
Variable Refrigerant Flow Outdoor Units

TAG	MANUFACTURER	MODEL	LOCATION	…	SOUND POWER LEVEL (dB) 63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
OU - 01a	LG	ARUM192DTE5	HEATING BUILDING ROOF		74	74	73	68	60	51	40	44
OU - 01b	LG	ARUM121DTE5	HEATING BUILDING ROOF		74	74	73	68	60	51	40	44
OU - 01c	LG	ARUM121DTE5	HEATING BUILDING ROOF		74	74	73	68	60	51	40	44
OU - 02	LG	ARUN060GSS4	CRAWL SPACE OF ANCILLARY BUILDING		74	74	73	68	60	51	40	44
OU - 03	LG	ARUB060GSS4	CRAWL SPACE OF ANCILLARY BUILDING		74	74	73	68	60	51	40	44

Memorandum

Appendix B: Generator Information

Generator with acoustic enclosure shown on Arup 100% SD Electrical Drawings (3/7/19):



Acoustic enclosure noted in Arup's 100% SD Combined Narrative (2/22/19):

> Preliminary system sizing indicates a 1MW diesel standby generator will be required, located on the roof of the Heating building in a sound dampening enclosure with integrated base tank. The basis of design genset model is a Caterpillar C32 1000kW Standby unit supplied by Peterson Power Systems.

Memorandum

Appendix C: Generator Acoustic Enclosure

Enclosures

Image shown may not reflect actual configuration.

Sound Attenuated Enclosures for C27 and C32 Generator Sets

These sound attenuated, factory installed enclosures are designed for safety and aesthetic value. Rugged construction provides weather protection and the ability to withstand exposure to the elements.

Features and Benefits

Robust/Highly Corrosion-Resistant Construction

- Environmentally friendly, polyester powder-baked paint in Caterpillar yellow
- Zinc plated or stainless steel fasteners
- 14-gauge steel construction
- Pitched roof for improved rain ingress protection
- Critical grade internally mounted muffler/ exhaust system
- Vibration spring isolators
- 75 dBA at 7 m

Excellent Access

- Control panel mounted on left side or right side of package
- Large cable entry area for ease of installation
- Left-hand or right-hand bottom entry access to power cable bus or circuit breaker
- Double doors on both sides
- Lube oil and coolant drains piped to exterior of enclosure and terminated drain valves

Options

- Interior AC lighting system and AC receptacles (interior and exterior)
- AC distribution box
- Interior DC lighting system with automatic shutoff timer
- Cold-weather bundle, including motorized louvers (powered closed), backdraft dampers, and enclosure space heater
- Caterpillar Yellow (default), white, grey, or beige paint
- 1000, 2000, and 3600 gallon fuel tanks
- 120 mph wind loading

Security and Safety

- Lockable access doors with standard key use
- Cooling fan and battery charging alternator fully guarded
- Oil fill and battery can only be reached via lockable access
- External fuel connections
- Externally mounted emergency stop button
- Designed for spreader-bar lifting to ensure safety

Certifications

- UL Listed
- Seismic certification per applicable building codes: IBC 2000, IBC 2003, IBC 2006, IBC 2009, IBC 2012, CBC 2007
- IBC certifiable for 120 mph wind loading
- Tested and analyzed in accordance with: ASCE 7-98, ASCE 7-02, ASCE 7-05, ICC-ES AC-156

LEHE0407-02

Page 1 of 2

Exhibit D

Statement Regarding Utility Service

KIER+WRIGHT

October 7, 2019

CITY OF SUNNYVALE
Attn: Noren Caliva-Lepe
Principal Planner
456 W. Olive Ave
Sunnyvale, CA 94086

SUBJECT: 1390 Borregas Ave Mechanical Facility

Dear Noren,

Considering the existing infrastructure, and proposed demands for 1390 Borregas Ave Mechanical Facility, we determine the following: based on our sewer calculations and analysis, the proposed project does not significantly impact the existing 10" VP sewer lines on Caribbean Drive or the 24" VCP on Borregas Avenue. Similarly, the recycled water usage will not significantly impact the existing 8" recycled water on Borregas Avenue. The minimal fixture count results in lower peak demand for domestic water than for fire, and the fire service demand will be met within the existing 12" water infrastructure. PG&E has an obligation to meet the demands required for the proposed project, and as a result, the electrical demands will be met.

Sincerely,
KIER & WRIGHT

Zico Saryeddean, PE
ASSOCIATE
zsaryeddean@kierwright.com, (925) 245-8788

cc: Joe South, Chuck McCallum

Exhibit E

Response to Comments by Adams Broadwell Joseph & Cardozo for the Google Mechanical Facility," prepared by Cornerstone Earth Group

CORNERSTONE EARTH GROUP

Date:	October 7, 2019
Project No.:	678-28-2
Prepared For:	Ms. Noren Caliva-Lepe Principal Planner **COMMUNITY DEVELOPMENT DEPARTMENT** **CITY OF SUNNYVALE** 456 W. Olive Avenue Sunnyvale, California 94086
Re:	**Response to Comments by Adams Broadwell Joseph & Cardozo for the Google Mechanical Facility** 1390 Borregas Avenue Sunnyvale, California

Dear Ms. Calive-Lepe:

On behalf of Google LLC (Google), Cornerstone Earth Group Inc. (Cornerstone) prepared this letter providing responses to Comments by Adams Broadwell Joseph & Cardoza (Adams Broadwell) on behalf of Safe Fuel and Energy Resources California (SAFER CA) for the City of Sunnyvale Zoning Administrator's Agenda Item No. 19-0988 for 1390 Borregas Avenue in Sunnyvale, California (Site).

Comments by Adams Broadwell were prepared based on information presented in a summary letter dated September 23, 2019 prepared by Soil Water Air Protection Enterprise (SWAPE) on behalf of Adams Broadwell and/or SAFER CA, an environmental consultant based in Santa Monica, California. SWAPE's summary letter was prepared based on their review of Cornerstone's Phase I Environmental Site Assessment (ESA) Update dated May 31, 2019. Selected comments by Adams Broadwell are summarized below along with Cornerstone's responses.

