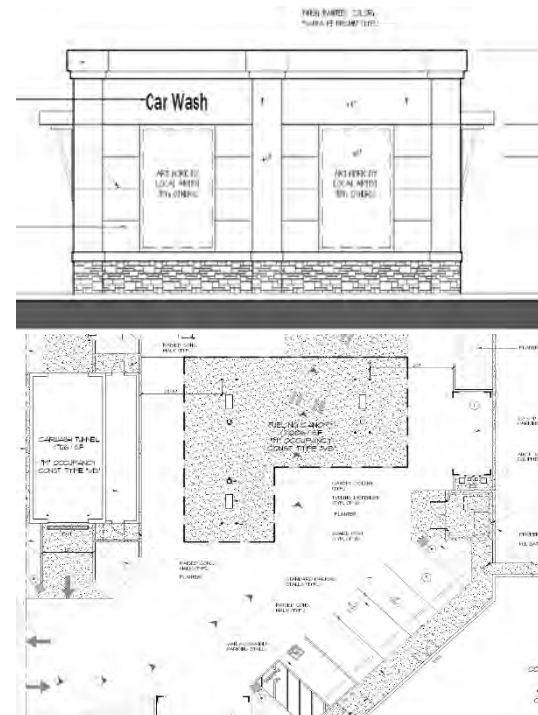


Mitigated Negative Declaration

2194 University Avenue Gas Station Improvements

DR18-022, V20-002, CUP20-002

August 11, 2022



Prepared by
EMC Planning Group



City of East Palo Alto
Planning and Housing Division
1960 Tate Street • East Palo Alto • CA • 94303
650.853.3189 [tel] • 650.853.3179 [fax]

NOTICE OF INTENT

Notice of Intent to Adopt a Mitigated Negative Declaration

To: Interested Individuals, Reviewing Agencies, County Clerk of San Mateo County

Subject: Notice of Intent to Adopt a Mitigated Negative Declaration (MND) in compliance with Section 21092.3 of the Public Resources Code.

This is to advise that the **City of East Palo Alto Planning Division** has prepared an **Initial Study** for the project identified below and intends to adopt a **Mitigated Negative Declaration** on the project. The minimum review period for this document is thirty (30) days. The document is available for review at the City of East Palo Alto Planning Division office, 1960 Tate Street, East Palo Alto and online at <http://cityofepa.org/index.aspx?NID=642>

Project Location: 2194 University Avenue, East Palo Alto, CA 94303

Project Title: 2194 University Avenue Gas Station Improvements

Project Description: The proposed project is a remodel and construction of additions to an existing three-pump gas station. The proposed project includes demolition and replacement of the existing three pumps, awning and underground storage tanks, and construction of a new convenience store, parking, and car wash tunnel. The proposed carwash tunnel would be placed on the west side of the site adjacent to University Avenue. The proposed convenience store would be placed near the southeast interior corner of the project site. Access to the site is provided on University Avenue and Bell Street and would remain unchanged by the project.

Public Review and Comment: The review period for the draft MND extends from **August 12, 2022 to September 12, 2022 (30 days)**. Comments on the draft MND must be submitted in writing to the Planning Division at the address below prior to the close of the public comment period. The Initial Study and draft MND are available for review during the circulation period at <http://cityofepa.org/index.aspx?NID=642> or in print at the City of East Palo Alto Planning Division office, 1960 Tate Street, East Palo Alto during normal office hours. A copy is also available at the San Mateo County Public Library located at 2415 University Avenue, East Palo Alto, CA 94303.

Public Hearing: A public hearing on the project, the Initial Study and the proposed Mitigated Negative Declaration has been tentatively scheduled before the **Planning Commission on September 12, 2022 at 7:00 p.m.**

Interested residents, agencies and other concerned citizens may transmit their concerns or comments within the public review period. Please direct your comments regarding potential environmental impacts to:

Michelle Huang, Assistant Planner

Planning Division, 1960 Tate Street, East Palo Alto, CA 94303, mhuang@cityofepa.org, 650-853-3151

MITIGATED NEGATIVE DECLARATION

2194 UNIVERSITY AVENUE GAS STATION IMPROVEMENTS

DR18-022, V20-002, CUP20-002

PREPARED FOR

City of East Palo Alto

Michelle Huang, Assistant Planner

1960 Tate Street

East Palo Alto, CA 94303

Tel 650.853.3151

PREPARED BY

EMC Planning Group Inc.

601 Abrego Street

Monterey, CA 93940

Tel 831.649.1799

Fax 831.649.8399

Stuart Poulter, AICP, MCRP, Senior Planner

poulter@emcplanning.com

www.emcplanning.com

August 11, 2022

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PROPOSED MITIGATED NEGATIVE DECLARATION
In Compliance with the
California Environmental Quality Act (CEQA)

Project Name	2194 University Avenue Gas Station Improvements
Lead Agency	City of East Palo Alto
Project Proponent	Vikash Bansal 809 E. Stanley Blvd. Livermore, CA 94550
Project Location	2194 University Avenue, East Palo Alto, CA 94303
Project Description	The proposed project, Design Review (DR18-022), Variance (V20-002), and Conditional Use Permit (CUP20-002), is a remodel and construction of additions to an existing three-pump gas station. The proposed project includes demolition and replacement of the existing three pumps, awning and underground storage tanks, and construction of a new convenience store, parking, and car wash tunnel. The proposed carwash tunnel would be placed on the west side of the site adjacent to University Avenue. The proposed convenience store would be placed near the southeast interior corner of the project site. Access to the site is provided on University Avenue and Bell Street and would remain unchanged by the project.
Public Review Period	Begins – August 12, 2022 Ends – September, 2022
Written Comments To	Michelle Huang, Assistant Planner City of East Palo Alto Planning Division 1960 Tate Street East Palo Alto, CA 94303
Proposed Findings	The City of East Palo Alto is the custodian of the documents and other material that constitute the record of proceedings upon which this decision is based. The initial study indicates that the proposed project has the potential to result in significant adverse environmental impacts. However, the mitigation measures identified in the initial

study would reduce the impacts to a less than significant level. There is no substantial evidence, in light of the whole record before the lead agency (City of East Palo Alto) that the project, with mitigation measures incorporated, may have a significant effect on the environment. See the following project-specific mitigation measures:

Mitigation Measures

Air Quality

AQ-1 Prior to issuance of a grading permit, the project applicant shall include the following air district basic control measures for construction projects on all project bid and construction documents.

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the sewer district regarding dust complaints. This person shall respond

and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.

9. Compliance with these measures during construction is the responsibility of the project contractor, subject to review and approval by the City of East Palo Alto Planning Director or his/her designee.

AQ-2 The project developer shall prepare, and the project contractor shall implement, an emissions avoidance and reduction plan to reduce construction particulate matter exhaust emissions by using equipment that can meet Tier 3 or better standards that reduces diesel particulate matter by 85 percent. The plan shall be prepared prior to the issuance of a demolition or grading permit and shall be reviewed and approved by the City of East Palo Alto Planning Director and may include the following measures:

- a. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall use Tier 3 engines with Level 3 diesel particulate features or Tier 4 engines;
- b. Use alternatively fueled equipment or equipment with zero emissions (i.e., electrical equipment); and/or
- c. Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment, such as generators.

The plan shall utilize the above measures or equivalent measures, and must demonstrate that particulate matter exhaust emissions would be reduced by 85 percent subject to review and approval of the City of East Palo Alto Planning Director.

Biological Resources

BIO-1 To avoid impacts to nesting birds, the removal of vegetation shall be minimized to the greatest extent feasible. Construction activities that include any tree removal, pruning, grading, grubbing, or demolition shall be conducted outside of the bird nesting season (January 15 through September 15) to the greatest extent feasible. If this type of construction occurs during the bird nesting season, then a qualified biologist shall conduct pre-construction surveys for nesting birds to ensure that no nests would be disturbed during project construction.

If project-related work is scheduled during the nesting season (February 15 to August 30 for small bird species such as passerines; January 15 to September 15 for owls; and February 15 to September 15 for other raptors), a qualified biologist shall conduct nesting bird surveys. Two surveys for active nests of such birds

shall occur within 14 days prior to start of construction, with the second survey conducted with 48 hours prior to start of construction. Appropriate minimum survey radius surrounding each work area is typically 250 feet for passerines, 500 feet for smaller raptors, and 1,000 feet for larger raptors. Surveys shall be conducted at the appropriate times of day to observe nesting activities.

If the qualified biologist documents active nests within the project site or in nearby surrounding areas, an appropriate buffer between each nest and active construction shall be established. The buffer shall be clearly marked and maintained until the young have fledged and are foraging independently. Prior to construction, the qualified biologist shall conduct baseline monitoring of each nest to characterize “normal” bird behavior and establish a buffer distance, which allows the birds to exhibit normal behavior. The qualified biologist shall monitor the nesting birds daily during construction activities and increase the buffer if birds show signs of unusual or distressed behavior (e.g. defensive flights and vocalizations, standing up from a brooding position, and/or flying away from the nest). If buffer establishment is not possible, the qualified biologist or construction foreman shall have the authority to cease all construction work in the area until the young have fledged and the nest is no longer active.

A report documenting survey results and a plan for active bird nest avoidance (if needed) will be completed by the biologist and submitted to the City for review and approval prior to disturbance and/or construction activities. If no active bird nests are detected during the survey, then project activities can proceed as scheduled. However, if an active bird nest of a native species is detected during the survey, then a plan for bird nest avoidance will be prepared to determine and clearly delineate an appropriately-sized, temporary protective buffer area around each active nest, depending on the nesting bird species, existing site conditions, and type of proposed disturbance and/or construction activities.

Cultural Resources

CR-1 Prior to issuance of a tree removal permit or grading permit, because the possibility that significant buried cultural resources might incidentally be found during construction activities, the applicant shall include the following language on all construction documents and on any permits issued for the project site:

“If archaeological resources are unexpectedly discovered during construction, work shall be halted immediately within 50 meters (160 feet) of the find, and the Planning Department notified, until it can be evaluated by a qualified professional archaeologist. If the find is determined to be unique, appropriate mitigation measures shall be formulated and

implemented subject to the review and approval of the City planning department.”

CR-2 Due to the possibility that Native American human remains may be discovered during project construction activities, the following language shall be included in all construction documents and on any permits issued for the project site, including, but not limited to, tree removal, grading, and building permits.

“If human remains are found during construction, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the San Mateo County Coroner is contacted to determine that no investigation of the cause of death is required.

If the coroner determines the remains to be Native American, then the coroner shall contact the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent (MLD) from the deceased Native American. The MLD may then make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and associated grave goods as provided in Public Resources Code Section 5097.98.

The landowner or authorized representative will rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further disturbance if: a) the Native American Heritage Commission is unable to identify a MLD or the MLD failed to make a recommendation within 48 hours after being allowed access to the site; b) the descendent identified fails to make a recommendation; or c) the landowner or his authorized representative rejects the recommendation of the descendent, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.

Geology and Soils

GEO-1 Prior to issuance of any permits, and due to the possibility that unique paleontological resources might be found during construction, the applicant shall include the following language on all construction documents and on any permits issued for the project site, including, but not limited to, tree removal, grading, and building permits:

“If paleontological resources are unexpectedly discovered during construction, work shall be halted immediately within 50 meters (160 feet) of the find, and the Planning Department notified, until it can be evaluated by a qualified

professional paleontologist. If the find is determined to be unique, appropriate mitigation measures shall be formulated and implemented subject to the review and approval of the City planning department.”

Noise

N-1 The applicant shall prepare a detailed construction noise logistics plan. The construction noise logistics plan shall be submitted for review and approval by the City planning department prior to issuance of any permit on the site, and the contractor shall implement the plan during all site preparation, grading, and construction. The construction noise logistics plan shall identify a procedure for coordination with adjacent residential land uses so that construction activities can be scheduled to minimize noise disturbance. The construction noise logistics plan must include provisions requiring implementation of the following best management practices to reduce noise from construction activities near sensitive land uses:

- Construction activities shall be limited to the hours between 7:00 am and 6:00 pm, Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays. No construction activity is allowed on Sundays or national holidays;
- Notify all adjacent land uses of the construction schedule in writing;
- Utilize ‘quiet’ models of air compressors and other stationary noise sources where technology exists;
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;
- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses. If they must be located near receptors, adequate muffling (with enclosures where feasible and appropriate) or temporary barriers shall be used reduce noise levels at the adjacent sensitive receptors. Any enclosure openings or venting shall face away from sensitive receptors.;
- Locate staging areas and construction material areas as far away as possible from adjacent land uses;
- Prohibit all unnecessary idling of internal combustion engines;
- Control noise from construction workers’ radios to a point where they are not audible at existing residences bordering the project site;

- If impact pile driving is proposed, the following measures shall be implemented:
 - multiple-pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced;
 - temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the adjacent land uses. Such noise control blanket barriers can be rented and quickly erected; and
 - foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile. Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile.
 - Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented; and
 - Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction.
- N-2 The project's proposed masonry walls located along the perimeter of the site to the east and south shall be constructed as early as possible to reduce construction noise levels at the adjacent residences.
- N-3 Prior to the issuance of building permits, the following improvements shall be reflected on construction plans:
- The car wash shall be equipped with a silencer and exit door.
- N-4 Fuel truck deliveries shall be limited to daytime hours between 7:00 a.m. and 10:00 p.m. Planned fuel truck delivery schedule shall be subject to verification by Planning Department staff.
- N-5 Prior to issuance of building permits, construction plans shall show all HVAC equipment located a minimum distance of 20 feet from the adjacent residential property lines to the south and east. Alternatively, the equipment shall be located a minimum distance of 10 feet from adjacent residential property lines with

enclosures or barriers designed such that the line of sight between the equipment and the nearest residential property line is broken.

N-6 A construction vibration monitoring plan shall be prepared by the applicant prior to the issuance of any permit, and shall be reviewed and approved by the Community Development Department Director or his/her designee. The approved construction vibration monitoring plan shall be implemented during construction by the project contractor to document conditions at the residences and commercial structures adjacent to the site prior to, during, and after vibration generating construction activities. All plan tasks shall be undertaken under the direction of a licensed Professional Structural Engineer in the State of California and be in accordance with industry accepted standard methods. The construction vibration monitoring plan shall include the following tasks:

- Identification of sensitivity to ground-borne vibration of the residences and commercial structures adjacent to the site. A vibration survey (generally described below) would need to be performed.
- Performance of a photo survey, elevation survey, and crack monitoring survey for the residences and commercial structures adjacent to the site. Surveys shall be performed prior to and after completion of vibration generating construction activities located within 25 feet of the structure. The surveys shall include internal and external crack monitoring in the structure, settlement, and distress, and shall document the condition of the foundation, walls and other structural elements in the interior and exterior of the structure.
- Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage. Make appropriate repairs where damage has occurred as a result of construction activities.
- The results of any vibration monitoring shall be summarized and submitted in a report shortly after substantial completion of each phase identified in the project schedule. The report will include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits will be included together with proper documentation supporting any such claims.
- Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted on the construction site.

- Limit the use of vibratory rollers, hoe rams, large bulldozers, and caisson drilling, and avoid clam shovel drops within 15 feet of shared property lines to the south and east.
- Place operating equipment on the construction site as far as possible from vibration-sensitive receptors.
- Use smaller equipment to minimize vibration levels below the limits.
- Select demolition methods not involving impact tools.
- Avoid dropping heavy objects or materials near vibration sensitive locations.
- A list of all heavy construction equipment to be used for this project known to produce high vibration levels (tracked vehicles, vibratory compaction, jackhammers, hoe rams, etc.) shall be submitted to the City by the contractor, prior to the commencement of demolition and construction activity. This list shall be used to identify equipment and activities that would potentially generate substantial vibration and to define the level of effort required for continuous vibration monitoring.

Tribal Cultural Resources

TR-1 The applicant shall contract with the Tamien Nation to develop and implement a cultural resource sensitivity training program for the construction work crew on the first days of excavation. The project contractor shall provide evidence of the training to the City Planning Division, which shall include the training materials and a sign-in list of trained construction personnel, at the end of the first day of excavation.

TR-2 Should Tribal or cultural resources be inadvertently discovered during project excavation activity, work shall be halted and the Tamien Nation Treatment Protocol shall be implemented.

The location of Tribal resources is confidential, may be redacted from monitoring reports, and shall not be made available for public review. The location of sensitive cultural resources is exempt from the Public Records Act.

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INITIAL STUDY

2194 UNIVERSITY AVENUE GAS STATION IMPROVEMENTS

DR18-022, V20-002, CUP20-002

PREPARED FOR

City of East Palo Alto

Michelle Huang, Assistant Planner

1960 Tate Street

East Palo Alto, CA 94303

Tel 650.853.3151

PREPARED BY

EMC Planning Group Inc.

601 Abrego Street

Monterey, CA 93940

Tel 831.649.1799

Fax 831.649.8399

Stuart Poulter, AICP, MCRP, Senior Planner

poulter@emcplanning.com

www.emcplanning.com

August 11, 2022

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A. BACKGROUND

Project Title	2194 University Avenue Gas Station Improvements
Lead Agency Contact Person and Phone Number	Michelle Huang, Assistant Planner 650-680-6084
Date Prepared	August 11, 2022
Study Prepared by	EMC Planning Group Inc. 601 Abrego Street Monterey, CA 93940
Project Location	2194 University Avenue, East Palo Alto, CA 94549
Project Sponsor Name and Address	Vikash Bansal 809 E. Stanley Blvd. Livermore, CA 94550
General Plan Designation	Mixed Use Corridor
Zoning	MUC-2 (Mixed Use Corridor Zone)

Setting

The proposed project is a remodel of an existing gas station on a 0.43-acre (18,779 square foot) project site located 2194 University Avenue in the City of East Palo Alto (city). The project site is located at the southeast corner of the University Avenue and Bell Street intersection (assessor's parcel number 063-321-400). The project site has a land use designation of Mixed Use Corridor, according to the 2016 *Vista 2035 East Palo Alto General Plan* (general plan). This designation provides for vertical and horizontal mixed use developments along arterial roads and other high-activity areas throughout the city.