Responses to Comments

1) **Comment - Page 32, title sentence No. 1:** *There are Unusual Circumstances Due to Residual Soil Contamination Beneath the Project Site.*

   Response No. 1: Soil contamination has not been identified at the Site. As discussed in the Phase I ESA Update, volatile organic compounds (VOCs) have been reported in regional groundwater that have been attributed to identified and unidentified sources in the general Site vicinity. No known soil, soil vapor, or groundwater sources of contamination have been identified at the Site.

2) **Comment - Page 32, first paragraph:** *A 2019 Phase I Environmental Site Assessment Update ("Phase I") prepared for the Project site identifies soil vapor concentrations above RWQCB Environmental Screening Levels for PCE and vinyl chloride, both known carcinogens according to the US EPA. The Phase I also states that one of the three buildings will be potentially impacted by vapor intrusion (the heating building).*

CORNERSTONE EARTH GROUP

Response No. 2:

While the PCE and vinyl chloride concentrations measured in soil vapor at the Site exceeded Environmental Screening Levels (ESLs) established by the San Francisco Bay Regional Water Quality Control Board (January 2019), there are many reasons why those screening levels are conservative and the assumptions are not applicable to the proposed development. Also, it is important to understand the context of screening levels in general and indoor air screening levels specifically. Screening levels are intended to be conservative, to identify when chemicals in the environment clearly would not present a potential health risk under a variety of circumstances. Importantly, they do not indicate that a health risk is present. Additionally, the attenuation factor used to calculate the screening levels for soil vapor (0.03) was developed by U.S. EPA to be protective of vapor intrusion based on sub-slab samples at a residential structure. As summarized below, the design for the proposed buildings at this Site are significantly different from slab-on-grade residential construction, which is one of many reasons that the screening levels developed using the 0.03 attenuation factor are overly conservative for this Site.

Additionally, the Phase I ESA Update does not state the planned heating building will be impacted by vapor intrusion. In our professional opinion, human health risk to future occupants is not a significant concern based on the following: 1) the majority of the main floor of the heating building will be constructed on a concrete slab with metal decking that will be elevated approximately 5 to 6 feet above the ground surface, virtually eliminating the vapor intrusion pathway; 2) architectural louvers will be constructed around the perimeter of the elevated sub-floor allowing for passive natural ventilation; 3) a non-structural concrete slab will be installed over the ground surface below the main floor; 4) the HVAC system for the main floor will operate continuously (24 hours per day, 7 days a week) and will include an outside air handling unit that will continuously supply outdoor air into the building; and 5) the intended mechanical use of the building does not include occupants except for infrequent visits by maintenance staff (estimated as monthly). Note that ESLs for the commercial exposure scenario conservatively represents those workers who spend 8 hours per day indoors, for 250 days per year, for 25 years.

To respond to the comment regarding waterproofing, a small electrical room (approximately 865 square feet) and water storage unit will extend from the main floor to the ground surface in the heating building. The concrete walls and floors of these rooms will include hydrostatic waterproofing. The Phase I ESA Update provided a conservative recommendation to select a waterproofing product that also serves as a vapor barrier and is commonly installed at construction projects in the San Francisco Bay Area in areas of regional groundwater contamination.

Similar to the planned heating building, the chiller building will include the same building design features except the main floor will be approximately 9 to 10 feet above a structural concrete slab that will be constructed over the ground surface. Since the naturally ventilated space below the entire main floor will virtually eliminate the vapor intrusion pathway, human health risk to future occupants is not expected.

3) **Comment - Page 32, second paragraph:** *SWAPE explains that "[t]he presence of PCE and vinyl chloride in the subsurface pose potential inhalation health risks to construction workers." This environmental impact may be significant because it will exacerbate*

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existing conditions and "PCE and vinyl chloride will…present inhalation risks to future plant workers if the membrane mitigation is inadequate." Further, SWAPE explains that the "contamination of the subsurface at the Project site" is an unusual circumstance for infill projects, one that is likely to result in significant environmental effects because the presence of PCE and vinyl chloride in the subsurface pose potential inhalation health risks to construction workers and others who come in close proximity to the contaminants.

Response No. 3: Soil vapor ESLs are not intended to evaluate human health risk for construction workers. For example, construction workers are assumed to be present on site for up to one year compared with a commercial worker who is present 25 times longer. In addition, construction workers spend a great deal of their time outside, which is not consistent with the basis of screening levels for vapor intrusion into buildings. Lastly, the soil vapor measurements are lower than the screening levels for commercial/industrial workers for non-cancer health effects, which would also be protective for construction workers. While subsurface excavation may put construction workers in contact with potentially affected soil, Best Management Practices (BMPs) will be implemented during construction to monitor conditions during these unique and transient conditions and reduce the potential for exposure by construction workers. These BMPs were summarized in Cornerstone's Phase I ESA Update and are considered precautionary measures that are typical of redevelopment in the San Francisco Bay Area in areas of regional groundwater contamination.

Referencing the small electrical room and water storage unit in the heating building, SWAPE indicates that there could be "*inhalation risks to future plant workers if the membrane mitigation is inadequate."* This comment is not applicable to the water storage unit since water will be stored in the system. For the reasons described in Response No. 2, in our professional opinion, a vapor barrier beneath the electrical room is not mandatory to reduce the inhalation risk to acceptable levels. The conservative recommendation provided by Cornerstone to install a dual-purpose waterproofing/vapor barrier product is a precautionary measure that will provide a greater level of protection. As summarized in Response No. 2, human health risk to future plant workers is not expected

4) **Comment – Page 34, second paragraph:** *As discussed above, the Updated Phase I ESA relied upon by the City acknowledges the VOC-impacted soil, soil vapor, and/or groundwater that may be encountered during future construction. As a part of the Updated Phase I ESA, the Applicant's environmental analysis provided numerous mitigation measures to prevent and/or respond to environmental issues during construction that may cause harm to construction workers and the public.*

Response No. 4: Refer to Response No. 3.

5) **Comment – Page 34, third paragraph, first and last sentences:**
The ESA recommends: "selected waterproofing product be a dual-purpose product that is also protective against chemical vapor intrusion"; general risk management protocols; a health and safety plan; screening of excavated soil; site control in contaminated areas; utility trenches; excavation dewatering; management of unanticipated contamination of hazardous debris; and soil disposal procedures.

CORNERSTONE EARTH GROUP

SWAPE also recommends a "Phase II soil investigation which specifically identifies the location and concentration of contaminants that are likely to be disturbed during Project construction."

Response No. 5: As discussed in the Phase I ESA Update and restated above, VOCs have been reported in regional groundwater that have been attributed to identified and unidentified sources in the general Site vicinity. Analyses of groundwater samples collected at the Site in 2018 did not detect VOCs. These results are presented in the attached Soil, Soil Vapor, and Groundwater Quality Evaluation Letter prepared by Cornerstone. On the adjacent properties in the upgradient groundwater flow direction, reported VOC concentrations do not exceed drinking water Maximum Contaminant Levels (MCLs) established by the State Water Board. MCLs are commonly used by regulatory agencies as cleanup goals. Additionally, no information was identified during the Phase I ESA Update study that would indicate that past on-Site activities have contributed to the regional impacted groundwater. In our professional opinion, based on the analytical data and intended use of the property, no further on-Site environmental investigation or remediation associated with the regional VOC impacted groundwater originating from off-Site sources is warranted.

6) **Comment – Page 35, first paragraph:** *These recommendations are clearly mitigation measures mitigation stemming from the potential for a significant environmental effect and which require mitigation to sufficiently protect construction workers, and other persons travelling to and from the Project site, from environmental impacts.*

Response No. 6: As discussed, direct exposure human health risks to construction workers and future occupants is not expected to be a significant concern. In accordance with the conservative recommendations in the Phase I ESA Update, standard BMPs commonly integrated into construction projects in the San Francisco Bay Area in areas of regional groundwater contamination will be implemented.

Closing

This letter, an instrument of professional service, was prepared for the sole use of Google LLC and the City of Sunnyvale and may not be reproduced or distributed without written authorization from Cornerstone, or as authorized by the City. Cornerstone makes no warranty, expressed or implied, except that our services have been performed in accordance with the environmental principles generally accepted at this time and location. Should you have any questions regarding this letter, or if we may be of further service, please contact us at your convenience.

Sincerely,

Cornerstone Earth Group, Inc.

Kurt M. Soenen, P.E.
Principal Engineer

Attachments: Soil, Soil Vapor and Groundwater Quality Evaluation letter
Copies: Addressee (1 by email)

Attachment:
Soil, Soil Vapor, and Groundwater Quality Evaluation Letter

CORNERSTONE EARTH GROUP

Date:	October 7, 2019
Project No.:	678-28-2
Prepared For:	Mr. Andy Springer **GOOGLE LLC** 1600 Amphitheatre Parkway Mountain View, California 94043
Re:	**Soil, Soil Vapor, and Groundwater Quality Evaluation** 1390 Borregas Avenue Sunnyvale, California

Dear Mr. Springer:

On behalf of Google LLC (Google), Cornerstone Earth Group (Cornerstone) prepared this letter presenting the results of the soil, soil vapor, and groundwater samples collected at 1390 Borregas Avenue in Sunnyvale, California (Site) as shown on Figures 1 and 2. This work was performed to help evaluate general subsurface conditions at the Site. The scope of work performed for this investigation at the Site included the following:

- Drilling and logging of two exploratory borings to an approximate depth of 15 feet;
- Installation of two subsurface soil vapor probes at approximately 7 feet;
- Collection of soil and groundwater samples from the exploratory borings for laboratory analyses;
- Collection of subsurface soil vapor samples from vapor probes for laboratory analyses; and
- Preparation of this letter.

The limitations for this investigation are presented below.

Subsurface Investigation

PRE-FIELD ACTIVITIES

Cornerstone notified the regional utility notification center (Underground Service Alert [USA]) so that public and private utilities could be identified and marked at the ground surface. Where practical, we marked borings in white paint to designate our exploration locations, as requested by USA. Additionally, to reduce the risk of damaging unidentified underground utilities during drilling, we also contracted with a private utility locator.

SUBSURFACE INVESTIGATION

Cornerstone performed the subsurface investigation activities on March 22, 2018. Two exploratory borings (SB-1 to SB-2) were advanced to an approximate depth of 15 feet using a track-mounted drill rig equipped with Direct Push Technology. Within approximately 5 feet of borings SB-1 and SB-

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2, a second boring (SV-1 and SV-2) was advanced to an approximate depth of 6½ feet and was converted into a temporary soil vapor monitoring probe. Additional information for the paired boring/probe locations is provided below. Approximate boring/probe locations are shown on Figure 2.

In general, exploratory borings SB-1 and SB-2 and vapor probes SV-1 and SV-2 were advanced at randomly accessible locations to evaluate general soil, soil vapor, and groundwater quality near the on-Site building.

The subsurface exploration program was performed using Direct Push technology equipped with the Dual Wall Sampling System. The Dual Wall Sampling System helps prevent cross contamination between sampling intervals. The Dual Wall Sampler is comprised of two main components: an exterior steel casing and an inner sample barrel. The outer casing has a 2-inch outer diameter (OD) and a 1.5-inch inner diameter (ID). The sample barrel is 5 feet in length with a 1.375-inch outside diameter (OD) and a 1-inch inner diameter (ID). The Dual Wall sample barrel is loaded with a 5-foot acetate liner and installed inside the outer casing. The outer drive casing and inner sample barrel are then hydraulically pushed to a depth of approximately 5 feet. As these tools are advanced, the inner sampling barrel collects the soil core sample. This sampler is then retrieved while the outer casing remains in place, protecting the integrity of the hole. A new sampler is lowered into place and advanced another 5 feet to collect the next soil sample. This process continues until a desired depth has been reached. Our field engineer continuously logged the borings in general accordance with the Unified Soil Classification System (ASTM D-2487). The two borings advanced to 15 feet were grouted upon completion. As discussed in the Soil Vapor Probe Installation section below, the co-located two borings advanced to approximately 6½ feet were converted to temporary soil vapor probes.