The project site is situated in an existing urban area of the city interspersed with various residential and neighborhood serving/commercial uses along University Avenue. University Avenue is a major north-south thoroughfare connecting East Palo Alto with the downtown area of the City of Palo Alto to the south across Highway 101. [Figure 1, Location Map](#), presents the regional and vicinity location of the project site. The site is accessed from Bell Street and University Avenue. [Figure 2, Aerial Photograph](#), presents an aerial view of the project site and immediate surroundings.

Description of Project

The proposed project consists of the construction of improvements to the existing gas station. A conditional use permit and variance approval per Municipal Code Chapter 6 are required for the proposed project. Demolition and/or removal activities at the project site will include:

- Demolition of a 95 square foot cashier and snack kiosk and its replacement with a 2,208 square foot convenience store;
- Demolition of an existing 1,618 square foot fueling canopy and three (3) fuel pumps, and replacement with a 2,006 square foot fueling canopy covering three (3) fuel pumps;
- Removal and replacement of underground fuel storage tanks and associated piping; and
- Removal of a 147 square foot accessory structure, and installation of a 726 square foot carwash tunnel with 365 square foot equipment room.

The proposed carwash tunnel would be placed on the west side of the site adjacent to University Avenue. The convenience store would be placed near the southeast interior corner of the project site. Access would be provided from University Avenue and Bell Street. The proposed project includes repaving the site and providing fifteen (15) onsite parking stalls made up of five (5) standard parking spaces, one (1) van accessible parking stall, and two (2) parallel parking stalls; an accessible path of travel to the right-of-way; a masonry trash enclosure; lighting, approximately 1,731 square feet of landscaping; and an area for self-service air and water equipment.

The proposed car wash will utilize a recycled carwash system as required by state law (AB 2230). Prior to discharge to the public sewer system, the used carwash water will run through two (2) types of treatment tanks the first tank is the sand/oil separator. This tank includes two (2) compartments. The sand oil separator will then intercept the sand in the first compartment and the oil in the second compartment. The access water then will leave the sand /oil separator tank to the clarifier tank. The clarifier tank consists of three (3) compartments to clear the water for the reuse by the carwash equipment. The percentage of the recycled water to be re-used in the carwash will be controlled by the reclaim system.

Project plans call for the removal of five (5) existing trees (four Honey Locust and one pine) located along the east, southeast corner, and west boundaries of the project site. Landscaping plans call for replacement of these trees with 12 smaller similar varieties of trees to be planted in existing planter areas where the existing trees are located.

Figure 3, [Site Plan](#), presents an overview of the proposed site plan, and Figure 4, [Proposed Building Elevations](#), presents building elevations of the proposed car wash, convenience store, and fuel dispenser canopy. [Appendix A](#) includes a complete set of project plans.

The proposed project operations are expected to require six (6) full-time employees and six (6) part-time employees. The hours of operation of the gas station and convenience store unchanged from the existing gas station and snack shop (24 hours per day, 365 days per year). The proposed car wash would operate daily between the hours of 7:00 A.M. and 10:00 P.M.

Other Public Agencies Whose Approval is Required

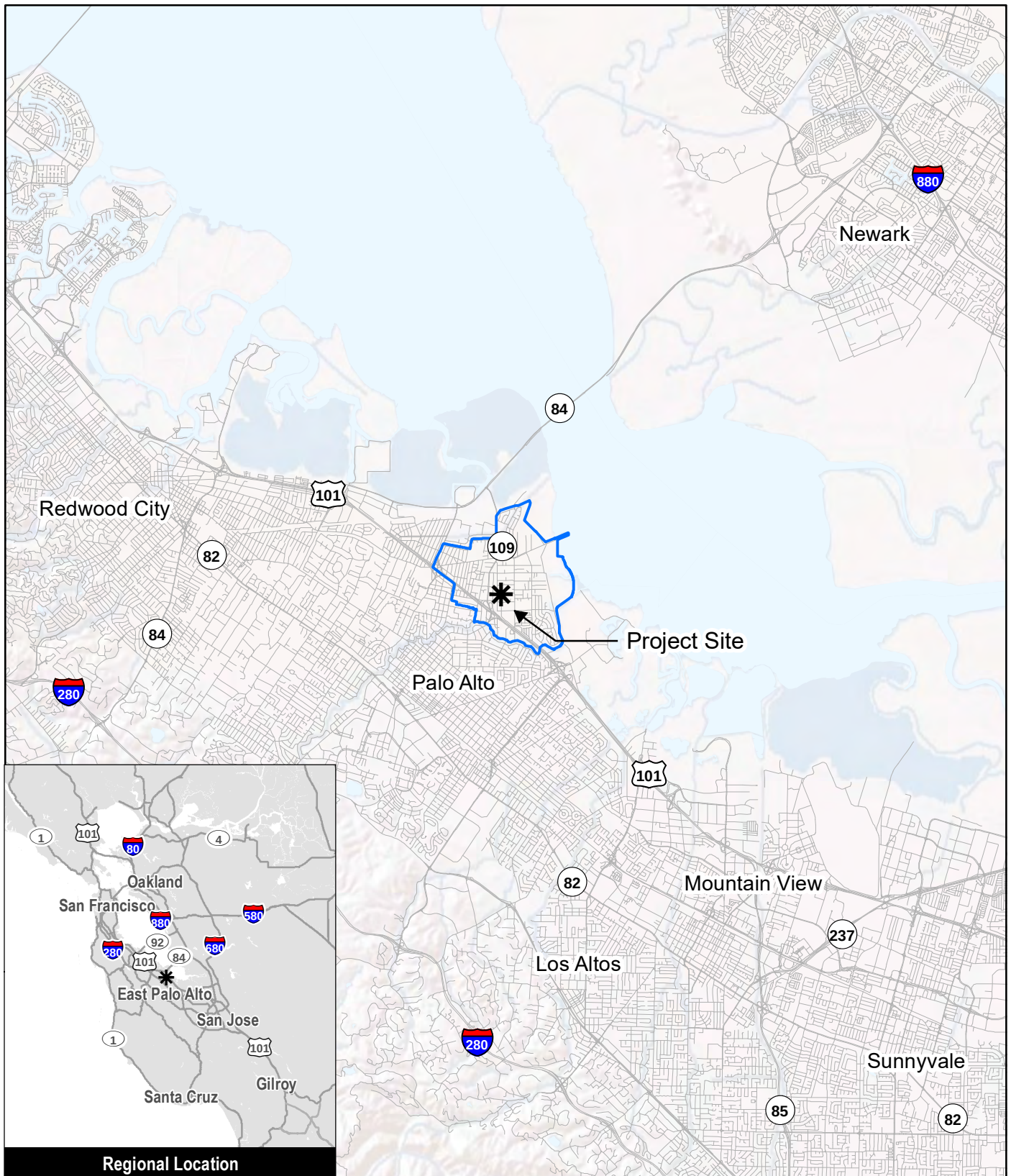
Bay Area Air Quality Management District

California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1.

On June 7, 2021, the city sent an offer of consultation letter to nine (9) tribal representatives representing the Amah Mutsun Tribal Band of Mission San Juan Bautista, Costanoan Rumsen Carmel Tribe, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Indian Tribe of the SF Bay Area, The Ohlone Indian Tribe, Rusem Am:a Tur:ataj Ohlone, and Tamien Nation, respectively. The city received a response letter and request for consultation from the Tamien Nation of the Greater Santa Clara County. The results of consultation are presented in Section 18.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

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Source: ESRI 2019



0 2 miles

City of East Palo Alto City Limits



Figure 1
Location Map

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Source: Google Earth 2020
Santa Clara County GIS 2020

Figure 2

Aerial Photograph

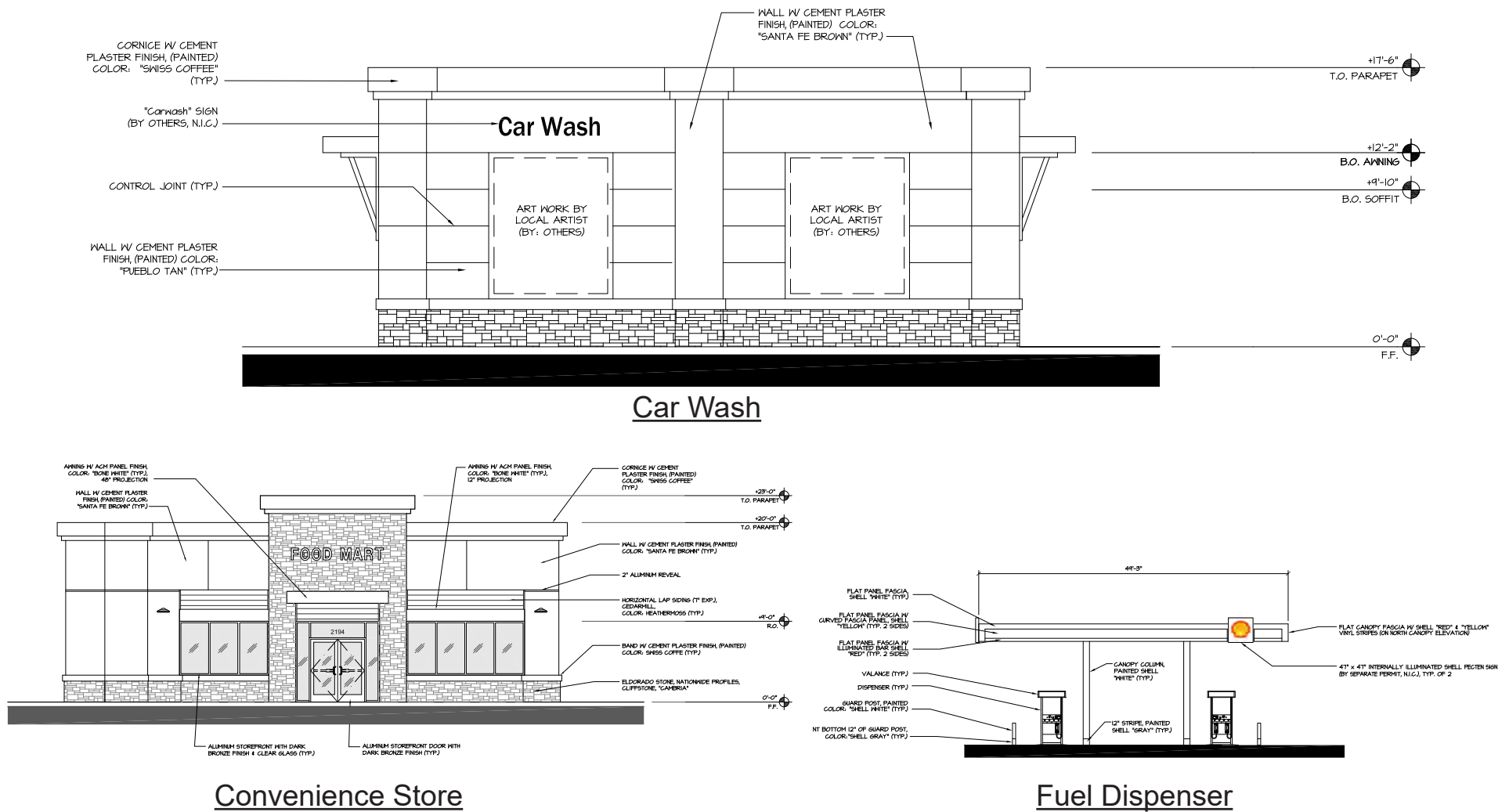


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Figure 3
Site Plan

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Source: MI Architects 2021

Figure 4
Proposed Building Elevations

2194 University Avenue Gas Station Improvements Initial Study

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B. ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages.

- | | | |
|---|--|---|
| ☐ Aesthetics | ☐ Greenhouse Gas Emissions | ☐ Population/Housing |
| ☐ Agriculture and Forestry Resources | ☐ Hazards & Hazardous Materials | ☐ Public Services |
| ☐ Air Quality | ☐ Hydrology/Water Quality | ☐ Recreation |
| ☐ Biological Resources | ☐ Land Use/Planning | ☐ Transportation |
| ☐ Cultural Resources | ☐ Wildfire | ☐ Tribal Cultural Resources |
| ☐ Energy | ☐ Mineral Resources | ☐ Utilities/Service Systems |
| ☐ Geology/Soils | ☐ Noise | ☐ Mandatory Findings of Significance |

C. DETERMINATION

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- ☐ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- ☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (1) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (2) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.



Michelle Huang, Assistant Planner

8/2/2022

Date

D. EVALUATION OF ENVIRONMENTAL IMPACTS

Notes

1. A brief explanation is provided for all answers except “No Impact” answers that are adequately supported by the information sources cited in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer is explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once it has been determined that a particular physical impact may occur, then the checklist answers indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an EIR is required.
4. “Negative Declaration: Less-Than-Significant Impact with Mitigation Measures Incorporated” applies where the incorporation of mitigation measures has reduced an effect from “Potentially Significant Impact” to a “Less-Than-Significant Impact.” The mitigation measures are described, along with a brief explanation of how they reduce the effect to a less-than-significant level (mitigation measures from section XVII, “Earlier Analyses,” may be cross-referenced).
5. Earlier analyses are used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier document or negative declaration. [Section 15063(c)(3)(D)] In this case, a brief discussion would identify the following:
 - a. “Earlier Analysis Used” identifies and states where such document is available for review.
 - b. “Impact Adequately Addressed” identifies which effects from the checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and states whether such effects were addressed by mitigation measures based on the earlier analysis.
 - c. “Mitigation Measures” — For effects that are “Less-Than-Significant Impact with Mitigation Measures Incorporated,” mitigation measures are described which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6. Checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances, etc.) are incorporated. Each reference to a previously prepared or outside document, where appropriate, includes a reference to the page or pages where the statement is substantiated.
7. “Supporting Information Sources” — A source list is attached, and other sources used or individuals contacted are cited in the discussion.
8. This is a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected. This is the format recommended in the CEQA Guidelines as amended 2018.
9. The explanation of each issue identifies:
 - a. The significance criteria or threshold, if any, used to evaluate each question; and
 - b. The mitigation measure identified, if any to reduce the impact to less than significant.

1. AESTHETICS

Except as provided in Public Resources Code Section 21099 (Modernization of Transportation Analysis for Transit-Oriented Infill Projects), would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Have a substantial adverse effect on a scenic vista? (1, 2, 3, 4, 13)	☐	☐	☐	☒
b. Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway? (26)	☐	☐	☐	☒
c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage points.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality? (2, 3, 4, 5)	☐	☐	☒	☐
d. Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area? (1, 13)	☐	☐	☐	☒

Comments:

- a. The general plan does not identify any designated scenic vistas, scenic resources, or scenic highways. The site is not located within designated viewsheds or view corridors identified by the general plan. Therefore, the project would have no impact on designated scenic vistas or scenic view corridors.
- b. According to the Caltrans Scenic Highways Program, no state scenic highways traverse the city. The nearest scenic highway is U.S Interstate 280, located more than five miles west of the city, and visually obscured by existing urban development (City of East Palo Alto 2016b, page 4.1-4; Caltrans 2021). Therefore, the project would have no impact to the aesthetic value of any state scenic highway.
- c. The proposed project is located in an established urban area within the city limit and has a zoning and general plan designation of "Mixed Use Corridor." The general plan EIR determined that compliance with general plan policies for the University Avenue

corridor would reduce visual impacts of new development to a less-than-significant level (City of East Palo Alto 2016). Goal LU-10 of the general plan seeks to transform University Avenue into a mixed-use corridor with a diversity of residential, mixed use and commercial development in a walkable urban fabric. The general plan Land Use Element includes a number of policies to achieve this goal. Policy 10.10 encourages a variety of architectural styles, building forms and heights along University Avenue; Policy 10.2 and Policy 10.9 provide guidance for building heights; Policy 10.11 calls for new buildings along the University Avenue corridor to enhance pedestrian activity; and Policy 10.13 provides guidance for improving the University Avenue streetscape.

The general plan EIR found that adherence to these and other University Avenue corridor design-related policies would ensure that the design of the proposed project would be compatible with adjacent uses. Although the project would introduce new visual features to the site, these features would not result in substantial degradation to existing visual character of the corridor to the extent that a significant impact would occur. Remodeling of the site would modernize the appearance of the facility when viewed by pedestrians, cyclists and persons in motor vehicles as they pass the site. The changes to the facility would visually contribute to the aesthetic urban fabric of the city and would not conflict with implementation of University Corridor general plan policies 10.2, 10.9, 10.10, 10.11, and 10.13.

Additionally, the project is subject to approval of a Design Review Permit, which will ensure consistency with the city's Development Standards for the Mixed Use Corridor zoning designation per the city's Municipal Code Section 18.12.030. The project is subject to compliance with these standards and performance measures and compliance with them ensures that no significant visual impacts would occur as a result of the project. Therefore, the change in visual character on the project site would not conflict with the general plan and the project-related change to the visual character of the neighborhood would be less than significant.

- d. Sources of daytime glare can either be a direct source of light, or can be an object which reflects light from another source, such as windows. Existing sources of light in the vicinity of the project site are primarily from lighting on the site and nearby residences and other buildings, streetlights, and headlights of vehicular traffic. Existing sources of daytime glare in the project site include light reflected from building and car windows. External nighttime lighting from residences near the project site contributes low levels of nighttime glare. The lighting proposed by redevelopment of the project site would be consistent with the existing sources of light and glare currently existing on the site. The proposed exterior light fixtures will

be LED, down-lit and fully shielded to avoid potential glare toward the street or adjacent properties. Lighting plans for the proposed project call for exterior lighting that will emit enough lighting to ensure the safety of the new facilities, but would not produce glare or excessive light spillage onto adjacent properties or the public right-of-way. Therefore, the proposed project would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area.

2. AGRICULTURE AND FOREST RESOURCES

In determining whether impacts on agricultural resources are significant environmental effects and in assessing impacts on agriculture and farmland, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use? (2)	☐	☐	☐	☒
b. Conflict with existing zoning for agricultural use, or a Williamson Act contract? (5)	☐	☐	☐	☒
c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? (2, 5)	☐	☐	☐	☒
d. Result in the loss of forest land or conversion of forest land to non-forest use? (2)	☐	☐	☐	☒
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to nonagricultural use or conversion of forest land to non-forest use? (2)	☐	☐	☐	☒

Comments:

- a-e. The project site is located in an established urban area of East Palo Alto and is surrounded by residential/urban uses. There are no Williamson Act contracts on the site, and the site is zoned for mixed commercial/residential uses. There is no agricultural land in East Palo Alto. Therefore, the project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, or conflict with a Williamson Act contract or Agricultural zoning.