Upon same day completion, the borings were tremie grouted without delays from the base of boring through the drilling rod as it is raised to the surface; no boring was left open overnight.

Downhole drilling and sampling equipment were steam cleaned with a pressure washer prior to commencement of drilling and between each well borehole. Drill cuttings and decontamination waste were temporarily stored on-Site in 55-gallon steel drums for future disposal.

Subsurface Material

Based on the exploratory borings advanced at the Site, the upper approximate ½ foot consisted of finished surface materials consisting of asphalt pavement over aggregate base. Beneath the surface materials, up to approximately 5 feet of possible fill and/or reworked native soils consisting of medium stiff brown lean sandy clays with gravel and clayey sands with gravel were observed in the borings at the Site. Below the fill and/or reworked native soil were soft expansive clays up to approximately 7 feet at boring SB-1, followed by medium stiff lean sandy clays with varying amounts of sands and gravels. At boring SB-2, lean clays with varying amount of sand and gravel extended to the maximum depth explored of approximately 15 feet. Borings logs are included with the attachments.

In SB-2, a sand layer with varying amounts of clay and gravel was observed at a depth of approximately 13 feet with a thickness of approximately ½ foot. Groundwater was observed in this layer. After drilling, groundwater was measured in the boreholes at approximate depths ranging from 7 to 8 feet, indicating possible semi-confined to confined groundwater conditions. No readily apparent soil discoloration was observed in the soil samples.

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Organic Vapor Readings

Soil samples retrieved from the exploratory borings were monitored with a MiniRAE 3000 OVM to record VOC vapors. Organic vapor readings ranged from 0.5 to 3.7 parts per million by volume (ppm_v) in the screened soil samples with the greatest concentrations generally observed in the groundwater bearing zone. OVM readings are shown on the boring logs.

SOIL SAMPLE COLLECTION AND LABORATORY ANALYSES

Soil samples for laboratory analyses were collected in new (unused) acetate liners using the hydraulic powered direct push rig. Ends of the soil samples were covered in a Teflon film, fitted with plastic end caps, and labeled with a unique sample identification number. Soil samples were placed in an ice-chilled cooler and transported to a state-certified laboratory with chain of custody documentation.

To evaluate potential historical agricultural-related impacts, three soil samples were selected from depths ranging from 2 feet to 5 feet and analyzed for organochlorine pesticides (OCPs) by EPA Test Method 8081 and pesticide-based metals arsenic, lead, and mercury by EPA Test Method 6010/7471. The soil samples were collected from both the fill and/or reworked native section, and from the upper approximate 1 foot of undisturbed native soil.

To further evaluate the quality of the fill and/or reworked native soil, one sample was selected and additionally analyzed for TPH as diesel and oil (TPHd/o) by EPA Test Method 8015M and California Assessment Manual (CAM) 17 metals by EPA Test Method 6000/7000.

GROUNDWATER COLLECTION AND LABORATORY ANALYSES

Groundwater grab samples were collected from borings SB-1 and SB-2. At each location, a section of dedicated, pre-cleaned, slotted polyvinyl chloride (PVC) casing was temporarily lowered into the boring to facilitate sample collection. Groundwater grab samples were collected from each boring by inserting dedicated polyethylene tubing equipped with a check valve through the PVC casing to raise groundwater to the surface to fill the sample containers. Groundwater grab samples were collected in appropriate containers and labeled with a unique sample ID, date, the time of collection, and requested analysis.

Groundwater samples for laboratory analyses were wrapped in bubble wrap, placed in an ice-chilled cooler, and transported to a state-certified laboratory with chain of custody documentation. The two groundwater grab samples were analyzed for TPHg and VOCs by EPA Test Method 8260B.

SOIL VAPOR COLLECTION AND LABORATORY ANALYSES

Soil Vapor Probe Installation

The subsurface soil vapor probes consisted of a stainless-steel expendable vapor tip and screen installed at approximate depth of 6½ feet. Probe depths were selected based on soil types encountered in each boring where more permeable soils were targeted for vapor probe tip placement. The probes were installed with stainless steel porous expendable tips and screens affixed to pre-cleaned stainless steel tubing. The probes were constructed by first placing approximately 6 to 8 inches of coarse (Monterey #3) sand into the bottom of the borehole. The stainless-steel tip and tubing was then lowered into the borehole via a tremie pipe. Additional sand was then placed in the borehole via tremie to create an approximately ¾ to 1-foot sand

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pack interval around the vapor tip. Approximately ½ foot of dry granular bentonite (Cetco #8) was placed on top of the sand pack. Hydrated granular bentonite (approximate mix of 50% water to bentonite) was then placed down-hole in less than ½ foot lifts to approximately just below the ground surface. The stainless-steel tubing was labeled designating depth of placement and capped utilizing a vapor tight Swagelok fitting or tube cap. Probes located in active parking lots or drive aisles were capped with an approximately 4-inch by 4-inch steel plate secured with black duct tape to allow cars to drive over the well without damaging the probe.

Soil Vapor Sampling

At least 48 hours after probe installation, on March 28, 2018 our Professional Geologist, returned to the Site to perform purging and vapor sampling activities. A total of two soil vapor samples were collected using the methods described below.

Soil vapor sampling was performed following the protocols presented in the July 2015 document entitled, “Advisory – Active Soil Gas Investigations”, prepared by the Department of Toxic Substances and Control and the California Regional Water Quality Control Board, Los Angeles Region. The tubing emanating from the vapor points was affixed to a sample shut off valve in the “off” position and was allowed to equilibrate for a minimum of one day before purging and soil vapor sampling. A 167 milliliters-per-minute flow regulator with attached particulate filter was fitted to the shut off valve and the other end to a “T” fitting. One end of the “T” was connected to the sampling summa canister. The other end of the “T” was affixed to a digital vacuum gauge and a 6-liter summa canister utilized for purging.

A minimum 10-minute vacuum tightness test was performed on the manifold and connections by opening and closing the 6-liter purge summa canister valve and applying and monitoring a vacuum on the vacuum gauge. The sample shut-off valve on the downhole side of the sampling manifold remained in the “off” position. When gauge vacuum was maintained for at least 10 minutes without any noticeable decrease (less than approximately 0.1 inches of mercury [Hg] for properly connected fittings), purging began. The downhole shut off valve was opened and at least three pore volumes were removed utilizing the purging summa canister. The volume of vapor removed was verified by the calculated pressure drop in the summa canister. The purge volume was calculated based on the length and inner diameter of the sampling probe, the connected sampling tubing and equipment, dry bentonite seal, and the borehole sand pack.

Isopropyl alcohol was utilized as a leak detection compound during sampling by applying 9 to 10 drops to cotton gauze and placing the moistened gauze near the borehole. Sampling began by opening the summa canister valve. Immediately upon opening the sampling valve, a shroud was placed over and enclosed the atmosphere of the borehole and entire sampling train including all connections.

Sampling continued until the vacuum gauge indicated approximately 5 inches of Hg remaining. A data logging photoionization detector (PID) was utilized during sampling to monitor the atmosphere inside the shroud through a bulkhead fitting. The logged data (at minimum thirty [30] second intervals) was corrected to parts per million by volume isopropyl alcohol concentrations and utilized to evaluate the integrity of the sampling train.

To confirm the isopropyl alcohol atmosphere, one confirmation sample was collected from the shroud atmosphere, at one probe location (SV-1), through the sampling port of the PID. The confirmation sample was collected using a summa connected to a flow controller within the

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shroud during sample collection and was analyzed for 2-proponal. All field data, including equilibrium time, purge volume calculations and leak check measurements were recorded.

The two soil vapor samples were analyzed for VOCs by EPA Test Method TO-15. The soil vapor sample collected from SV-1 was also analyzed for carbon dioxide, methane, and oxygen.

Discussion of Results

ENVIRONMENTAL SCREENING CRITERIA

Due to the regulatory involvement of the Water Board at several nearby and on-Site properties, Cornerstone compared detected contaminants in soil and soil vapor to Environmental Screening Levels (ESLs). ESLs were developed by the Water Board (2019) and are used to screen properties for potential human health concerns where releases of chemicals to soil have occurred. Under most circumstances, the presence of a chemical in soil or soil vapor below the corresponding ESL can be assumed not to pose a significant risk to human health. A chemical exceeding the ESL does not indicate that adverse impacts to human health are occurring or will occur but suggests that further evaluation of potential health concerns is warranted.

The soil results were also compared to Total Threshold Limit Concentration (TTLC) criteria established in Title 22 California Code of Regulations. The TTLC is the level at which a solid waste is considered hazardous and is pertinent when evaluating waste disposal options.

Regional Screening Levels (RSLs) established by the U.S. EPA (U.S. EPA, 2019) were used if an ESL is not established. For soil vapor, the indoor air RSL was divided by the appropriate attenuation factor to calculate a soil vapor screening level. Similar to ESLs, an attenuation factor of 0.03 was used in calculating a screening level and comparison of the soil vapor data.

The groundwater results were compared to drinking water MCLs established by the State Water Resources Control Board (SWRCB, 2018).

SUMMARY OF ANALYTICAL DATA

Data summary tables are attached to this letter. A summary of the analytical results is provided below:

Soil

- As shown in Data Table 1, OCP compounds Dichlorodiphenyldichloroethane (4,4'-DDD), Dichlorodiphenyldichloroethylene (4,4'-DDE), Dichlorodiphenyltrichloroethane (4,4'-DDT), and dieldrin were detected in several soil samples; however, none of the detected concentrations exceeded their respective residential ESL. Additionally, total DDT (sum of DDD, DDE, and DDT) did not exceed its TTLC.

- The remaining detected metal concentrations in the soil samples did not exceed their natural/ambient concentration or respective residential ESL (except for arsenic). Natural background concentrations of arsenic are often well above the health-based ESL of 0.067 milligrams per kilogram (mg/kg); however, the California Environmental Protection Agency generally does not require cleanup of metals in soil to below background levels. Bradford et.al. (1996) estimated that background arsenic concentrations in California soil types range from 0.6 mg/kg to 11 mg/kg. Scott (1991)

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documented background arsenic concentrations ranging up to 20 mg/kg. Duverge (2011) concluded that the mean and upper estimate (the 99th percentile) for background arsenic levels in the San Francisco Bay Region are 4.61 mg/kg and 11 mg/kg, respectively. Arsenic was detected in the 3 soil samples at concentrations up to 6.1 mg/kg; these concentrations are typical of natural background.

- TPHd was detected in the one soil samples collected from the fill and/or reworked native soil; however, the detected concentrations did not exceed their respective ESL. TPHd was detected up to 2.2 mg/kg; its ESL is 230 mg/kg. TPHo was not detected above the laboratory reporting limit in the one soil sample.

Groundwater

- As shown in Data Table 2, VOCs and TPHg were not detected above their laboratory reporting limits.

Soil Vapor

- As shown in Data Table 3, PCE was detected in 1 of 2 soil vapor samples at a concentration of 180 µg/m^3 (SV-1), exceeding its commercial ESL of 67 µg/m^3.
- Vinyl chloride was detected in the two soil vapor samples at concentrations ranging from 8.9 µg/m^3 (SV-2) to 16 µg/m^3 (SV-1). These concentrations exceed the commercial ESL for vinyl chloride of 5.2 µg/m^3.
- Other detected VOCs did not exceed their respective Environmental Screening Criteria.
- Oxygen, carbon dioxide, and methane were detected in the one soil vapor sample (SV-1) at concentrations of 1.3 percent, 4.9 percent, and 0.15 percent, respectively.