There are no lands zoned for forest land or timber production located in East Palo Alto. Therefore, the project would have no impact on agricultural or forest land.

3. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Conflict with or obstruct implementation of the applicable air quality plan? (1, 27, 28, 29)	☐	☒	☐	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard? (1, 27, 28, 29, 30)	☐	☒	☐	☐
c. Expose sensitive receptors to substantial pollutant concentrations? (28)	☐	☒	☐	☐
d. Result in other emissions, such as those leading to odors adversely affecting a substantial number of people? (1, 2, 6)	☐	☐	☒	☐

Comments:

- a. The City of East Palo Alto, including the project site, is located within the boundaries of the San Francisco Bay Area Air Basin (air basin). The Bay Area Air Quality Management District (air district) is the agency with the primary responsibility for assuring that national and state ambient air quality standards are attained and maintained in the air basin. The air district's most recent adopted plan is the Bay Area 2017 Clean Air Plan: Spare the Air, Cool the Climate (Clean Air Plan). The Clean Air Plan includes measures to minimize ozone precursor emissions and halt the movement of ozone and its precursors into nearby air basins, and builds upon the air district's determination to minimize the emissions of fine particulate matter and toxic air contaminants (Bay Area Air Quality Management District 2017a).

Consistency with the Clean Air Plan is based on conformance with air quality control measures presented in the Clean Air Plan. The air district's Air Quality CEQA Guidelines (2017b) ("air district CEQA guidelines") Section 9.1 provides guidance for determining if a development project is consistent with the Clean Air Plan. For consistency a project should meet three criteria: 1) support the primary goals of the Clean Air Plan; 2) include applicable Clean Air Plan control measures; and 3) not disrupt or hinder implementation of any Clean Air Plan control measures.

The primary goals of the Clean Air Plan are to attain air quality standards; to reduce population exposure to pollutants and protect public health in the Bay Area; and to reduce greenhouse gas (GHG) emissions and protect the climate. This is considered to have been accomplished if there are no project-level significant impacts, or if significant impacts are mitigated to a less-than-significant level.

As discussed in section “b” below, the proposed project would generate criteria air pollutant emissions during construction and operations, but project-related construction and operational criteria pollutant emissions would not exceed air district thresholds of significance. However, during construction and operations, the proposed project would generate toxic air contaminant (TAC) emissions and expose sensitive receptors to them.

Operational emissions would be very similar to existing emissions since there would be no increase in pumping capacity and the car wash and convenience store are ancillary services that would not be expected to attract a greater number of customers for those specific services (refer also to the discussion in Section 17, Transportation). Construction emissions would result in significant emissions exposures to sensitive receptors, but not to the extent that significant impacts could not be mitigated to a less-than-significant level. Therefore, the proposed project would not result in significant air quality impacts, and supports the primary goals of the Clean Air Plan.

There are 81 control measures in the 2017 Clean Air Plan, many of which are applicable only for industrial or regional implementation. Project consistency with applicable control measures is discussed below, based in part on the implementation expectations stated in the Clean Air Plan (Bay Area Air Quality Management District 2017b).

Clean Air Plan Control measures potentially applicable to the proposed project are presented below in [Table 1, Potentially Applicable Control Measures \(Clean Air Plan\)](#) along with a brief consistency analysis to determine how the project either does or does not implement the measure.

As noted in Table 1, with mitigation the proposed project is consistent with the Clean Air Plan. The impact is less than significant with mitigation (see discussion in item b, below).

Table 1 Potentially Applicable Control Measures (Clean Air Plan)

Control Measure Number and Name	Consistency Analysis
BL1 – Green Buildings	Consistent. This policy encourages utilization of Green Building Standards in new development. The proposed project is subject to compliance with California Building Code's Energy Efficiency Standards for Nonresidential Buildings (California Code of Regulations, Title 24, Part 6).
BL4: Urban Heat Island Mitigation.	Consistent. This measure is intended to mitigate the "urban heat island" effect by promoting the implementation of cool roofing and cool paving techniques. The proposed project presents an opportunity for use of cool roofing and paving techniques.
NW2: Urban Tree Planting.	Consistent. This measure encourages voluntary approaches to reduce urban heat islands by increasing shading in urban and suburban communities via planting of low-VOC emitting trees. The proposed project would remove five existing trees from the site. Twelve new tree plantings are proposed.
SS17 GHG Best Available Control Technology (BACT)	Consistent. The Air District's New Source Review (NSR) program is a comprehensive air permitting program that applies to a wide-range of stationary source facilities within the Air District's regulatory jurisdiction. The program requires a facility to obtain a permit and implement state-of-the-art air pollution control technology whenever a facility installs a new source of air emissions or makes a modification to an existing source. Gas dispensing facilities are regulated by the air district's Regulation 2, Rule 2 (Rule 2-2), which requires a new source review for any new or "modified" source of air emissions (see also the discussion of consistency with SS21, below), and satisfy other air pollution control requirements as part of the air district permitting process. The proposed project is subject to compliance with the air district permitting requirements.
SS20: Air Toxics Risk Cap and Reduction from Existing Facilities	Consistent. This control measure seeks to further reduce public exposure to toxic air contaminants (TACs) from existing facilities. New Regulation 11, Rule 18 (Rule 11-18) is expected to substantially reduce health risks from existing facilities that emit TACs, by requiring the implementation of all technically and economically feasible risk reduction measures at significant sources of TACs in these facilities. The rule also incorporates the Office of Environmental Health Hazard Assessment (OEHHA's) recently adopted (2015) Health Risk Assessment Guidelines into its required health risk estimation methodology. Various facilities, including gas stations, in the Bay Area region emit toxic air contaminants that can adversely impact public health. The Air District's long-standing Air Toxics Program for reducing TAC emissions from stationary sources and statewide programs for reducing emissions from mobile sources have been largely responsible for decreasing these pollutants by at least 87 percent since 1990. However, there is still progress to be made. Many Bay Area residents have expressed concern about the impact of these toxic pollutants on public health. Modifications to the existing facility are subject to compliance with the air district permitting and must show conformance to Rule 11-18 during operations. A health risk assessment has been prepared that evaluates construction health risks to nearby receptors. With implementation of Mitigation Measure AQ 1 and AQ-2 project-related health risks to sensitive receptors are reduced to less than significant.

Control Measure Number and Name	Consistency Analysis
SS21: New Source Review of Toxic Air Contaminants	Consistent. Air District Regulation 2, Rule 5 (Rule 2-5) requires a health impact review for new and modified sources that emit toxic air contaminants (TACs) in excess of emissions trigger levels. It also establishes risk thresholds for mitigation and permit approval. The Air District conducts the health impact review in accordance with the California Office of Environmental Health Hazard Assessment (OEHHA) Health Risk Assessment Guidelines and the CARB/CAPCOA Risk Management Guidelines. The use of the 2015 guidelines will increase the stringency of the toxics NSR program because the new health risk calculation procedures will result in higher cancer risk estimates for the same level of emissions. The proposed project is renovation of an existing permitted facility that would not increase the number of fueling stations. Therefore, the renovated gasoline dispensing facility would not increase fueling capacity from existing conditions and no new sources of TACs associated with the gasoline dispensing facility would occur.
SS31: General Particulate Matter Emission Limitation	Consistent. Many existing stationary sources with operational PM emissions have been modified over the years. Permit conditions have been established to require Best Available Control Technology (BACT) when these sources were installed, modified, or replaced, requiring more stringent levels of control than required by Rule 6-1. These permit conditions often also define testing, monitoring, reporting and recordkeeping requirements. The proposed project is an existing permitted gasoline dispensing facility that is subject to compliance with Rule 6-1.
SS36 Particulate Matter from Trackout	Consistent. Prevent mud/dirt and other solid trackout from construction, landfills, quarries and other bulk material sites. The proposed project is subject to compliance with Mitigation Measure AQ-1, presented later in this section, which includes measures to minimize fugitive dust emissions during construction.
SS38 Fugitive Dust PM	Consistent. See response to SS36.
SS40 Odors	Consistent. This control measure would revise Air District Regulation 7 to reduce emissions of odorous substances and place emission limits on odor compounds. The rule was originally intended to reduce odorous emissions from operations such as refineries, sewage treatment plants, and rendering plants. The proposed project replaces an existing facility with no increase in the number of fueling stations. The proposed car wash and convenience store are uses ancillary to the fueling stations and would not be sources of substantial odors.
TR2: Trip Reduction Programs	N/A. This policy requires businesses with 50 employees or more to comply the Bay Area Commuter Benefits Program. The proposed project would provide employment for six FTE and six PTE. Compliance with this policy is not required.
TR8 – Ridesharing and Last-Mile Connections	Several transit stops are located on University Avenue in the vicinity of the project site. The transit stop nearest to the project site is located on University Avenue, just north of Bell Street. The proposed project would not conflict with this measure.
TR9: Bicycle and Pedestrian Access and Facilities.	Consistent. Encourage planning for bicycle and pedestrian facilities in local plans, e.g., general and specific plans, fund bike lanes, routes, paths and bicycle parking facilities.

Control Measure Number and Name	Consistency Analysis
	The proposed project includes replacement of sidewalks along the site frontages and would not preclude the continued use of existing bicycle and pedestrian facilities on Bell Street or University Avenue.
TR16: Indirect Source Review.	Consistent. This measure reduces emissions of key ozone precursors, ROG and NOx, particulate matter, toxic air contaminants and GHGs by reducing construction and operational emissions associated with new or modified land uses. On-road and off-road mobile emission sources are the main source categories targeted by this measure. This reduces region-wide population exposure to air pollutants and also reduces localized population exposure to air pollution. The proposed project would not emit operational emissions that would exceed air district standards. Mitigation measure AQ-1 and AQ-2 discussed later in this section include emissions reduction measures to reduce construction emissions and minimize exposures to air pollution.
WR2 Support Water Conservation GHG Develop a list of best practices that reduce water consumption and increase on-site water recycling in new and existing	Consistent. This measure promotes water conservation of conveyance and treatment, including reduced water consumption and increased on-site water recycling, in residential, commercial and industrial buildings. The purpose is to reduce greenhouse gas (GHG) emissions associated electricity use required to capture, use, convey, store, conserve, recycle and treat water and wastewater in the Bay Area. The proposed project would increase water demand on the site and is subject to compliance with the state model water efficient landscape (MWELO) regulations. The proposed project would recycle water on the site for use in the car wash. The project would not require expansion of off-site facilities or the construction of new water mains aside from lateral lines required to connect to the existing water main.

SOURCE: BAAQMD 2017a; EMC Planning Group 2021

- b. The six most common and widespread air pollutants of concern, or “criteria pollutants,” are ground-level ozone, nitrogen dioxide, particulate matter, carbon monoxide, sulfur dioxide, and lead. In addition, reactive organic gases are a key contributor to the criteria air pollutants because they react with other substances to form ground-level ozone. Health effects of criteria air pollutants include asthma, bronchitis, chest pain, coughing, and heart diseases.

The air district is responsible for monitoring emissions and developing air quality plans for the San Francisco Bay area, including San Mateo County, and has published comprehensive guidance on evaluating, determining significance of, and mitigating air quality impacts of projects and plans in the air district’s CEQA Air Quality Guidelines (BAAQMD 2017b) (2017 CEQA Guidelines).

The air district is the agency with the primary responsibility for assuring that national and state ambient air quality standards are attained and maintained in the air basin. Depending on whether or not the standards are met or exceeded, the air basin is classified as being in “attainment” or “nonattainment.” [Table 2, San Francisco Bay Area Air Basin Attainment Status](#), identifies the current attainment status within the air basin for each criteria pollutant.

Table 2 San Francisco Bay Area Air Basin Attainment Status

Criteria Air Pollutants	State Standards	National Standards
Ozone	Non-attainment	Non-attainment
Respirable Particulate Matter	Non-attainment	Unclassified
Fine Particulate Matter	Non-attainment	Non-attainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Lead	-	Attainment

SOURCE: Bay Area Air Quality Management District 2017b

The air district has developed thresholds of significance that are used to determine whether or not the proposed project would result in a cumulatively considerable net increase of criteria air pollutants during operations and/or construction. The thresholds of significance for determining air quality impacts are contained in the 2017 CEQA Guidelines and are presented in [Table 3, Thresholds of Significance for Criteria Air Pollutants](#).

Table 3 Thresholds of Significance for Criteria Air Pollutants

Criteria Air Pollutants	Construction Thresholds	Operational Thresholds	
	Average Daily Emissions (lb/day)	Average Daily Emissions (lb/day)	Annual Emissions (tons/year)
Reactive Organic Gases (ROG)	54	54	10
Nitrogen Oxides (NO _x)	54	54	10
Respirable Particulate Matter (PM ₁₀)	82 (exhaust) ¹	82	15
Fine Particulate Matter (PM _{2.5})	54 (exhaust) ¹	54	10

SOURCE: Bay Area Air Quality Management District 2017b

NOTE:

1. The thresholds of significance for particulate matter emissions from project construction apply to exhaust emissions only. The air district recommends implementation of best management practices to reduce fugitive dust emissions.

Construction and operations of the proposed project would increase ozone and particulate matter air pollutant emissions. Criteria air pollutant emissions generated by existing uses of the site and emissions during construction and operation of the proposed project were estimated using the California Emissions Estimator Model (CalEEMod) version 2016.3.2. Refer to [Appendix B](#) for the CalEEMod results.

Operational Emissions

[Table 4, Unmitigated Operational Criteria Pollutant Emissions](#), presents the modeled unmitigated operational criteria pollutant emissions.

Table 4 Unmitigated Operational Criteria Pollutant Emissions

Emissions Scenarios	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO _x)	Suspended Particulates (PM ₁₀)	Total Fine Particulates (PM _{2.5})
Proposed ^{1,2}	0.32	0.96	0.27	0.08
Net Average Daily Emissions ^{1,3}	1.75	5.26	1.48	0.44
Air District Thresholds ³	54	54	82	54
Exceeds Thresholds?	NO	NO	NO	NO

SOURCE: EMC Planning Group 2021

NOTES:

1. Results may vary due to rounding.
2. Expressed in tons per year.
3. Expressed in pounds per day: A U.S. ton is equal to 2,000 pounds. The emissions estimates in tons per year are multiplied by 2,000 pounds to arrive at emissions volume in pounds per year, then divided by 365 days per year to arrive at pounds per day.

The proposed project would not generate operational criteria pollutant emissions that would exceed the air district thresholds. Therefore, criteria pollutant emissions generated by the project would be less than significant and less than cumulatively considerable.

Construction Emissions

Construction emissions include mobile source exhaust emissions, emissions generated during the application of asphalt paving material and architectural coatings, as well as emissions of fugitive dust during demolition and grading. The unmitigated criteria air pollutant emissions resulting from project construction are summarized in [Table 5, Unmitigated Construction Criteria Air Pollutant Emissions](#).

Table 5 Unmitigated Construction Criteria Air Pollutant Emissions

Emissions	Reactive Organic Gases (ROG)	Nitrogen Oxides (NO _x)	Exhaust Respirable Particulate Matter (PM ₁₀)	Total Fine Particulate Matter (PM _{2.5})
2021 ^{1,2}	0.15	0.56	0.03	0.03
Average Daily Emissions ^{1,3}	2.22	8.30	0.44	0.44
Air District Thresholds ³	54	54	82	54
Exceeds Thresholds?	NO	NO	NO	NO

SOURCE: EMC Planning Group 2021

NOTES:

1. Results may vary due to rounding.
2. Expressed in tons per year.
3. Expressed in pounds per day: CalEEMod estimates a total of 135 construction days. A U.S. ton is equal to 2,000 pounds. The emissions estimates in tons per year are multiplied by 2,000 pounds to arrive at emissions volume in pounds per year, then divided by the number of construction days per year to arrive at pounds per day.

The proposed project would not result in construction emissions that exceed the air district thresholds for criteria air pollutants. Therefore, the increase in criteria pollutant emissions during construction is less than significant and the contribution of these emissions to regional air quality is less than cumulatively considerable. However, construction activities would temporarily generate fugitive dust and, for all construction projects in the air basin, the air district has determined that significant regional air quality impacts would occur if a project does not incorporate the air district's basic control measures to control fugitive dust emissions during construction. The air district's basic control measures are found in Table 8-2 of the air district's 2017 CEQA Guidelines and are presented in Mitigation Measure AQ-1. Implementation of Mitigation Measure AQ-1 would ensure that the air district's basic control measures are implemented during construction.

Mitigation Measure

AQ-1 Prior to issuance of demolition and grading permits, the project applicant shall include the following air district basic control measures for construction projects on all project bid and construction documents.

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.

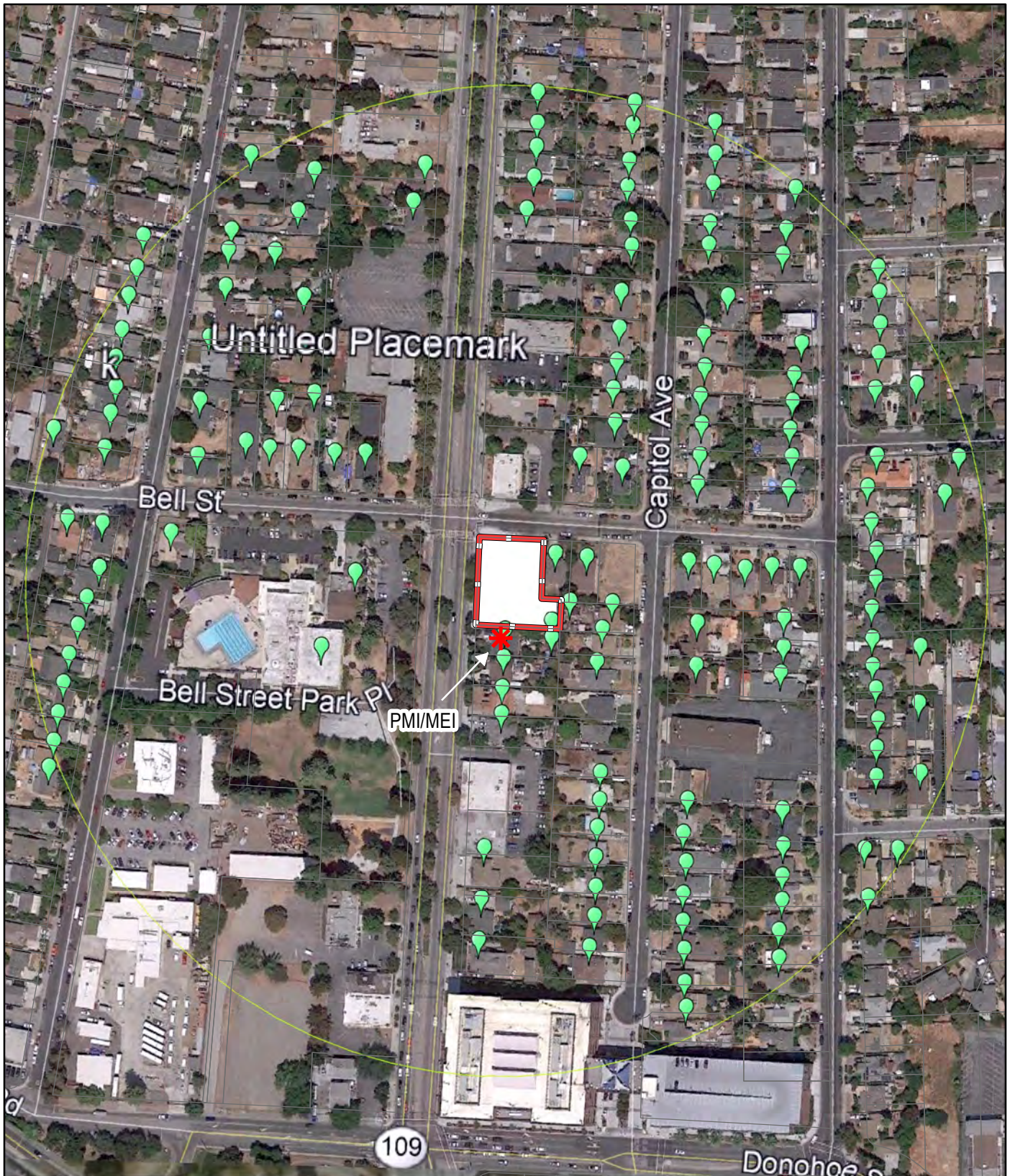
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.
8. Post a publicly visible sign with the telephone number and person to contact at the sewer district regarding dust complaints. This person shall respond and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.
9. Compliance with these measures during construction is the responsibility of the project contractor, subject to review and approval by the City of East Palo Alto Planning Director or his/her designee.

Implementation of Mitigation Measure AQ-1 would reduce project-related fugitive dust emissions during construction to a less than-significant-level by requiring that the air district's Basic Control Measures are incorporated into the project during construction. As a result, the project's contribution to regional fugitive dust emissions would be less than cumulatively considerable with mitigation.

- c. Toxic air contaminants (TACs) are pollutants that may be expected to result in an increase in mortality or serious illness or may pose a present or potential hazard to human health. Health effects include cancer, birth defects, neurological damage, damage to the body's natural defense system, and diseases that lead to death. TACs are found in ambient air, especially in urban areas, and are caused by industry, agriculture, fuels combustion, and commercial operations (e.g., dry cleaners). Diesel exhaust is the predominant TAC in urban air and is estimated to represent about two-thirds of the cancer risk from TACs.

Children, the elderly, and the chronically or acutely ill are the most sensitive population groups that are more susceptible to adverse effects of air pollution than others. These sensitive receptors are commonly associated with specific land uses such as residential areas, elementary schools, retirement homes, and hospitals.

Construction equipment and associated heavy-duty truck traffic generates diesel exhaust and fugitive dust (PM_{2.5}) that poses health risks for sensitive receptors. Diesel particulate matter (DPM), which is a known TAC, is a component of diesel exhaust. The air district requires an analysis of construction emissions exposures when construction activity would occur within 1,000 feet of sensitive receptors. The locations of sensitive receptors within 1,000 feet of the project site are shown in [Figure 5, Sensitive Receptors Within 1,000 Feet](#).



0 300 feet



Construction Area



Receptor



PMI/MEI

Source: ESRI 2020, San Mateo County GIS 2020

Figure 5

Sensitive Receptors Within 1,000 Feet

2194 University Avenue Gas Station Improvements Initial Study



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The *2194 University Avenue Risk Assessment* (EMC Planning Group 2021) (HRA) was prepared to analyze the single-source (direct) and cumulative effects of DPM and PM_{2.5} exposures and related cancer risks that could occur during project construction. The primary community risk impact issues associated with construction emissions are cancer risk and exposure to PM_{2.5}. The HRA is included in [Appendix C](#). For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer causing TACs. Project impacts related to increased community risk can occur either by introducing a new source of TACs with the potential to adversely affect existing sensitive receptors in the project vicinity or by significantly exacerbating existing cumulative TAC impacts. Community risk impacts were addressed by predicting increased lifetime cancer risk, the increase in annual PM_{2.5} concentrations, and computing the Hazard Index (HI) for non-cancer health risks. The only existing source of TACs within 1,000 feet of the project site are the combined mobile source emissions from vehicles on University Avenue.

CalEEMod was used to estimate PM₁₀ exhaust emissions (assumed to be DPM) and PM_{2.5} emissions from construction activities (see Table 5). The AERMOD dispersion model was used to predict concentrations of DPM and PM_{2.5} concentrations at sensitive receptors in the vicinity of the project site, and to identify the Point of maximum impact (PMI) that would experience the greatest exposures and the Maximally Exposed Individual (MEI), both of which are located at a single-family home located adjacent to the project site to the south. The locations of the PMI/MEI, are shown in [Figure 5, Sensitive Receptors Within 1,000 Feet](#), presented previously.

The maximum increased cancer risks at the MEI were calculated using the modeled TAC concentrations combined with the Office of Environmental Health Hazard Assessment guidance for age sensitivity factors and exposure parameters as recommended by the air district. Model results show that unmitigated construction emissions would not result in significant increases in adult cancer risks, health risks associated with PM_{2.5} exposures, or chronic DPM exposures that would exceed air district thresholds. However, the unmitigated cancer risk for infants and children at the MEI is 40.24 cases per million, which exceeds the air district threshold of 10 cases per million. This is a significant impact, and emissions reductions measures are needed to reduce the infant/child cancer risks. Modeled unmitigated health risks resulting from MEI exposures to construction emissions are compared with the air district standards in [Table 6, Unmitigated Single-Source Health Risks at the MEI](#).

Table 6 Unmitigated Single-source Health Risks at the MEI

Category	Infant/Child Cancer Risk (Cases per Million)	Adult Cancer Risk (Cases per Million)	PM _{2.5} Exposures (µg/m ³)	Hazard Index
Air District Single-Source Thresholds	10.0	10.0	>0.3	1.0
Construction Year 2021	40.24	0.70	0.08	0.1
Exceeds Thresholds?	YES	NO	NO	NO

SOURCE: EMC Planning Group 2021, BAAQMD 2017

NOTE: Amounts have been rounded and may vary.

Implementation of the air district's basic control measures for the control of construction exhaust emissions and fugitive dust emissions (Mitigation Measure AQ-1) would reduce the project's infant/child cancer emissions but not to a less than significant level. To determine the extent of emissions reduction measures that would be required to reduce infant/child cancer risk below the air district threshold, the modeled construction equipment inputs were modified in CalEEMod using a combination of Tier 3 diesel engines and Level 3 Diesel Particulate Filters (DPF) on the construction fleet. The mitigated results show that an 85 percent reduction in construction emissions would reduce infant/child cancer risks at the MEI below the air district threshold. Mitigated infant/child cancer risks are presented in [Table 7, Mitigated Construction Cancer Risk at the MEI](#). The CalEEMod unmitigated and mitigated construction emissions estimates results are included as an appendix to the HRA.

Table 7 Mitigated Construction Cancer Risks at the MEI^{1,2}

Construction Year	Infant/Child Cancer Risk (per million)
2021 (0.25 years during pregnancy)	1.05
2021	6.32
Air District Single-Source Threshold	10.0
Exceeds Thresholds?	NO

SOURCES: EMC Planning Group 2021 and Bay Area Air Quality Management District 2017

NOTES:

1. Results have been rounded, and may, therefore, vary slightly.
2. The MEI is located at an adjacent house to the south of the project site. The UTM coordinates are approximately 575951.50 meters Easting and 4146814.35 Northing (Refer to Figure 5).

Implementation of the following mitigation measure in addition to Mitigation Measure AQ-1 would reduce construction emissions and associated increases in infant/child cancer risk to a less-than-significant level.

Mitigation Measure

- AQ-2 The project developer shall prepare, and the project contractor shall implement, an emissions avoidance and reduction plan to reduce construction particulate matter exhaust emissions by using equipment that can meet Tier 3 or better standards that reduces diesel particulate matter by 85 percent. The plan shall be prepared prior to the issuance of a demolition or grading permit and shall be reviewed and approved by the City of East Palo Alto Planning Director and may include the following measures:
- a. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total shall use Tier 3 engines with Level 3 diesel particulate features or Tier 4 engines;
 - b. Use alternatively fueled equipment or equipment with zero emissions (i.e., electrical equipment); and/or
 - c. Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment, such as generators.

The plan shall utilize the above measures or equivalent measures, and must demonstrate that particulate matter exhaust emissions would be reduced by 85 percent subject to review and approval of the City of East Palo Alto Planning Director.

Implementation of mitigation measure AQ-2 in addition to mitigation measure AQ-1 would reduce the infant child cancer risks to a less-than-significant level.

Community Health Risks

Cumulative community cancer risks from existing mobile and stationary sources do not exceed the air district's cumulative significance thresholds for cancer risks, PM_{2.5} Health Risks or chronic health risks. The cumulative community risk impacts and the project's contribution to them during construction are summarized in [Table 8, Cumulative Unmitigated Health Risks at Construction MEI](#).

Unmitigated project construction emissions contribute to less than significant cumulative cancer risks and other health risks associated with exposures to PM_{2.5} emissions and chronic health risks from exposures to DPM emissions. As shown in Table 8, cumulative community cancer and health risks are below the air district's cumulative thresholds with or without the project. Therefore, the project's contribution to cumulative cancer risk and non-cancer health risks are less than cumulatively considerable. Implementation of Mitigation Measures AQ-1 and AQ-2 would further reduce the project's contribution to cumulative health risks.

Table 8 Cumulative Unmitigated Health Risks at Construction MEI

Source	Cancer Risk (per million)¹	Annual PM_{2.5} Concentration (µg/m³)¹	Chronic Hazard Index¹
Air District Cumulative-Source Threshold	100.0	0.80	10.0
University Avenue Traffic (30,122 ADT)	10.00	0.24	<1.00
Cumulative Without Project	10.00	0.24	<1.00
<i>Exceeds Thresholds (Without Project)?</i>	<i>NO</i>	<i>NO</i>	<i>NO</i>
Project (Unmitigated)	40.24	0.08	0.08
Cumulative with Unmitigated Project^{1,2}	50.24	0.32	<1.00
<i>Exceeds Thresholds (with Project)?</i>	<i>NO</i>	<i>NO</i>	<i>NO</i>

SOURCE: EMC Planning Group 2021

NOTE:

1. Results have been rounded, and may, therefore, vary slightly.

- d. The proposed project would not result in new sources of objectionable odors during the operational phase. Operations of the fueling stations would be the same as existing operations and related odors would be expected to be the same or very similar to existing conditions. The convenience store would not generate substantial odors during operations. Odors associated with the new car wash would be contained within the wash tunnel. No car washing activities are proposed outside the tunnel. During project construction, there may be nuisance diesel odors associated with operation of diesel construction equipment on-site, but this effect would be localized, sporadic, and short-term in nature. Therefore, temporary impacts from nuisance diesel odors on adjacent residential receptors would be less than significant.

4. BIOLOGICAL RESOURCES

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service? (1, 2, 3, 4, 6, 13)	☐	☒	☐	☐
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or US Fish and Wildlife Service? (1, 2, 3, 4, 6, 13)	☐	☐	☐	☒
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.), through direct removal, filling, hydrological interruption, or other means? (1, 2, 3, 4, 6, 13)	☐	☐	☐	☒
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites? (1, 2, 3, 4, 13)	☐	☐	☐	☒
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (1, 2, 3, 4, 5, 6, 13)	☐	☒	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (1, 2, 3, 4, 13)	☐	☐	☐	☒

Comments:

- a. **Special-Status Species.** Most special-status plant and wildlife species known to occur in the region are not expected to occur on the urban project site due to lack of suitable habitats. However, vegetation on and adjacent to the project site may provide suitable nesting habitat for various common birds.

Nesting Birds. Construction activities, including vegetation removal and ground disturbance, have potential to impact nesting birds (including raptors) protected under the federal Migratory Bird Treaty Act and California Fish and Game Code, should such nesting birds be present during construction. The project site and adjacent areas contain trees and/or other suitable habitats with potential to support nesting birds. If protected species are nesting in or adjacent to the project site during the bird nesting season, then noise-generating construction activities and/or vegetation removal could result in the loss of fertile eggs or nestlings, or otherwise lead to the abandonment of nests. Implementation of the following mitigation measure would reduce significant potential impacts to nesting birds to a less-than-significant level.

Mitigation Measure

BIO-1 To avoid impacts to nesting birds, the removal of vegetation shall be minimized to the greatest extent feasible. Construction activities that include any tree removal, pruning, grading, grubbing, or demolition shall be conducted outside of the bird nesting season (January 15 through September 15) to the greatest extent feasible. If this type of construction occurs during the bird nesting season, then a qualified biologist shall conduct pre-construction surveys for nesting birds to ensure that no nests would be disturbed during project construction.

If project-related work is scheduled during the nesting season (February 15 to August 30 for small bird species such as passerines; January 15 to September 15 for owls; and February 15 to September 15 for other raptors), a qualified biologist shall conduct nesting bird surveys. Two surveys for active nests of such birds shall occur within 14 days prior to start of construction, with the second survey conducted with 48 hours prior to start of construction. Appropriate minimum survey radius surrounding each work area is typically 250 feet for passerines, 500 feet for smaller raptors, and 1,000 feet for larger raptors. Surveys shall be conducted at the appropriate times of day to observe nesting activities.

If the qualified biologist documents active nests within the project site or in nearby surrounding areas, an appropriate buffer between each nest and active construction shall be established. The buffer shall be clearly marked and maintained until the young have fledged and are foraging independently. Prior to construction, the qualified biologist shall conduct baseline monitoring of each nest to characterize “normal” bird behavior and establish a buffer distance, which allows the birds to exhibit normal behavior. The qualified biologist shall monitor the nesting birds daily during construction activities and increase the buffer if birds show signs of unusual or distressed behavior (e.g., defensive flights and vocalizations, standing up from a brooding position, and/or flying away from the nest). If buffer establishment is not possible, the qualified biologist or construction foreman shall have the authority to cease all construction work in the area until the young have fledged and the nest is no longer active.

A report documenting survey results and a plan for active bird nest avoidance (if needed) will be completed by the biologist and submitted to the City for review and approval prior to disturbance and/or construction activities. If no active bird nests are detected during the survey, then project activities can proceed as scheduled. However, if an active bird nest of a native species is detected during the survey, then a plan for bird nest avoidance will be prepared to determine and clearly delineate an appropriately-sized, temporary protective buffer area around each active nest, depending on the nesting bird species, existing site conditions, and type of proposed disturbance and/or construction activities.

Implementation of Mitigation Measure BIO-1 would ensure potential impacts to nesting birds are less than significant by requiring a pre-construction survey for bird nests (should construction be scheduled during the nesting season) and implementation of avoidance measures should any active nest(s) be found.

- b. The project site does not contain riparian habitat or sensitive natural communities. The main aquatic feature near the project site, San Francisquito Creek, is outside the project site boundaries and is approximately one mile to the southeast. The project site does not drain toward San Francisquito Creek, and no impact to the creek would occur. Water quality issues associated with construction are addressed in Section 10, Hydrology and Water Quality.

- c. San Francisquito Creek is approximately one mile to the southeast and the San Francisco Bay is approximately 1.2 miles to the northeast. Natural drainage channels and wetlands are considered Waters of the U.S., and the U.S. Army Corps of Engineers regulates the filling or grading of such jurisdictional waters by authority of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. The project site, as shown on the HM Control Area Map, is located in an area that drains into hardened channels (California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit Appendix H). There are no wetlands or waterways on the project site, therefore, no direct impacts to wetland or waterways are anticipated. Water quality issues associated with construction are addressed in Section 10, Hydrology and Water Quality.
- d. The proposed project would not substantially interfere with wildlife movement corridors as it is located within a developed mixed residential and commercial area, and is a completely paved site and partially fenced. Wildlife movement corridors provide connectivity between habitat areas, enhancing species richness and diversity, and usually also provide cover, water, food, and breeding sites. The project site is not likely to facilitate major wildlife movement due to current active disturbance
- e. Measures to protect sensitive biological resources within the City of East Palo Alto are identified in the general plan in the Parks, Open Space and Conservation Element, Goal POC-4-Protect and preserve the City's natural habitat and wildlife. This goal is to "Ensure that public access to the Bay is designed, developed, and maintained in a manner that protects the existing natural resources and habitats."

Policies within this element include protecting wildlife from adverse impacts caused by human activities, coordinating with federal agencies and neighboring cities to manage the Don Edwards San Francisco Bay National Wildlife Refuge or Ravenswood Open Space Preserve, shield any site lighting from the Bay, ensure that new development and landscaping adjacent to tidal marshes and other bayfront areas avoids tall perches for raptors or other predatory birds, protect the salt-marsh harvest mouse from feral cat predation, encourage or require the use of native and/or non-invasive plants in privately built landscaping, and do not allow new development within a 100-foot buffer zone from the top of the San Francisquito Creek bank. The proposed project is not close enough to either preserve, the tidal marshes, or San Francisquito Creek to result in direct impacts to these areas, therefore, the project would have a less-than-significant impact with regard to local biological resources ordinances or policies.