SOIL VAPOR SAMPLE INTEGRITY EVALUATION

To help confirm the sampling trains were sufficiently tight and the soil vapor data is representative of subsurface conditions, one confirmation sample of the shroud atmosphere were collected from the exhaust port of the PID and into a 1liter summa canister during sampling at subsurface soil vapor location SV-2. Laboratory analyses of the shroud atmosphere sample detected isopropyl alcohol (i.e., 2 propanol) at 160,000 µg/m^3 in SV-1. During the same sampling time period, isopropyl alcohol levels within the shroud atmosphere were measured by the PID to range from approximately 45,000 µg/m^3 to 72,000 µg/m^3 with an average concentration of 58,000 µg/m^3. The PID appeared to underestimate the shroud atmosphere.

Isopropyl alcohol was not detected in the soil vapor samples. The average shroud concentration of isopropyl alcohol measured with the datalogging PID during sampling at SV-2 was 58,000 µg/m^3. Based on these data, the maximum leakage rate was estimated to be less than 0.05 percent in both SV-1. This analysis indicates the sampling trains appeared sufficiently tight for representative soil vapor sample collection, and no significant leakage occurred.

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Closing

Cornerstone performed this investigation to support Google LLC in evaluation of soil, soil vapor, and groundwater quality beneath the Site. Google LLC understands that the extent of soil, soil vapor and groundwater data obtained is based on the reasonable limits of time and budgetary constraints. In addition, the chemical information presented in this report can change over time and is only valid at the time of this investigation and for the locations sampled.

This letter, an instrument of professional service, was prepared for the sole use of Google LLC and may not be reproduced or distributed without written authorization from Cornerstone.

Cornerstone makes no warranty, expressed or implied, except that our services have been performed in accordance with the environmental principles generally accepted at this time and location.

Should you have any questions regarding this letter, or if we may be of further service, please contact us at your convenience.

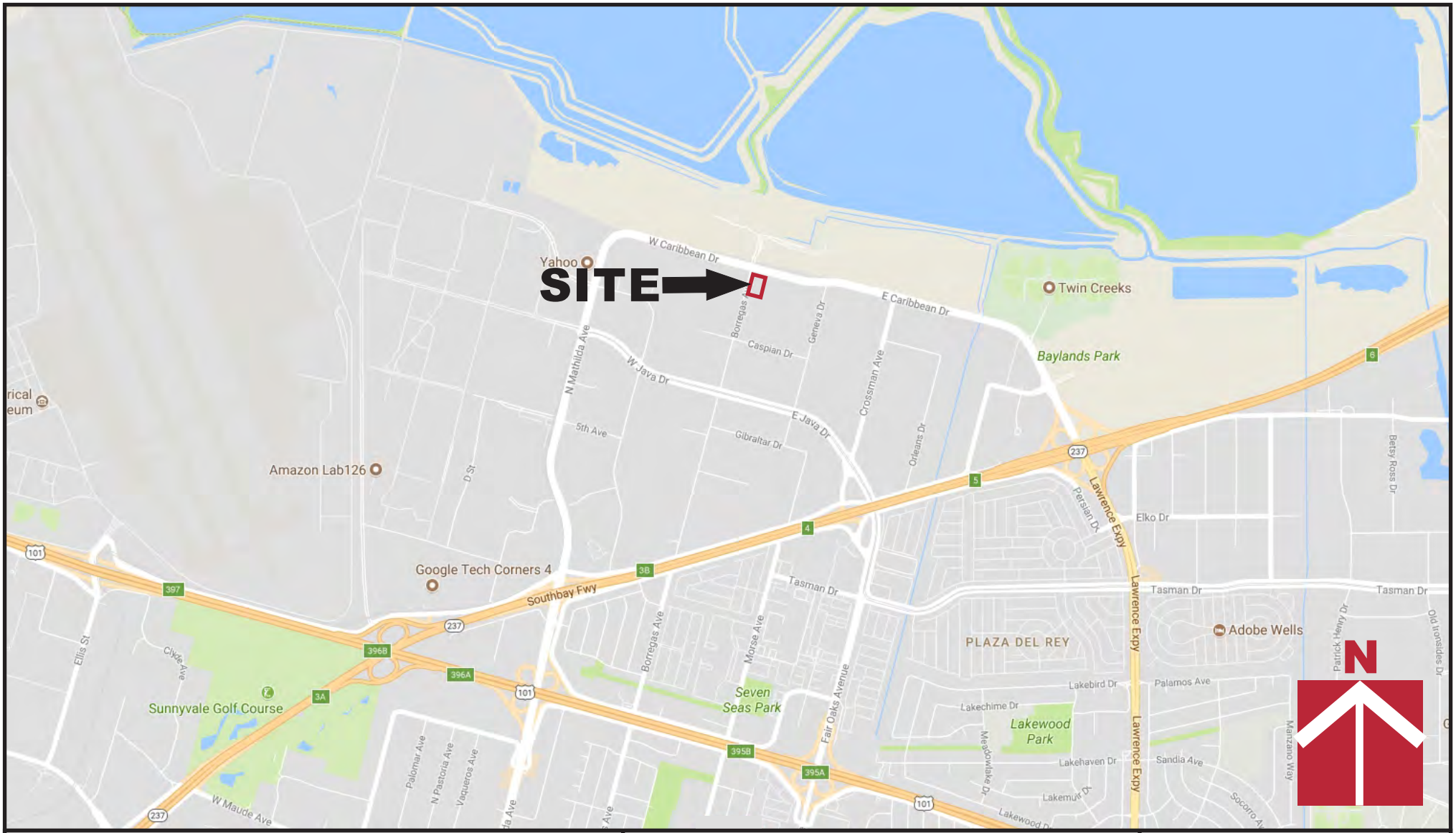
Sincerely,

Cornerstone Earth Group, Inc.