The City of East Palo Alto's tree ordinance requires a tree removal permit (Chapter 18.28.40) for any tree with a main stem or trunk that measures 40 inches or greater in circumference at a height of 24 inches to two feet above natural grade, any tree within a public street or public right-of-way, regardless of size, any tree that existed at the time of an approval granted under the city's subdivision or zoning ordinance and required to be preserved as part of such approval, any tree required to be planted as a condition of any development approval granted by the city, and any tree required to be planted as a replacement for an unlawfully removed tree. Project plans call for the removal of five (5) existing trees (four Honey Locust and one pine) located along the east, southeast corner, and west boundaries of the project site. Landscaping plans call for replacement of these trees with 12 smaller similar varieties of trees to be planted in existing planter areas where the existing trees are located. Compliance with the city's tree removal permit and tree protection requirements reduces potential impacts from tree removal to less than significant. No mitigation is required.

- f. There is no critical habitat, habitat conservation plan, natural community conservation plan, or other approval local, regional, or state habitat conservation plan applicable to the project site.

5. CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a historical resource pursuant to section 15064.5? (1, 2, 3)	☐	☐	☐	☒
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to section 15064.5? (1, 2, 3)	☐	☒	☐	☐
c. Disturb any human remains, including those interred outside of dedicated cemeteries? (1, 2, 3)	☐	☒	☐	☐

Comments:

- a. The proposed redevelopment of the project site includes demolishing the existing kiosk and fuel dispensers/canopy and replacement with new convenience store, car wash, and fuel dispensers. Any building or structure that is at least 50 years old is considered to be historic according to the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR), however, not all historic buildings will meet the eligibility criteria for significance. The exact age of the 95 square-foot kiosk and pump awnings are not known; however, it is presumed the awnings and kiosk were constructed when the gas station was built in the 1970s. The project site is not listed in the city's inventory of historic resources and the property with current improvements is not considered a significant historic resource for the purposes of CEQA. Therefore, future development of the project site would not result in a significant effect on a historic structure.
- b. A Sacred Lands File check with the Native American Heritage Commission (NAHC) conducted by the City did not yield positive results in the vicinity of the project site. Consultation with the Tamien Nation was conducted and the city has agreed to include a mitigation measure requiring construction worker sensitivity training per Tamien Nation protocols. Potential impacts to tribal cultural resources and mitigation measures to address them are discussed in Section 18.

Disturbance of archaeological resources, whether or not they are considered tribal cultural resources, could be considered a significant adverse environmental impact. The project site has been substantially altered during development of the existing gas station and underground storage tanks. Their removal and replacement requires excavation on the site; however, there are no previously records of the presence of archaeological resources for this parcel, and as noted, the Sacred Lands File check was negative (NAHC 2021). However, during earth-moving activities, it is always possible to accidentally discover previously unknown buried archaeological resources. Disturbance of unique prehistoric archaeological resources, including potential historically unique archaeological resources is a potentially significant impact.

General plan Policy 9.7 protects historic and cultural resources by requiring cessation of development activity when archaeological resources are discovered during construction. The project sponsor will be required to retain a qualified archaeologist to oversee the handling of resources in coordination with appropriate local and state agencies and organizations and local Native American representatives, as appropriate.

In addition to compliance with general plan policy, implementation of the following mitigation measure would ensure that this potential significant effect is reduced to a less-than-significant level.

Mitigation Measure

CR-1 Prior to issuance of a tree removal permit or grading permit, because the possibility that significant buried cultural resources might incidentally be found during construction activities, the applicant shall include the following language on all construction documents and on any permits issued for the project site:

“If archaeological resources are unexpectedly discovered during construction, work shall be halted immediately within 50 meters (160 feet) of the find, and the Planning Department notified, until it can be evaluated by a qualified professional archaeologist. If the find is determined to be unique, appropriate mitigation measures shall be formulated and implemented subject to the review and approval of the City planning department.”

In addition to compliance with general plan, implementation of mitigation measure CR-1 would require construction to be halted and appropriate evaluation and actions

be taken should archaeological resources be discovered during construction. Implementation of the mitigation measure would reduce potentially significant impacts associated with significant archaeological resources to a less-than-significant level.

- c. Refer also to the discussion in Section 18 regarding Tribal Cultural Resources. Although no evidence of potentially sensitive cultural resources are associated with the project site, there is the possibility of an accidental discovery of unknown archaeological resources or human remains during construction activities. Disturbance of Native American human remains would be a significant adverse environmental impact. Implementation of the following mitigation measure would reduce this impact to a less-than-significant level.

Mitigation Measure

CR-2 Due to the possibility that Native American human remains may be discovered during project construction activities, the following language shall be included in all construction documents and on any permits issued for the project site, including, but not limited to, tree removal, grading, and building permits.

“If human remains are found during construction, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent human remains until the coroner is contacted to determine that no investigation of the cause of death is required.

If the coroner determines the remains to be Native American, then the coroner shall contact the Native American Heritage Commission within 24 hours. The Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent (MLD) from the deceased Native American. The MLD may then make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposing of, with appropriate dignity, the human remains and associated grave goods as provided in Public Resources Code Section 5097.98.

The landowner or authorized representative will rebury the Native American human remains and associated grave goods with appropriate dignity on the property in a location not subject to further disturbance if: a) the Native American Heritage

Commission is unable to identify a MLD or the MLD failed to make a recommendation within 48 hours after being notified by the commission; b) the descendent identified fails to make a recommendation; or c) the landowner or his authorized representative rejects the recommendation of the descendent, and the mediation by the Native American Heritage Commission fails to provide measures acceptable to the landowner.”

Implementation of mitigation measure CR-2 will ensure that potential impacts due to accidental discovery of buried human remains will be reduced to a less-than-significant level by requiring that if a find is made, activity is stopped, and appropriate measures are taken.

6. ENERGY

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? (25, 31)	☐	☐	☒	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency? (25, 31)	☐	☐	☐	☒

Comments:

- a. Energy impacts are assessed based on the proposed project energy demand profile and on its relationship to the state's energy efficiency regulations. Both are summarized below.

Existing Energy Demand

The existing use creates demand for electricity and natural gas, and demand for transportation fuel is created by employee and associated vehicle trips.

Electricity. Section 5.3, Energy by Land Use – Electricity, in the CalEEMod results included in [Appendix B](#) shows existing electricity demand of about 4,198.28 kilowatt-hour (kWh) per year.

Natural Gas. Section 5.2, Energy by Land Use – Natural Gas, in the CalEEMod results included in [Appendix B](#) show that the natural gas demand from existing uses would be about 11,172.5 thousand British Thermal Unit (kBtu) per year.

Transportation Fuel. In general, transportation fuel demand is most significantly influenced by vehicle miles traveled. The two components affecting VMT are vehicle trip volume and vehicle trip length. Trip generation information provided by Hexagon Transportation Consultants (Gary Black, Email Correspondence with Consultant 2021) shows that a gas station with six fueling stations would generate about 413 average daily trips, taking into account pass-by trips. This equates to approximately 68.83 average daily trips per pump. As is described below for the proposed use, vehicle trip generation (and volume) is used as a proxy for making a qualitative comparison of the transportation fuel demand between the existing and proposed use.

Projected Energy Demand

Operation of the proposed project would result in demand for electricity, natural gas and fuel. A summary of projected energy demand is provided below.

Electricity. Section 5.3, Energy by Land Use – Electricity, in the CalEEMod results included in [Appendix B](#) show projected electricity demand would be approximately 186,299 kWh per year. According to the California Energy Commission Energy Consumption Data Management System, in 2019, total electricity consumption in San Mateo County was 4,325,279,371 kWh per year. Projected electricity demand would be .004 percent of the total 2019 San Mateo County electricity demand.

Relative to the existing use, natural gas demand would increase by about 182,100 kWh per year.

Natural Gas. Section 5.2, Energy by Land Use – Natural Gas, in the CalEEMod results included in [Appendix B](#) show that projected natural gas demand would be about 31,151 kBtu per year. According to the California Energy Commission Energy Consumption Data Management System, in 2019, total natural gas consumption in San Mateo County was 214,429,843 therms. Projected natural gas demand would be approximately 0.014 percent of the total 2019 San Mateo County natural gas demand.

Relative to the existing use, natural gas demand would increase by about 19,978 kBtu per year.

Transportation Fuel. Average daily trip generation including pass-by trips for a 2,200 square foot convenience store with six fueling stations would generate about 668 average trips per day, whether or not a car wash is included with the facility (Hexagon Transportation Consultants 2021). The corresponding average vehicle trip rate for a six-pump gas station with a market and carwash is 111.33 trips per day per pump. Existing and proposed uses on the site would serve the same local community but would expand the type of services on the site, which may reduce the need for customers to travel a greater distance for those same services currently provided elsewhere. An increase in average trips per day generated by an expansion of a local-serving commercial use typically results in fewer overall VMT, which in turn reduces fuel demand. Given that the number of vehicle pumps under existing and proposed conditions would remain the same, and an assumption that trip lengths for the existing and proposed use would be similar, the proposed project would result in fewer VMT per day. Consequently, its associated fuel demand would likely be lower than the baseline use.

Regulatory Requirements

A multitude of state regulations and legislative acts are aimed at improving vehicle fuel efficiency, energy efficiency, and enhancing energy conservation. For example, the Pavley I standards focus on transportation fuel efficiency. The gradual increased use of electric cars powered with cleaner electricity will reduce consumption of fossil fuel. In the renewable energy use sector, representative legislation includes, but is not limited to, Senate Bill 350 and Executive Order B-16-12. In the building energy use sector, representative legislation and standards for reducing natural gas and electricity consumption include, but are not limited to, Assembly Bill 2021, CALGreen, and the California Building Standards Code.

The California Building Standards Code is enforceable at the project level. The California Energy Code (California Code of Regulations, Title 24, Part 6), which is incorporated into the California Building Standards Code, was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The California Energy Code is updated every three years by the California Energy Commission as the Building Energy Efficiency Standards to allow consideration and possible incorporation of new energy efficiency technologies and construction methods. The Green Building Standards Code (also known as CALGreen), which requires all new buildings in the state to be more energy efficient and environmentally responsible, was most recently updated in July 2019. These comprehensive regulations are intended to achieve major reductions in interior and exterior building energy consumption.

Conclusion

A proposed project could be considered to result in significant environmental effects due to wasteful, inefficient, or unnecessary consumption of energy if its energy demand is extraordinary relative to common land use types, its gross energy demand is excessive relative to total demand in San Mateo County and/or it fails to comply with California energy efficiency/conservation regulations that are within the applicant's control. There are no definitions in CEQA for "wasteful," "inefficient," or "unnecessary" and therefore, this threshold of significance is qualitative.

The project energy demand would not be excessive relative to total demand and common land use types are not inherent sources of wasteful energy demand. The project applicant would be required to comply with the current California Building Standards Code with respect to energy efficiency. The proposed project would consume energy, but it would not be inefficient, wasteful, or unnecessary. Therefore, the impact would be less than significant.

- b. There are no regulations at the state or local level that would mandate that the proposed project must include on-site renewable energy sources. The proposed project must be built to the Building Energy Efficiency Standards in effect at the time the building permit is issued. By incorporating energy efficient measures per the Building Energy Efficiency Standards, the project would comply with existing state and local energy standards and would not conflict with or obstruct a state or local plan for energy efficiency. Therefore, the project has no potential to conflict with a policy or plan for renewable energy.

7. GEOLOGY AND SOILS

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
(1) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42? (1, 2, 3)	☐	☐	☐	☒
(2) Strong seismic ground shaking? (1, 2, 3)	☐	☐	☒	☐
(3) Seismic-related ground failure, including liquefaction? (1, 2, 3)	☐	☐	☒	☐
(4) Landslides? (1, 2, 3)	☐	☐	☐	☒
b. Result in substantial soil erosion or the loss of topsoil? (1, 2, 3, 5)	☐	☒	☐	☐
c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? (1, 2, 3)	☐	☐	☒	☐
d. Be located on expansive soil, creating substantial direct or indirect risks to life or property? (1, 2, 3)	☐	☐	☒	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater? (1, 2, 3)	☐	☐	☐	☒
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (1, 2, 3)	☐	☒	☐	☐

Comments:

a. Potential impacts from exposure to geologic risks are as follows:

(1) No Alquist-Priolo Earthquake Fault Zones are located within the city. Therefore, the proposed project would not be subject to effects from a known surface fault rupture, and no impact would occur.

(2) The city is located within the seismically active San Francisco Bay region, which is one of the most seismically active zones in the United States. No known active faults traverse the city. Faults in the vicinity of the city include the San Andreas, the Pilarcitos, and the San Gregorio. The closest known active fault, the Monte Vista-Shannon Fault, is located approximately six miles southwest of the city. Due to its proximity to major potentially active faults, the city is subject to a medium to high risk of seismic shaking. Therefore, the proposed project could increase exposures to seismic ground shaking.

The general plan Safety and Noise Element includes policies to reduce the risk to people and property from earthquakes and other geologic hazards. Policies 1.1 through 1.4 require new development to apply the proper engineering and building construction requirements, enforce the most recent State guidance for seismic and geologic hazards, incorporate recommendations of a state licensed engineering geologist into design plans, and examine necessity of seismic upgrades to existing multi-family housing constructed prior to 1971. The Safety and Noise Element also includes policies 5.1 and 5.2 to provide efficient and effective emergency response in the immediate aftermath of a disaster.

A geotechnical report is currently being prepared for the proposed project and is subject to review and approval by the city's Chief Building Official as part of the building permit process, to ensure compliance with seismic safety measures and building code requirements. Implementation of the recommendations in the approved geotechnical report in addition to compliance with the most current building code requirements would reduce impacts associated with seismic ground shaking to a less-than-significant level. No mitigation is required.

(3) Liquefaction is the term used to describe how underlying soils can "liquefy" or lose stability during a seismic event. Substantial areas of the city are at an elevated risk of liquefaction. According to Figure 4.6-1 of the general plan draft EIR, the project site is located within the "Medium" liquefaction zone. Buildings on the project site are at a moderate risk for significant damage during a seismic event, with the potential for loss of life or severe injury to humans. Implementation of the recommendations in the approved geotechnical report and compliance with building

code requirements for structural design and performance criteria would reduce impacts associated with seismic liquefaction to a less-than-significant level. No mitigation is required.

(4) The project site is flat. No areas in the city exhibit steep slopes or other features that would result in landslide or collapse.

- b. Erosion is a process that transports soil materials to another area, typically by wind or water. Erosion is a natural process that can vary depending on the soil material and structure, placement, and human activity. Grading and other construction activities associated with the proposed project could result in erosion that could deposit soil in nearby water bodies, degrading local water quality and could cause wind erosion as well.

The proposed project is subject to compliance with applicable regulations related to erosion control. Compliance with these provisions would reduce this potential impact to less than significant. Municipal Code Section 15.48.160 requires the preparation and implementation of an erosion and sediment control plan to minimize the potential for erosion. Any land disturbing activity during the rainy season requires authorization from the planning director per requirements of municipal code section 15.48.160. Municipal Code Section 15.48.160 also requires all projects to submit dust control plans and implement performance standards as detailed in the Grading Permit Performance Standards Handbook. Implementation of the dust control measures included in Mitigation Measure AQ-1 would also reduce the potential for erosion and, as discussed in Section D.10, Hydrology and Water Quality, the proposed project is required to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP). These measures reduce project-related erosion impacts in addition to implementation of an approved erosion control plan. No additional mitigation is required.

- c, d. See items a (3) and a (4) above. Expansive soils shrink and swell as a result of moisture changes. This can cause heaving and cracking of slabs-on-grade, pavements, and structures with shallow foundations. The proposed project could be subject to impacts related to expansive soils. Implementation of the recommendations in the approved geotechnical report in addition to compliance with standard building code requirements for structural design and performance criteria would reduce impacts associated with expansive soils to a less-than-significant level. No mitigation is required.
- e. The proposed project would be connected to the city's sewer system, and would not rely on septic tanks or alternative wastewater systems.

- f. Policy 9.1 of the general plan requires that areas of important archaeological, paleontological and natural resources be protected. As noted in the general plan EIR, in general, most fossils in the Peninsula and San Francisco Regions are found along the immediate Pacific Ocean coastline, and in locations within the outcropping marine units in the Santa Cruz Mountains. Since East Palo Alto does not extend into either of these areas, the likelihood of encountering fossils in underlying geologic layers is low. The geologic units underlying the city are primarily composed of Holocene period alluvial fan deposits and Holocene period San Francisco Bay Muds. The Holocene Period dates from approximately 10,000 to 12,000 years prior to the present and is the era in which human civilization is generally considered to have begun. Fossils are more likely to be found in substantially older geologic layers (City of East Palo Alto 2016b, p. 4-5.9-10).

Although there are no specific indications of paleontological resources associated with the project site, it is always possible to accidentally discover unknown buried paleontological resources during earth-moving activities. Disturbance of unique paleontological resources could be considered a significant adverse environmental impact. Implementation of the following mitigation measure would reduce the potential, significant impact to unique paleontological resources to less than significant.

Mitigation Measure

- GEO-1 Prior to issuance of any permits, and due to the possibility that unique paleontological resources might be found during excavation and construction, the applicant shall include the following language on all construction documents and on any permits issued for the project site, including, but not limited to, tree removal, grading, and building permits:

“If paleontological resources are unexpectedly discovered during construction, work shall be halted immediately within 50 meters (160 feet) of the find, and the Planning Department notified, until it can be evaluated by a qualified professional paleontologist. If the find is determined to be unique, appropriate mitigation measures shall be formulated and implemented subject to the review and approval of the city planning department.”

8. GREENHOUSE GAS EMISSIONS

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (30)	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? (30)	☐	☐	☐	☒

- a. The City of East Palo Alto does not have a local adopted plan for reducing GHG emissions; therefore, reference is made to guidance provided by the Bay Area Air Quality Management District (air district) for qualitatively assessing the relative magnitude of project emissions.

The air district provided guidance for assessing GHG impacts in its 2017 *California Environmental Quality Act Air Quality Guidelines*, and as part of that guidance, the air district derived a bright line GHG threshold of significance of 1,100 MT CO₂e/year for individual land use projects. The substantial evidence used to develop the threshold is included the air district's CEQA guidance documentation. The bright line threshold was developed to guide new development within the air district boundary with the goal of meeting the state's Assembly Bill 32 statewide GHG emissions reduction target of 20 percent below 1990 levels by 2020. Assembly Bill 32 was passed in 2006.

With the subsequent passage of Senate Bill 32 in 2016, the state set a deeper GHG reduction target of 40 percent below 1990 levels by 2030. Consequently, the bright line threshold of 1,100 MT CO₂e identified above is not valid after 2020. Reducing the bright line threshold by an additional 20 percent relative to the 2020 target to 660 MT CO₂e/year would approximate the bright line value of 40 percent below 1990 levels by 2030 at which individual projects would meet the 2030 emissions reduction target. The air district has not adopted this scaled down value as threshold of significance. Rather, as noted above, the value is being used to qualitatively assess the relative magnitude of project emissions.

Projected Project GHG Emissions

The air district's GHG guidance does not include a threshold of significance for construction emissions, nor suggest that construction emissions should be considered when considering the significance of project operational emissions.

GHG emissions from project operations have been estimated using California Emissions Estimator Model (CalEEMod) version 2016.3.2 for the project operational year of 2022. Projected unmitigated emissions are summarized in [Table 9, Unmitigated Project GHG Emissions](#). Refer to Section 2.2, Overall Operational, of the CalEEMod results included in [Appendix B](#) for reference to these emissions volumes.

Table 9 Unmitigated Project GHG Emissions

Emissions Sources	GHG Emissions^{1,2}
Area	0.00
Energy	19.29
Mobile	349.86
Waste	0.00
Water	0.05
Total	369.20

SOURCE: EMC Planning Group 2021

NOTES:

1. Results may vary due to rounding.
2. Expressed in MT CO₂e

The dominant source of emissions is from mobile sources. As described in Section 6, Energy, the proposed project is expected to generate fewer VMT than the existing baseline use. The mobile emissions shown in Table 9 does not consider the existing baseline use. Thus, net mobile emissions for the project may be lower than for the existing use. Similarly, the energy emissions volume in Table 9 does not consider the existing baseline energy demand. Net energy emissions would be lower than shown in Table 9.

The net increase in projected GHG emissions would be far below the scaled down 2030 target value of 660 MT CO₂e/year as referenced above. This indicates that the project would have a less-than-significant impact from generating GHGs.

- b. As described in item “a” above, the city does not have a current adopted plan for reducing GHG emissions. Consequently, GHGs are evaluated in the context of the scaled, quantified threshold of significance presented above that is part of the air district’s 2017 guidance for reducing GHG emissions. Because the project impacts are less than significant based on the reference emissions value, the project would have no impact from conflict with regulations or plans for reducing GHG emissions.

9. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (1, 2, 3)	☐	☐	☒	☐
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? (1, 2, 3)	☐	☐	☒	☐
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? (1, 2, 3, 6)	☐	☐	☐	☒
d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code section 65962.5 and, as a result, create a significant hazard to the public or the environment? (15, 16)	☐	☐	☐	☒
e. For a project located within an airport land-use plan or, where such a plan has not been adopted, within two miles of a public airport or a public-use airport, result in a safety hazard or excessive noise for people residing or working in the project area? (2)	☐	☐	☐	☒
f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (1, 2, 3)	☐	☐	☐	☒
g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? (1, 2, 3)	☐	☐	☐	☒

Comments:

- a, b. The proposed project is the redevelopment of an existing gas/service station. Construction and operation of the project would involve the routine transport, use, or disposal of hazardous materials on- and off-site. Construction activities would require the temporary use of hazardous substances, such as fuel, lubricants, and other

petroleum-based products for operation of construction equipment as well as oil, solvents, or paints. As a result, the proposed project could result in the exposure of persons and/or the environment to an adverse environmental impact due to the accidental release of a hazardous material.

However, the transportation, use, and handling of hazardous materials would be temporary and would coincide with the short-term project construction activities. Further, these materials would be handled and stored in compliance with all with applicable federal, state, and local requirements, any handling of hazardous materials would be limited to the quantities and concentrations set forth by the manufacturer and/or applicable regulations, and all hazardous materials would be securely stored in a construction staging area or similar designated location within the project site. In addition, the handling, transport, use, and disposal of hazardous materials must comply with all applicable federal, state, and local agencies and regulations, including the Department of Toxic Substances Control; Occupational Health and Safety Administration (OSHA); Caltrans; and the County Health Department. The proposed project is subject to these regulations. Through compliance with local, state, and federal regulations, short-term construction impacts associated with the handling, transport, use, and disposal of hazardous materials would be less than significant.

Operations of the gas station include the use, transport and handling of hazardous materials. Specifically, operation activities include the regular transportation of gasoline to refill underground storage tanks, refilling underground storage tanks and pumping gasoline to fuel dispensers, and regular use of the fuel dispensers by motorists. Existing operations have the potential to expose people and the environment to accidental releases of hazardous materials (e.g., operators or motorists could spill gasoline while refueling, underground storage tanks or pipes dispensing fuel from underground storage tanks could leak, fuel dispenser damage from vehicles, or motorists could refuel while having engine running causing a fire hazard).

The proposed project replaces older equipment and underground storage tanks and does not increase the number of pumps. As a result the proposed project would not increase the risks of an accidental release of hazardous materials into the environment during operations, and may reduce risks by the replacement of aging infrastructure on the site. The proposed project would be required to operate in compliance with all with applicable federal, state, and local requirements which lessen the potential for these impacts. Therefore, with project compliance with federal, state, and local regulations, impacts associated with the handling, transport, use, and disposal of hazardous materials and the release of hazardous materials into the environment would be less than significant.

- c. The closest school to the project is Cesar Chavez Middle School, which is approximately one-half mile to the northwest. There are no schools within one-quarter mile radius of the project boundaries. According to the health risk assessment prepared for the proposed project, significant exposures to the school would not result from construction or operations of the proposed project. The proposed project would not generate hazardous emissions that would adversely affect children at the school location.
- d. According to the California Department of Toxic Substances Control Envirostor database of hazardous materials release sites, the proposed project is not located on a site identified by the Cortese List (Government Code 65962.5). According to the State Water Resources Control Board (SWRCB) GeoTracker database, the project site was designated a Leaking Underground Storage Tank (LUST) Cleanup Site in 2002 for which cleanup activities have since occurred and is now considered closed. The project site is not currently included on the list of hazardous materials sites compiled pursuant to Government Code §65962.5.
- e. The project site is approximately 1.5 miles west of Palo Alto Airport. The project site is not located within the Santa Clara County Land Use Plan Traffic Pattern Zone for the Palo Alto Airport (refer to Figure 4.8-1 of general plan EIR). The project site lies outside the 55 dBA CNEL Noise Contour for aircraft noise, which is within the normally acceptable range of noise in East Palo Alto, and for which noise restrictions are not required by the airport land use plan (page 4-1). In addition, the project site is not located in the vicinity of a private airstrip. Therefore, the proposed project would not increase safety risks related to air traffic safety hazards for people residing or working in the project area.
- f. The proposed project is located in an established area of East Palo Alto and will have direct access to University Avenue and Bell Street. No changes are proposed to the street system or site access. Therefore, the proposed project would not impair implementation of, or physically interfere with, adopted emergency response plans or emergency evacuation plans.
- g. Wildfires pose a potential hazard to people and property and generally occur in rural foothill and mountainous areas. The risk of wildfire is limited in East Palo Alto due to its location in a highly urbanized portion of San Mateo County (general plan EIR, page 4.8-25). Therefore, the proposed project would not expose people or structures to a risk of loss, injury or death involving wildland fires.

10. HYDROLOGY AND WATER QUALITY

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? (2, 3, 13, 17, 18, 19)	☐	☐	☒	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? (2, 3, 13, 17, 18, 19)	☐	☐	☐	☒
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
(1) Result in substantial erosion or siltation on- or off-site; (1, 2, 3, 13, 17, 18, 19, 20)	☐	☐	☒	☐
(2) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site; (1, 2, 3, 17, 18, 19, 20)	☐	☐	☒	☐
(3) Create or contribute runoff water that would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or (1, 2, 3, 17, 18, 19, 20)	☐	☐	☒	☐
(4) Impede or redirect flood flows? (1, 2, 3, 17, 18, 19, 20, 21)	☐	☐	☐	☒
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation? (2, 3, 21)	☐	☐	☐	☒

- e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan? (1, 2, 3, 17, 18, 19, 20) ☐ ☐ ☐ ☒
-

Comments:

- a. The San Francisco Bay Region Regional Water Quality Control Board (Water Board) regulates water quality in accordance with the San Francisco Bay Basin (Regional 2) Water Quality Control Plan (November 5, 2019) or "Basin Plan." The Basin Plan designates the beneficial uses that the Water Board has identified for local aquifers, streams, marshes, rivers, and the San Francisco Bay and quality objectives and criteria to protect these uses. The Water Board implements the Basin Plan by issuing and enforcing waste discharge requirements, including permits for nonpoint sources such as the urban runoff discharged by a city's storm water drainage system.

The proposed car wash will utilize a recycled carwash system as required by state law (AB 2230). Prior to discharge to the public sewer system, the used carwash water will run through two (2) types of treatment tanks the first tank is the sand/oil separator. This tank includes two (2) compartments. The sand oil separator will then intercept the sand in the first compartment and the oil in the second compartment. The access water then will leave the sand /oil separator tank to the clarifier tank. The clarifier tank consists of three (3) compartments to clear the water for the reuse by the carwash equipment.

The Nonpoint Source Management Program adopted by the State Water Resources Control Board (SWRCB) requires individual permits to control water pollutant discharges associated with construction activities. The Nonpoint Source Management Program is administered by Water Board under the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit). Projects disturbing one acre or more of soil must obtain permit coverage under the Construction General Permit by filing a Notice of Intent (NOI) and Storm Water Pollution Prevention Plan with the Water Board prior to commencement of construction.

The Water Board issued a Municipal Regional Stormwater NPDES Permit (Permit) to standardize storm water management requirements. The Permit replaces the countywide municipal storm water permits with a regional permit for bay area municipalities, including the City of East Palo Alto. Projects that add and/or replace

more than 10,000 square feet of impervious surface or 5,000 square feet of specified Special Land Use Categories must comply with the Permit. Projects subject to the provisions of the Permit must incorporate Low Impact Development (LID) storm water treatment controls (e.g., biotreatment facilities) to treat all post-construction storm water runoff. In addition to water quality controls, the Permit also has hydromodification controls, which are defined in the Hydromodification Management Plan. Projects may be deemed exempt from the Permit hydromodification controls if they do not meet the Permit size threshold, drain into tidally influenced areas or directly into the San Francisco Bay, drain into hardened channels, or are infill projects in subwatersheds that are 65 percent or more impervious as shown on the HM Control Area Map.

According to the HM Control Area Map, the project site is located in an area that drains into hardened channels (California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit Appendix H).

However, East Palo Alto is largely situated in the floodplain of San Francisquito Creek and is considered a community vulnerable to sea level rise; as such, the project will require source controls that reduce or, at a minimum, are equal the pre-project runoff volumes for storm water discharge. Additionally, the project adds more than 10,000 square feet of impervious surfaces and, therefore, must comply with other Permit requirements to include appropriate source control, site design, and storm water treatment measures to address storm water runoff pollutant discharges and prevent increases in runoff flows (California Regional Water Quality Control Board San Francisco Bay Region Municipal Regional Stormwater NPDES Permit).

The City of East Palo Alto municipal code section 15.48.160 requires the preparation and implementation of an erosion and sediment control plan to minimize the potential for erosion. The proposed project will be required to file a Notice of Intent (NOI) with the SWRCB and prepare a SWPPP prior to commencing construction. The project's SWPPP must include site-specific and seasonally appropriate Best Management Practices to control, erosion, run-on and run-off, and sediment and must include Best Management Practices for active treatment systems (when applicable), good site management, and non-storm water management. The city will review the erosion control plan for consistency with local requirements and the appropriateness and adequacy of proposed Best Management Practices for each site before issuance of grading permits for projects as part of the building permit process. Best Management Practices must include measures for soil stabilization, sediment control, sediment tracking control, wind erosion control, and non-storm water management, and waste management and disposal control.

With implementation of an approved SWPPP and the standard measures in conformance with the Permit, the proposed project would not violate any water quality standards or waste discharge requirements or result in a significant water quality impact.

- b. The proposed project will be served by the City of East Palo Alto water system. The city relies on the San Francisco Public Utilities Commission for its domestic water supplies, which provides surface water from Hetch Hetchy Reservoir in the Sierra Nevada, augmented with water from local watersheds in Alameda and San Mateo counties. Therefore, the proposed project would not use groundwater as a water supply source.

According to Figure 13 of the Groundwater Management Plan for City of East Palo Alto, the city is not located within a groundwater recharge area. Therefore, the project would have no impact on groundwater.

- c. The topography of the project site is relatively flat and is located within the O'Connor Drainage Sub-Area identified in the city's *Storm Drain Master Plan* (City of East Palo Alto 2014, p. 1-2). The site is located within the Federal Emergency Management Agency (FEMA) Flood Zone X, Area of Minimal Flood Hazard (FEMA 2021).

(1) The proposed project would add approximately 16,500 square feet of impervious surfaces to the site, which would increase the amount of surface water runoff that would drain from the project site toward the San Francisco Bay. Development of the project site is subject to compliance with post-construct storm water controls as part of their obligations under Provision C.3 and C.6 of the Permit including the Permit requirements for preparation of a SWPPP and with municipal code requirements for the preparation and implementation of an erosion control plan (refer to the discussion in item a of this section). The SWPPP/erosion control plan will include standard storm water control measures that would reduce and/or avoid the potential for project-generated runoff to result in erosion, and/or siltation. Development of the proposed project in compliance with the approved SWPPP and erosion control plan would not result in significant on- and/or off-site erosion and siltation impacts through alterations to the existing site drainage. The impact is less than significant and no mitigation is required.

(2) The site is not located within an area subject to flooding. Development of the proposed project in compliance with the approved SWPPP would not result in significant on- and/or off-site flooding impacts through alterations to the existing site drainage. Therefore, the impact is less than significant and no mitigation is required.

(3) About two thirds of the city's storm water drains into two major drainage systems: the Runnymede Storm Drain System and the O'Connor Storm Drain System. Portions of the Runnymede Storm Drain System and all of the O'Connor System are distributed directly into San Francisquito Creek. Both systems ultimately drain to the San Francisco Bay (general plan 4.15-16). The storm drainage system south of Bay Road generally conducts flows in a southeasterly direction to the O'Connor Pump Station near San Francisquito Creek. The proposed project would add approximately 16,500 square feet of impervious surfaces to the site, which would increase the volumes of surface water runoff and urban pollutants that would potentially drain from the project site toward the San Francisco Bay. The nearest storm drains to the project site are located at the northeast corner of Bell Street and University Avenue (across from the project site) and on Bell Street at the north end the project site (City of East Palo Alto 2015).

As noted previously, development of the project site is subject to compliance with post-construct storm water controls as part of their obligations under Provision C.3 and C.6 of the Permit including the Permit requirements for preparation of a SWPPP and its implementation during construction. Projects subject to the provisions of the Permit must incorporate LID storm water treatment controls (e.g., biotreatment facilities) to capture and treat all post-construction storm water runoff for pollutants and silt and sediments. The proposed project is subject to compliance with the Permit and must submit grading and drainage plans as part of the building permit application. The plans must demonstrate how these measures are incorporated into the project during and post construction. The plans are subject to city approval prior to issuance of any permits on the site.

Additionally, the project developers are required to participate in the Citywide Development Impact Fee Program, and are responsible for the payment of the project's share of costs for the city's planned downstream storm drainage improvements, as discussed above, that are necessary to maintain overall system capacity at the 10-year storm event. The payment of development impact fees and compliance with the MRP Permit requirements, including the approved SWPPP and erosion control plan, mitigate the project's contribution to cumulative storm drain capacity impacts related to volume and polluted runoff. Therefore, the proposed project would not result in significant storm water runoff impacts related to runoff volume or the transport of urban pollutants. The impact to storm water volume and quality is less than significant. No mitigation is required.

(4) The project site is not located in a FEMA Special Flood Hazard Area and is not subject to flooding from a 100-year storm event.

- d. The project site is not located in a FEMA Special Flood Hazard Area and is not subject to flooding from a 100-year storm event, the failure of a dam or levee, or flooding associated with a tsunami (FEMA 2021). Therefore, the proposed project would result in no impact associated with exposing people or structures to a risk of loss, injury, or death associated with flooding.
- e. All development within the city is subject to the provisions of the Water Board's Basin Plan (introduced in "a" above) in managing its storm water and wastewater discharge. As noted previously the proposed project is required to prepare and implement a SWPPP in conformance to the Water Board construction general permit. The proposed project is also subject to compliance with the city's storm water management ordinance (Municipal Code Chapter 13.12) and other relevant standards, which are established by the city pursuant to its Municipal Regional Stormwater Permit and Waste Discharge Requirements (Regional Board Order No. R2-2015-0049). Additionally, the proposed project is subject to compliance with the city's sanitary sewer ordinance (Municipal Code Chapter 13.08) and requirements of the East Palo Alto Sanitary District. Wastewater generated onsite would be collected by the East Palo Alto Sanitary District's wastewater collections system and conveyed to the City of Palo Alto's Regional Water Quality Control Plant, which is then treated and discharged pursuant to the plant's Waste Discharge Requirements (Order No. R2-2019-0015). Therefore, the proposed project would not conflict with the Basin Plan.

The project overlies the San Mateo Plain Subbasin of the Santa Clara Valley Groundwater Basin. The basin has a "very low" priority ranking designated by the Department of Water Resources and is not subject to the Sustainable Groundwater Management Act. T Subsequently, the basin is not subject to a sustainable groundwater management plan.

Therefore, the proposed project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan

11. LAND USE AND PLANNING

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Physically divide an established community? (13)	☐	☐	☐	☒
b. Cause any significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect? (1-5, 13, 15-19, 29, 30)	☐	☒	☐	☐

Comments:

- a. The proposed project is located within an established urban area of the city and would not physically divide an established community.
- b. The proposed project, as mitigated, would be consistent with the air district 2017 CAP and would not conflict with general plan policies and air district requirements that call for the reduction of exposures to significant sources of air contaminants (refer to Section 3, Air Quality and Section 9, Hazards and Hazardous Materials).

The project site is not part of or near an existing habitat conservation plan or natural community conservation plan (refer to Section 4, Biological Resources).