Melanie Seydel
Senior Staff Engineer

Kurt M. Soenen, P.E.
Principal Engineer

Copies: Addressee (1 by email)
Attachments: Figures
Data Tables
Boring Logs



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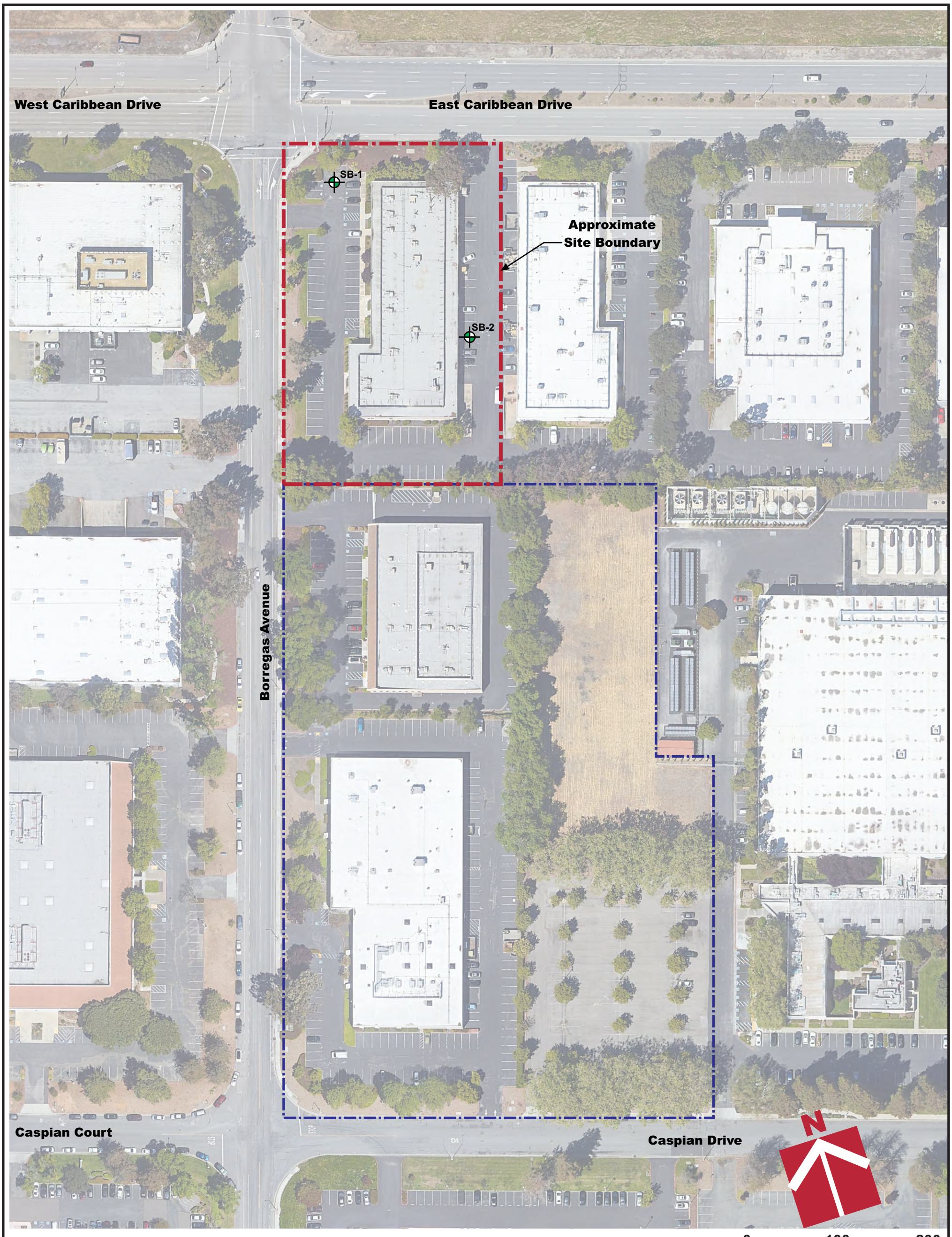
Vicinity Map

1390 Borregas Avenue
Sunnyvale, CA

Project Number	678-28-2
Figure Number	Figure 1
Date	May 2019
Drawn By	RRN



Legend

Approximate location of boring (SB)

Base by Google Earth, dated 3/28/2018

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Site Plan

1390 Borregas Avenue
Sunnyvale, CA

Project Number	678-28-2
Figure Number	Figure 2
Date	May 2019
Drawn By	RRN

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Table 1. Analytical Results of Selected Soil Samples - OCPs, Metals, TPHd/o
(Concentrations in mg/kg)

Sample Location	Boring ID	Sample ID	Date	Depth (feet)	4,4´-DDD	4,4´-DDE	4,4´-DDT	DDT Total	Dieldrin	Arsenic	Barium	Beryllium	Chromium	Cobalt	Copper	Lead	Mercury	Nickel	Vanadium	Zinc	TPHd	TPHo
1390 Borregas Avenue	SB-1	SB-1 (2-2.5)	3/22/2018	2-2½	0.043	0.23	<0.0019	0.273	<0.0019	5.1	---	---	---	---	---	13	0.051	---	---	---	---	---
	SB-2	SB-2 (2.5-3)	3/22/2018	2½-3	0.0046	0.079	0.0074	0.091	0.0033	6.1	140	0.52	58	15	35	10	0.15	75	45	63	2.2	<49
		SB-2 (5-5.5)	3/22/2018	5-5½	<0.002	<0.002	<0.002	<0.002	<0.002	3.4	---	---	---	---	---	5.9	0.052	---	---	---	---	---
Environmental Screening Criteria					2.7	1.8	1.9	1	0.037	11	390	5	160	23	180	32	13	86	390	340	260	1,600
Screening Level Basis					ESL[1]	ESL[2]	ESL[2]	TTLC[3]	ESL[2]	Duverge[4]	ESL[1]	ESL[1]	ESL[1]	ESL[1]	ESL[1]	ESL[1]	ESL[1]	ESL[1]	ESL[1]	ESL[1]	ESL[1]	ESL[1]

1 Tier 1 Environmental Screening Level (ESL), RWQCB, San Francisco Bay Region - January 2019.
2 Residential direct exposure human health risk ESL - January 2019.
3 Total Threshold Limit Concentration - California Code of Regulations, Title 22.
4 Duverge, 2011. Establishing Backround Arsenic in Soil of the Urbanized San Francisco Bay Region.
< Not detected at or above laboratory reporting limit
--- Not Analyzed
BOLD Concentration exceeds selected environmental screening criteria

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Table 2. Analytical Results of Selected Groundwater Samples - TPHg, VOCs
(Concentrations in µg/L)

Sample Location	Boring ID	Sample ID	Date	Depth (feet)	TPHg	VOCs
1390 Borregas Avenue	SB-1	SB-1 (10-15)	3/22/2018	10-15	<0.50	ND
	SB-2	SB-2 (10-15)	3/22/2018	10-15	<0.50	ND
MCL[1] - Drinking Water					NE	Varies

1 Maximum Contaminant Level (MCL), State Water Resources Control Board - March 2018.
< Not detected at or above laboratory reporting limit
ND Not Detected
NE Not Established

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Table 3. Analytical Results of Selected Soil Vapor Samples - VOCs, Fixed Gases
(Concentrations in µg/m³, unless stated otherwise)

Sample Location	Sample ID	Date	Depth (feet)	1,1 - DCE	1,2,4-Trimethylbenzene	cis-1,2-dichloroethene	Dichlorodifluoromethane	Freon 113	PCE	TCE	trans-1,2-Dichloroethene	Vinyl Chloride	Carbon Dioxide (%)	Methane (%)	Oxygen (%)
1390 Borregas Avenue	SV-1	3/28/2018	6.5	9.1	7.6	110	<1.4	42	**180**	71	6	**16**	4.9	0.15	1.3
	SV-2	3/28/2018	6.5	<2.1	<1.5	64	29	1,000	<1.1	14	<1.4	**8.9**	---	---	---
ESL[1] - Commercial				10,000	8,700[2]	1,200	15,000[2]	730,000[2]	67	100	12,000	5.2	NE	NE	NE

1 Environmental Screening Level (ESL) Human Health Risk, RWQCB, San Francisco Bay Region - January 2019.
2 ESL not established, value is calculated soil vapor screening level using indoor air Regional Screening Level (RSL) established by U.S. EPA (April 2019) and attenuation factor = 0.03.
NE Not Established
< Not detected at or above laboratory reporting limits.
--- Not Analyzed
BOLD Concentration exceeds selected commercial environmental screening criteria

BORING NUMBER SB-1

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PROJECT NAME 1390 Borregas Avenue
PROJECT NUMBER 678-28-2
PROJECT LOCATION 1390 Borregas Ave, Sunnyvale, CA

DATE STARTED 3/22/18 **DATE COMPLETED** 3/22/18
GROUND ELEVATION _____ **BORING DEPTH** 15 ft.
DRILLING CONTRACTOR Penecore **LATITUDE** _____ **LONGITUDE** _____
DRILLING METHOD Direct Push (Geoprobe) / Hand Auger **GROUNDWATER LEVELS:**
LOGGED BY MJS **AT TIME OF DRILLING** Not Encountered
NOTES Hand Auger to 5' **AT END OF DRILLING** 8 ft.

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OVM Reading (ppm)	Odors or Discoloration	Notes
	0		3 inches asphalt concrete over 4 inches aggregate base							
			Sandy Lean Clay with Gravel (CL) [Fill] medium stiff, moist, dark brown, angular gravel			x				
			Fat Clay (CH) soft, moist, dark brown, some subrounded gravel			x		0	None	
			becomes dark gray at 4'							
	5		becomes light gray at 5'					2.6		
								3.5		
			Sandy Lean Clay (CL) medium stiff, moist, light gray, trace gravel becomes light brown at 7.5'			x	90	2.9	None	
								3.7		
	10		becomes soft at 13'			x	100	0	None	
	15		Bottom of Boring at 15.0 feet.							
	20									

BORING NUMBER SB-2

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PROJECT NAME 1390 Borregas Avenue
PROJECT NUMBER 678-28-2
PROJECT LOCATION 1390 Borregas Ave, Sunnyvale, CA
GROUND ELEVATION _____ **BORING DEPTH** 15 ft.
LATITUDE _____ **LONGITUDE** _____
GROUNDWATER LEVELS:
AT TIME OF DRILLING 13 ft.
AT END OF DRILLING 7 ft.

DATE STARTED 3/22/18 **DATE COMPLETED** 3/22/18
DRILLING CONTRACTOR Penecore
DRILLING METHOD Direct Push (Geoprobe) / Hand Auger
LOGGED BY MJS
NOTES Hand Auger to 5'

This log is a part of a report by Cornerstone Earth Group, and should not be used as a stand-alone document. This description applies only to the location of the exploration at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with time. The description presented is a simplification of actual conditions encountered. Transitions between soil types may be gradual.

ELEVATION (ft)	DEPTH (ft)	SYMBOL	DESCRIPTION	N-Value (uncorrected) blows per foot	Sample Type and Interval	Sample Submitted for Laboratory Analysis	Percent Recovery (%)	OVM Reading (ppm)	Odors or Discoloration	Notes
	0		3 inches asphalt concrete over 4 inches aggregate base							
			Clayey Sand with Gravel (SC) [Fill] dense, moist, brown, angular gravel							
						x		0	None	
	5		**Lean Clay with Sand (CL)** stiff, moist, dark brown, trace gravel			x				
								0.5		
			Sandy Lean Clay (CL) stiff, moist, brown, trace gravel				50		None	
			becomes medium stiff at 9'			x		1.2		
	10		subrounded gravel at 10-11'							
			trace gravel at 11-13'							
			becomes gray at 13-15' subrounded gravel and sand, wet at 13-13.5' some subrounded gravel at 13.5-15'			x	100	0	None	
	15		Bottom of Boring at 15.0 feet.							
	20									