SB 32 is considered to be the plan for reducing GHG emissions that is applicable to the proposed project. The GHG threshold of significance derived for the project is based on the rate of project emissions below which the project would not impede attainment of the SB 32 statewide emissions reduction goal for 2030. SB 32 is considered to be the applicable plan for reducing GHG emissions. Project emissions are below the threshold, the project would not conflict with SB 32 emissions reduction goals (refer to Section 8, Greenhouse Gas Emissions).

As discussed in Section 10, Hydrology and Water Quality, the project overlies the San Mateo Plain Subbasin of the Santa Clara Valley Groundwater Basin. The basin has a "very low" priority ranking designated by the Department of Water Resources ("DWR") and is therefore not subject to the Sustainable Groundwater Management Act ("SGMA"), and therefore, is not subject to a sustainable groundwater management plan. Additionally, the proposed project is required to prepare and implement a SWPPP in conformance to the Water Board construction general permit.

The proposed project is also subject to compliance with the city's storm water management ordinance (Municipal Code Chapter 13.12) and other relevant standards, which are established by the city pursuant to its Municipal Regional Stormwater Permit and Waste Discharge Requirements (Regional Board Order No. R2-2015-0049).

For these reasons, the proposed project would not result in significant physical environmental impacts due to conflicts with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect.

12. MINERAL RESOURCES

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Result in loss of availability of a known mineral resource that would be of value to the region and the residents of the state? (2, 3, 10)	☐	☐	☐	☒
b. Result in the loss of availability of a locally important mineral resource recovery site delineated in a local general plan, specific plan, or other land-use plan? (2, 3, 10)	☐	☐	☐	☒

Comments:

- a, b. The California Geological Survey (CGS) is responsible under the Surface Mining Control and Reclamation Act (SMARA) for classifying land into Mineral Resource Zones (MRZ) based on the known or inferred mineral resource potential of that land. East Palo Alto is located in an area zoned MRZ-1. MRZ-1 zones are areas where adequate information indicates that no significant mineral or aggregate deposits are present or where it is judged that little likelihood exists for their presence. No statewide or regionally significant mineral resources have been documented by the California Geological Survey in East Palo Alto. No mineral extraction operations exist within the city. Therefore, the project would have no impact on the availability of a known mineral resource.

13. NOISE

Would the project result in:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in applicable standards of other agencies? (1-5, 7, 13, 34)	☐	☒	☐	☐
b. Generation of excessive ground-borne vibration or ground borne noise levels? (1-5, 7, 13)	☐	☒	☐	☐
c. For a project located within the vicinity of a private airstrip or an airport land-use plan or, where such a plan has not been adopted, within two miles of a public airport or public-use airport, expose people residing or working in the project area to excessive noise levels? (1-5, 7, 13, 14)	☐	☐	☐	☒

Comments:

The discussion in this section is based primarily on the *2194 University Avenue Gas Station Improvements Project Noise and Vibration Assessment* (hereinafter “noise assessment”) prepared by Illingworth & Rodkin, Inc., dated December 22, 2020. The noise assessment is included as [Appendix D](#).

- a. The Safety and Noise Chapter of the general plan provides goals and policies to reduce noise within the community. The goals and policies that set forth noise standards applicable to the proposed project are presented in the noise assessment (pages 8 and 9). Additionally, the general plan Safety and Noise Element Policy 7.2 requires the preparation of acoustical analysis to evaluate the effects of noise-generating projects. According to Policy 7.2, a significant adverse community response would be expected to occur if project operations cause the L_{dn} /Community Noise Equivalent Level (CNEL) at noise sensitive uses to permanently increase by 3 dBA or more and exceed the normally acceptable noise levels, or cause the L_{dn} /CNEL to permanently increase by 5 dBA but remain within the normally acceptable noise levels. Table 10-1 of the general plan Safety and Noise Element identifies normally acceptable noise levels for all residential uses as 45dB CNEL for interior noise and 65 dB CNEL for exterior noise.

General plan Policy 7.11 states that a significant construction noise impact may occur when construction is located within 500 feet of a residential use or 200 feet from a commercial or office use would generate substantial noise from construction activities such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing that continues for more than 12 months. Reasonable noise reduction measures and limiting of construction hours are required for all construction activities.

The CNEL is a weighted equivalent sound level averaged over a 12-hour period and is a measure of the cumulative noise exposure in a community, with a five dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels.

Municipal Code Chapter 8.52, Noise Control, includes measures to protect the citizens of East Palo Alto from unnecessary, excessive, and annoying noise; to maintain quiet in areas where noise levels are low; and to implement programs to reduce unacceptable noise. Municipal Code Section 15.04.125 limits construction activity to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays. No construction activity is allowed on Sundays or national holidays. The municipal code also identifies categories of exterior and interior noise standards based on duration of activity (refer also to the noise assessment Tables 4 and 5).

Temporary (Construction) Noise

Project-related construction activity would generate noise and temporarily increase noise levels at adjacent residential and non-residential receptors. The planned duration of construction would be six months and construction would occur between the hours of 8:00 a.m. and 5:00 p.m. The noise assessment reports that construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors.

The nearest noise-sensitive residential land uses would be located adjacent to the project site to the east and south, about 60 feet east and 75 feet south of the approximate center of construction. The nearest non-residential noise-sensitive land uses include the Lewis and Joan Platt East Palo Alto Family YMCA located approximately 235 feet to the southwest of the center of construction, the Community Church located approximately 270 feet northwest of the center of construction, and Bell Street Park located approximately 320 feet southwest of the center of construction.

Neither the City of East Palo Alto nor the State of California specifies quantitative thresholds for temporary increases in noise due to construction. However, the noise assessment bases its analysis of temporary noise impacts on the following threshold: temporary construction noise impact would be considered significant if project construction activities exceeded 60 dBA L_{eq} (L_{eq} or energy-equivalent sound/noise descriptor is defined as the average level of sound that has the same acoustical energy as the summation of all the time-varying events) at nearby noise-sensitive receptors or exceeded 70 dBA L_{eq} at nearby commercial land uses and exceeded the ambient noise environment by 5 dBA L_{eq} or more for a period longer than one year.

The noise assessment concluded that the proposed project's demolition and construction activities would generate noise in excess of ambient daytime levels at the nearest noise sensitive uses. According to the noise assessment, construction noise generated by the project would typically range from 62 to 85 dBA L_{eq} at the nearest residences, from 52 to 73 dBA L_{eq} at the YMCA, from 51 to 72 at the Community Church, and from 49 to 70 at Bell Street Park (Illingworth and Rodkin 2020, Table 8). This is a significant impact.

General plan Policy 7.11 requires the preparation and implementation of a construction noise logistics plan to reduce construction noise near sensitive land uses, and sets forth provisions to be included, at minimum, in the plan. These provisions are included in Mitigation Measure N-1. Additionally, the noise assessment notes that the project's proposed masonry walls could be constructed early in the construction phases to further reduce noise at adjacent residences. Implementation of Mitigation Measure N-2 requires construction of the masonry walls early in the construction schedule to further reduce noise impacts to adjacent residences.

Implementation of the following Mitigation Measure N-1 and N-2 ensures compliance with the city's general plan policies and noise standards during construction and would reduce construction noise impacts to a less-than-significant level.

Mitigation Measures

- N-1 The applicant shall prepare a detailed construction noise logistics plan. The construction noise logistics plan shall be submitted for review and approval by the City planning department prior to issuance of any permit on the site, and the contractor shall implement the plan during all site preparation, grading, and construction. The construction noise logistics plan shall identify a procedure for coordination with adjacent residential land uses so that construction activities can be scheduled to minimize noise disturbance. The construction noise logistics plan must

include provisions requiring implementation of the following best management practices to reduce noise from construction activities near sensitive land uses:

- Construction activities shall be limited to the hours between 7:00 am and 6:00 pm, Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays. No construction activity is allowed on Sundays or national holidays;
- Notify all adjacent land uses of the construction schedule in writing;
- Utilize 'quiet' models of air compressors and other stationary noise sources where technology exists;
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;
- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses. If they must be located near receptors, adequate muffling (with enclosures where feasible and appropriate) or temporary barriers shall be used reduce noise levels at the adjacent sensitive receptors. Any enclosure openings or venting shall face away from sensitive receptors;
- Locate staging areas and construction material areas as far away as possible from adjacent land uses;
- Prohibit all unnecessary idling of internal combustion engines;
- Control noise from construction workers' radios to a point where they are not audible at existing residences bordering the project site;
- If impact pile driving is proposed, the following measures shall be implemented:
 - multiple-pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced;

- temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the adjacent land uses. Such noise control blanket barriers can be rented and quickly erected; and
 - foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile. Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile.
- Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented; and
 - Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction.

N-2 The project's proposed masonry walls located along the perimeter of the site to the east and south shall be constructed as early as possible to reduce construction noise levels at the adjacent residences.

Implementation of Mitigation Measures N-1 and N-2 would reduce temporary construction noise impacts to a less-than-significant level.

Permanent Increase in Ambient Noise Levels

Traffic Noise. A significant impact would result if traffic generated by the project would substantially increase noise levels at sensitive receptors in the vicinity. The existing noise environment in the surrounding area currently exceeds 65 dBA CNEL; therefore, a significant impact would occur if project-generated traffic would permanently increase noise levels by 3 dBA CNEL. For reference, a 3 dBA CNEL noise increase would be expected if the project would double existing traffic volumes along a roadway.

Based on the traffic study conducted for the University Plaza Phase II project, future peak hour traffic volumes along University Avenue near the site will range from 2,700 to 3,200 vehicles. Future peak hour traffic volumes along Bell Street will range from 370 to 660 vehicles. For the project to generate enough traffic to increase ambient

noise levels by 3 dBA CNEL at sensitive receptors along these roads, the proposed changes to the site would have to double traffic volumes on nearby streets. A doubling of traffic volume and the related increase in noise is not expected for a project of this scale. Trip generation information provided by Hexagon Transportation consultants (Gary Black, Email Correspondence with Consultant 2021) shows that a gas station with six fueling stations would generate about 413 average daily trips, taking into account pass-by trips. Average daily trip generation including pass-by trips for a 2,200 square foot convenience store with six fueling stations would generate about 668 average trips per day, whether or not a car wash is included with the facility. Traffic noise generated by the proposed project is expected to be similar to existing traffic noise levels during project operations. Therefore, a substantial permanent increase in traffic noise would not occur.

Car Wash, Truck Deliveries and Mechanical Equipment. The primary noise source at the project site would be the dryer system used in the drive-through car wash. Car wash dryer systems are capable of generating high levels of noise near the entrance and exit doors. The proposed hours of operation for the car wash were assumed to occur only between 7:00 a.m. and 10:00 p.m. Vehicles would enter the car wash through a door along the northern façade of the car wash building and exit through a door to the south. Noise data for the car wash dryer system proposed for this project indicates that the dryer, when equipped with a silencer, would generate noise levels of 74 dBA when measured at a distance of 20 feet directly in front of the center of the tunnel exit.

There are no hospitals, schools, or public libraries in the site vicinity. Operational noise associated with the project is not anticipated to result in noise levels above the ambient standard during any hour at the Community Church, 270 feet from the project site. However, the noise assessment reports that ambient noise measurements taken in the vicinity indicate that noise levels at the front yard of 2178 University Avenue, the residence located south of the site and with the greatest exposure to project-generated noise, currently reach about 63 to 69 dBA L₅₀ during daytime hours. The proposed addition of the drive-through car wash tunnel on the site has the potential to exceed the city's interior 45dBA noise standards at this residence. Truck deliveries during nighttime hours have the potential to exceed the city's nighttime threshold of 60 dBA L_{max} at the residences to the east and south of the site. The proposed project includes a six-foot tall masonry wall around the perimeter of the site intended to shield adjacent residences from operational noise on the site.

Noise generated by the car wash was modeled and calculated at the nearest façade of the proposed convenience store. Depending on the operations of the car wash system,

the dryer may be in use for only part of the cycle, and there may be extended periods of time where the car wash is not in use. However, to analyze a worst case scenario, and given the information available on the car wash, both modeling scenarios assume continuous operation of the dryer throughout all daytime hours. Also added into the model as a noise source was the vacuum station which would be located northeast of the tunnel entrance. Noise data for the vacuum station was not currently available, however, manufacturer data used for vacuum stations in other studies indicate that an individual vacuum station when in use generates a noise level of about 66 dBA at a distance of 3 feet. Minimal noise is generated when vacuum hoses are hooked. The center of the exit of the proposed car wash would be located approximately 85 feet northwest of the nearest point of the convenience store building and would be expected to generate a worst-case hourly average noise level of 63 dBA Leq.

Even equipped with a silencer on the blowers, the modeled noise levels during car wash operations would reach 65 to 66 dBA in the front yard and 57 to 62 dBA in the backyard of the residence located at 2178 University Avenue. Although typical residential construction with windows in the closed position provides a minimum noise reduction of about 15 dBA, interior noise levels at the nearest residence would be 47 dBA, which exceeds the city's interior noise threshold of 45 dBA. Project-related noise that exceeds the city's threshold is a significant impact. The noise report notes that the new convenience store would shield some, but not all adjacent residences from the car wash noise.

The noise report recommended adding an eight-foot-tall sound wall at the car wash exit and raising the height of the proposed south perimeter wall of the site from six feet to eight feet to reduce noise exposures at the residence located at 2178 University Avenue by 4-8 decibels (Illingworth and Rodkin 2020, Figure 14; Table 9). However, increasing the height of the wall within 20 feet of roadways would require variance approval, which has been determined to be infeasible by staff due to the limited lines of sight that would result for drivers entering and exiting the site from University Avenue and Bell Street. The placement of a sound wall at the tunnel exit without the increased perimeter wall height would not reduce noise exposures below the City thresholds for unacceptable noise.

In a supplemental analysis (Illingworth and Rodkin 2022) (supplemental noise report), the effectiveness of equipping the car wash with an exit door which would remain closed during the loudest parts of the wash and dry cycle was modeled. The supplemental noise report found that the use of a carwash exit door combined with a silencer on the dryer would reduce noise levels from the carwash and dryer below the City's thresholds for unacceptable noise. With these measures in place increasing

the perimeter wall heights on the site would not be necessary. The modeled attenuated noise levels are compared to existing noise levels in Table 2 of the supplemental noise report. The supplemental noise report is included in Appendix D.

The modeled results show that utilization of a carwash exit door during operations would reduce noise levels by nine (9) dBA at the adjoining residence at 2178 University Avenue, Bell Street Park, and the YMCA outdoor patio, but could increase noise levels at the Community Church courtyard north of University Avenue. The additional sound received at the church property would be reflected off of the door inside the car wash and out through the open entrance to the carwash. Mitigated worst-case hourly noise levels with a vacuum silencer and carwash door would be 56 to 57 dBA in the front yard of the residence at 2178 University Avenue, which is below the City threshold of significance for exterior and interior noise levels. Therefore, the mitigated noise impacts of the carwash would be less than significant. Implementation of the following mitigation measure would reduce interior noise levels at the nearest residence to below the city's threshold and reduce the noise impacts resulting from car wash operations to a less-than-significant level.

Mitigation Measure

N-3 Prior to the issuance of building permits, the following improvements shall be reflected on construction plans:

- The car wash shall be equipped with a silencer and exit door.

Truck deliveries also have the potential to result in noise levels that exceed the city's thresholds. Noise from fuel truck deliveries are assumed to be similar to existing noise levels generated by such activity. However, deliveries could potentially occur during nighttime hours. The approximate center of the site through which delivery trucks would maneuver and generate noise is located approximately 50 feet from the nearest residential property line to the west, which would be separated from the site by the proposed six-foot tall wall. At this distance and with the proposed wall in place, fuel truck deliveries would be anticipated to result in noise levels of 60 to 65 dBA L_{max} at the nearest residential property line. Smaller vendor trucks making deliveries to the convenience store would generate noise levels of 50 to 55 dBA L_{max} at the nearest residential property line. The daytime deliveries would not exceed the city's noise thresholds; however, fuel truck deliveries have the potential to exceed nighttime noise thresholds. This is a potentially significant impact.

Implementation of the mitigation measure identified below would reduce noise impacts from night time fuel supplier deliveries to less than significant.

Mitigation Measure

- N-4 Fuel truck deliveries shall be limited to daytime hours between 7:00 a.m. and 10:00 p.m. Planned fuel truck delivery schedule shall be subject to verification by Planning Department staff.

The proposed convenience store will include roof-mounted heating and air conditioning (HVAC) equipment, which can generate unacceptable day and nighttime noise levels at adjacent residences to the west and south of the site. The noise assessment reports that typical HVAC equipment for a commercial use such as the proposed project generates noise levels in the range of 58 to 68 dBA at a distance of 3 feet. During the day, the noise environment would be dominated by the car wash operations; however, during periods of low use, the HVAC equipment noise may be most discernable at the adjacent residences. The convenience store building would be located as close as 5 feet from adjacent residential property lines. At this distance, noise from HVAC equipment could reach 54 to 64 dBA L_{50} , exceeding daytime and nighttime limits, which would be a significant impact. Placing the equipment farther from receptors and/or using a roof parapet or other noise attenuation screen would reduce HVAC noise by about 10 dBA. Implementation of Mitigation Measure N-5 ensures that the HVAC equipment would not exceed the city's threshold.

Mitigation Measure

- N-5 Prior to issuance of building permits, construction plans shall show all HVAC equipment located a minimum distance of 20 feet from the adjacent residential property lines to the south and east. Alternatively, the equipment shall be located a minimum distance of 10 feet from adjacent residential property lines with enclosures or barriers designed such that the line of sight between the equipment and the nearest residential property line is broken.

Implementation of Mitigation Measure N-5 ensures that the HVAC equipment noise would not exceed the city's day or nighttime thresholds at adjacent residences. The impact is reduced to less than significant with mitigation.

Implementation of Mitigation Measures N-1 – N-5 would reduce project-generated operational noise impacts to less than significant.

- b. According to Policy 6.4 of the general plan, a vibration limit of 0.08 in/sec PPV shall be used to minimize the potential for cosmetic damage to sensitive historic structures, and a vibration limit of 0.30 in/sec PPV shall be used to minimize the potential for cosmetic damage at buildings of normal conventional construction. Cosmetic damage

(also known as threshold damage) is defined as hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects.

Construction activities associated with the project would include demolition, site preparation, foundation work, and new building framing and finishing. Foundation construction techniques involving impact or vibratory pile driving, which can cause excessive vibration, are not anticipated as part of the project. Heavy vibration-generating construction equipment, such as vibratory rollers or the dropping of heavy equipment (e.g., clam shovel drops), would have the potential to produce vibration levels of 0.30 in/sec PPV or more at structures within 18 feet of the project site. Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.), may generate substantial vibration in the immediate vicinity. Jackhammers typically generate vibration levels of 0.035 in/sec PPV and drilling typically generates vibration levels of 0.09 in/sec PPV at a distance of 25 feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used.

A review of the City of East Palo Alto Historic Resource Inventory indicates that the nearest property of historical significance in the site vicinity would be the Martinelli House, which is located at located at 2126 University Avenue approximately 475 feet south of the project site. Project-generated construction vibration would not be expected to result in a significant impact to the Martinelli House (Illingworth and Rodkin 2020, Table 10).

All other structures surrounding the site are assumed to be of normal conventional construction. Vibration levels during construction would vary depending on soil conditions, construction methods, and equipment used. According to the noise assessment, adjacent residential buildings to the south and west would be exposed to vibration levels exceeding 0.3 in/sec PPV when clam shovel drops and vibratory rollers (or similar types of equipment) are used within five to 12 feet of the shared property line, and when other heavy equipment such as large bulldozers, and caisson drills are operated within five and eight feet of the shared property lines. Exposure to vibration greater than 0.3 in/sec PPV may result in cosmetically damaging the adjacent residential buildings to south and west. Vibration that exceeds the city's threshold and increases the risks of property damage, would be a significant impact. Use of alternative equipment or methods of construction in proximity to adjacent residences would reduce the impact to less than significant.

Implementation of Mitigation Measure N-6 would reduce this impact to a less-than-significant level.

Mitigation Measure

N-6 A construction vibration monitoring plan shall be prepared by the applicant prior to the issuance of any building permit, and shall be reviewed and approved by the Community Development Department Director or his/her designee. The approved construction vibration monitoring plan shall be implemented during construction by the project contractor to document conditions at the residences and commercial structures adjacent to the site prior to, during, and after vibration generating construction activities. All plan tasks shall be undertaken under the direction of a licensed Professional Structural Engineer in the State of California and be in accordance with industry accepted standard methods. The construction vibration monitoring plan shall include the following tasks:

1. Identification of sensitivity to ground-borne vibration of the residences and commercial structures adjacent to the site. A vibration survey (generally described below) would need to be performed.
2. Performance of a photo survey, elevation survey, and crack monitoring survey for the residences and commercial structures adjacent to the site. Surveys shall be performed prior to and after completion of vibration generating construction activities located within 25 feet of the structure. The surveys shall include internal and external crack monitoring in the structure, settlement, and distress, and shall document the condition of the foundation, walls and other structural elements in the interior and exterior of the structure.
3. Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage. Make appropriate repairs where damage has occurred as a result of construction activities.
4. The results of any vibration monitoring shall be summarized and submitted in a report shortly after substantial completion of each phase identified in the project schedule. The report will include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits will be included together with proper documentation supporting any such claims.

5. Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted on the construction site.
 6. Limit the use of vibratory rollers, hoe rams, large bulldozers, and caisson drilling, and avoid clam shovel drops within 15 feet of shared property lines to the south and east.
 7. Place operating equipment on the construction site as far as possible from vibration-sensitive receptors.
 8. Use smaller equipment to minimize vibration levels below the limits.
 9. Select demolition methods not involving impact tools.
 10. Avoid dropping heavy objects or materials near vibration sensitive locations.
 11. A list of all heavy construction equipment to be used for this project known to produce high vibration levels (tracked vehicles, vibratory compaction, jackhammers, hoe rams, etc.) shall be submitted to the City by the contractor, prior to the commencement of demolition and construction activity. This list shall be used to identify equipment and activities that would potentially generate substantial vibration and to define the level of effort required for continuous vibration monitoring.
- c. The proposed project consists of improvements to an existing gas station. The nearest public airport is the Palo Alto Airport which is 1.25 miles east of the project site. The project is not located within the airport's land-use plan boundary or its 55 dBA noise contour. There are no private airstrips in the vicinity. For these reasons the proposed project would not increase exposures of people residing or working in the project area to excessive airport-related noise levels.

14. POPULATION AND HOUSING

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)? (13)	☐	☐	☐	☒
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? (13)	☐	☐	☐	☒

Comments:

- a, b. The proposed project consists of physical improvements to an existing gas station and would not affect population or housing. No persons or housing would be displaced by the project. No further discussion is required.

15. PUBLIC SERVICES

Would the project result in substantial adverse physical impacts associated with the provision of or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Fire protection? (2, 3, 6)	☐	☐	☒	☐
b. Police protection? (2, 3, 6)	☐	☐	☒	☐
c. Schools? (2, 3)	☐	☐	☐	☒
d. Parks? (2, 3)	☐	☐	☐	☒
e. Other public facilities? (2, 3)	☐	☐	☐	☒

Comments:

- a. The Menlo Park Fire Protection District (fire district) provides emergency response services such as fire prevention, hazardous materials response, search-and-rescue, and paramedic services to the cities of East Palo Alto, Atherton, and Menlo Park, and portions of unincorporated San Mateo County. The closest fire station to the project site is located at 2290 University Avenue (Station 2), approximately 0.20 miles north of the project site. According to the general plan EIR, the adopted response standard for the fire district is within seven minutes 90 percent of the time (City of East Palo Alto 2019, page 4.13-4). The project site is located within the service area of the fire district and can be accommodated by existing levels of service.

General plan Policy 5.1, Impact Fees, requires the collection of impact fees that mitigate the cost of providing infrastructure and public facilities to serve new development. The impacts of increases in service demands were addressed in the general plan EIR Public Services Section. The general plan EIR found that buildout of the general plan would increase demand for fire protection and emergency medical services. However, the fire district did not identify a need to construct new or significantly expand existing stations or other facilities (ibid, page 4.13-15).

The proposed improvements to the existing gas station would contribute to the increase in the demand for fire protection services analyzed in the general plan EIR, and would not require the construction of new fire facilities. Therefore, no new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, would be needed to maintain service levels at the project site.

- b. The East Palo Alto Police Department (police department) provides law enforcement services to the city. The police department currently operates one police station located at 141 Demeter Street, approximately 0.64 miles northeast of the project site. The project would contribute to an increase in demand identified in the general plan EIR that would result from buildout of the general plan land uses. No facility upgrades were identified in the general plan EIR, and the impact to police facilities and services resulting from general plan buildout was found to be less than significant. The proposed project is located within the service boundary of the police department and would be accommodated by existing levels of service. No new police protection facilities, the construction of which would result in physical environmental impacts, would be required to maintain services to the project site.
- c,d,e. The project is not population-generating and would not generate new students or increase demand for public parks or other public services.

16. RECREATION

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated? (13)	☐	☐	☐	☒
b. Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment? (13)	☐	☐	☐	☒

Comments:

a, b. See Section D.15, Public Services, question “d” above.

17. TRANSPORTATION

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? (1-3, 13, 25, 35)	☐	☐	☐	☒
b. Conflict or be inconsistent with CEQA guidelines section 15064.3, subdivision (b)? (1-3, 13, 25, 35)	☐	☐	☐	☒
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? (1)	☐	☐	☐	☒
d. Result in inadequate emergency access? (1)	☐	☐	☐	☒

Comments:

- a. The proposed project consists of constructing improvements and alterations to an existing gas station. Project operations expected to result in a slight increase in vehicle trips to the site from existing conditions. Trip generation information provided by Hexagon Transportation Consultants (Gary Black, Email Correspondence with Consultant 2021) (traffic consultant) shows that a gas station with six fueling stations would generate about 413 average daily trips, taking into account pass-by trips. According to the trip generation information, average daily trip generation including pass-by trips for a 2,200 square foot convenience store with six fueling stations would generate about 668 average trips per day, whether or not a car wash is included with the facility. The proposed project's increase of 235 vehicle trips would be negligible according to the traffic consultant. Therefore, the permanent increase in traffic resulting from the project would not be significant.

The proposed project would not eliminate existing pedestrian, bicycle or transit facilities in the vicinity of the project site and would not preclude any planned improvements to such facilities. Therefore, the proposed project would not conflict with a program, plan, ordinance, or policy addressing the circulation system.

Vehicle Miles Traveled (VMT) Thresholds. According to the Office of Planning and Research Technical Advisory on Evaluating Transportation Impacts in CEQA, "By

adding retail opportunities into the urban fabric and thereby improving retail destination proximity, local-serving retail development tends to shorten trips and reduce VMT. Thus, lead agencies generally may presume such development creates a less-than-significant transportation impact.” (Page 16). The advisory also notes that retail development “larger than 50,000 square feet might be considered regional-serving” (page 17), which is more likely to generate VMT. However, the advisory’s discussion of mixed uses also notes that if a project “leads to a net increase in provision of locally-serving retail, transportation impacts from the retail portion of the development should be presumed to be less than significant.” (Page 18).

“Where a project replaces existing VMT-generating land uses, if the replacement leads to a net overall decrease in VMT, the project would lead to a less-than-significant transportation impact. If the project leads to a net overall increase in VMT, then the thresholds described above should apply.” (Page 17).

The gas station is located in an established urban area of the city and would not be considered a regional-serving use. The proposed project would add less than 50,000 square feet of locally-serving retail uses (2,200 square feet of commercial retail and carwash tunnel) to the existing gas station and would not result in a significant increase in VMT. Therefore, under these conditions, the increase in VMT generated by the proposed project would be less than significant.

- c. The project would continue to use the existing driveways on University Avenue and Bell Street to access the new fuel dispenser locations, convenience store, and car wash. The project would largely maintain the existing traffic circulation pattern of the existing gas station layout with cars accessing the site at the southwest (off University Avenue) and northeast corners (off Bell Street) of the site. The applicant proposed to remove and replace the Bell Street driveway, sidewalk, and street paving to be replaced with a city standard driveway.

Access and circulation on the project site would be designed to adhere to the City of East Palo Alto design guidelines and standards and would be subject to approval by the City’s Public Works Department and Fire Department. This would ensure that the proposed project is adequately designed to minimize hazards associated with design, including line of sight adjustments on the walls at access/egress points. Therefore, the proposed project would not increase hazards due to a design feature or result in inadequate emergency access.

- d. Final plans would be reviewed by the city to ensure that the project adheres to all California Fire Code requirements. Therefore, the project would not result in inadequate emergency access.

18. TRIBAL CULTURAL RESOURCES

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
(1) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources code section 5020.1(k), or (2, 3, 32, 33)	☐	☐	☐	☒
(2) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe. (32, 33)	☐	☒	☐	☐

Comments:

- a. (1, 2) The CEQA statute (Public Resources Code Sections 21073 and 21074) defines “tribal cultural resources”, and “California Native American tribe” as a Native American tribe located in California that is on the contact list maintained by the Native American Heritage Commission (NAHC). Public Resources Code Section 21080.3.1 outlines procedures for tribal consultation as part of the environmental review process per AB 52. On June 7, 2021, the city sent an offer of consultation letter to nine (9) tribal representatives representing the Amah Mutsun Tribal Band of Mission San Juan Bautista, Costanoan Rumsen Carmel Tribe, Indian Canyon Mutsun Band of Costanoan, Muwekma Ohlone Indian Tribe of the SF Bay Area, The Ohlone Indian Tribe, Rusem Am:a Tur:ataj Ohlone, and Tamien Nation, respectively.

On June 21, 2021, the city received a formal request for tribal consultation from the Tamien Nation of the Greater Santa Clara County. No other requests for consultation per AB 52 were received.

A Sacred Lands File check was conducted by the NAHC at the city's request, which returned a negative result (NAHC 2021). The Sacred Lands File check was shared with the Tribal representative. The City met with the Tamien Nation (Quirina Geary, Chairwoman) on September 21, 2021.

The Tribal representative indicated that the project site is located within a general area known to the Tribe and may contain sensitive resources. Although the Tribal representative provided no evidence of Tribal cultural resources on or in the immediate vicinity of the project site that are listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources code section 5020.1(k), or, a resource determined by the City of East Palo Alto, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.

However, because the Tamien Nation is traditionally and culturally affiliated with the project area, and the Tribe has indicated that sensitive resources are located with the general vicinity, the Tribal representative and City staff have agreed to the following mitigation measure, in the event significant resources meeting the definition in (1) and (2) in the table above are accidentally discovered during earth moving activities associated with the proposed project.

Mitigation Measures

In addition to mitigation measures CR-1 and CR-2 presented in Section 5, Cultural Resources, the following measures shall be implemented:

- TR-1 The applicant shall contract with the Tamien Nation to develop and implement a cultural resource sensitivity training program for the construction work crew on the first days of excavation. The project contractor shall provide evidence of the training to the City Planning Division, which shall include the training materials and a sign-in list of trained construction personnel, at the end of the first day of excavation.
- TR-2 Should Tribal or cultural resources be inadvertently discovered during project excavation activity, work shall be halted and the Tamien Nation Treatment Protocol shall be implemented.

The location of Tribal resources is confidential, may be redacted from monitoring reports, and shall not be made available for public review. The location of sensitive cultural resources is exempt from the Public Records Act.

19. UTILITIES AND SERVICES SYSTEMS

Would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Require or result in the relocation or construction of new or expanded water, wastewater treatment, storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? (1-3, 13, 20)	☐	☐	☐	☒
b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? (1-3, 13, 22)	☐	☐	☒	☐
c. Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (1-3, 13)	☐	☐	☐	☒
d. Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals? (1-3, 23, 24)	☐	☐	☐	☒
e. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste? (1-3, 23, 24)	☐	☐	☐	☒

Comments:

- a. The project site is connected to water and sewer infrastructure and existing drainage systems on University Avenue and Bell Street, as well as to existing utility infrastructure. There is sufficient water and wastewater capacity available to serve the proposed project (see "b" and "c" below). According to the city's Storm Drain Master Plan, the existing storm drain system on University Avenue has capacity sufficient to accommodate runoff from a 10-year storm event (City of East Palo Alto 2014, page 4-3). Refer also to the related discussion in Section 10, Hydrology and Water Quality. Pacific Gas and Electric provides electricity and natural gas to the site. The proposed project would not require relocation or construction of new or expanded water, wastewater treatment, storm water drainage, electric power, natural gas, and telecommunication facilities.

- b. The proposed project will be served by the City of East Palo Alto water system that is operated by Veolia. The proposed convenience store and car wash, along with on-site landscaping, would require additional water beyond that which serves the current fuel dispensers and kiosk on-site. However, the proposed car wash will utilize a recycled carwash system as required by state law (AB 2230) which will offset the increase in water required for the site. AB 2230 requires in-bay and conveyor car washes to either install, use, and maintain a water recycling system, that recycles and reuses at least 60 percent of the wash and rinse water, or to use recycled water provided by a water supplier for at least 60 percent of its wash and rinse water (California State Assembly 2012).

The proposed convenience store will only require minimal increases in water demand to accommodate two restrooms. Therefore, the project would not require access to new supplies of water or the construction of new water treatment or storage facilities. Further, the proposed project would be required to obtain a “will serve” letter from Viola, the city’s water purveyor, prior to issuance of a building permit. Obtaining a will serve letter assures that adequate water would be available to serve the proposed project. Sufficient water supplies are expected to be available to serve the project during even dry and multiple dry years. Compliance with the city’s will building permit requirements related to water demand ensures that the project’s increased water demand would be less than significant.

- c. The proposed project would increase wastewater generation on the site from new bathrooms located in the convenience store, and non-recycled wastewater from the car wash (40 percent of water demand). The project site lies within the service area of the East Palo Alto Sanitary District (“sanitary district”). Sewage collected by the sanitary district is treated at the Palo Alto Regional Water Quality Control Plant. The sanitary district has an annual average dry-weather flow capacity allotment of 2.9 MGD at the Palo Alto Regional Water Quality Control Plant (general plan EIR, page 4.15-11). The sanitary district is operating below its system dry-weather flow capacity, with an average dry-weather flow of 1.5 MGD, or 548 million gallon of wastewater per year (general plan EIR, page 4.15-11) and has adequate capacity to serve buildout of the general plan. Wastewater generated by the proposed project would contribute to the wastewater capacity envisioned in the general plan and is less than significant.
- d, e. As a part of California's continued commitment to reduce the amount of solid waste entering landfills, AB 939 (also known as the California Integrated Waste Management Act) requires each jurisdiction in California to divert at least 50 percent of its waste away from landfills, whether through waste reduction, recycling or other means.

Solid waste generated by the project would be handled in accordance with the requirements of AB 939. Garbage service and recycling in East Palo Alto is provided by Recology of San Mateo County. Residential and commercial solid waste and recyclable materials collected by the franchise hauler, Recology of San Mateo County, will be taken to Shoreway Environmental Center, a recycling center and transfer station that implements and manages waste reduction and recycling programs.

Solid waste from East Palo Alto is disposed of at the Corinda Los Trancos (Ox Mountain) Landfill near Half Moon Bay. The landfill is owned and operated by Republic Services. According to the Application for Solid Waste Facility Permit and Waste Discharge Requirements, the Corinda Los Trancos (Ox Mountain) Landfill has a remaining capacity of approximately 22 million cubic yards. The landfill has a cease operation date of January 1, 2034. On an average, the landfill receives 1,700 tons per day of solid waste. The maximum permitted throughput is 3,598 tons per day (CalRecycle 2021).

According to California Department of Resources Recycling and Recovery's Disposal Rate Calculator, the disposal rate in East Palo Alto in 2018 was 19.6 pounds per employee generated per day. With an employment number of 12, the proposed project could generate approximately 235 pounds per day or 43 tons per year of solid waste. The average landfill tonnage per day with the proposed project would be approximately 1,935, which would not exceed the landfill's maximum permitted throughput of 3,598 tons per day.

Therefore, the proposed project would not generate solid waste that exceeds the landfill capacity, impair the attainment of solid waste reduction goals, or conflict with state regulations related to solid waste.

20. WILDFIRE

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than-Significant Impact	No Impact
a. Substantially impair an adopted emergency response plan or emergency evacuation plan? (2, 3, 12)	☐	☐	☐	☒
b. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire? (2, 3, 12)	☐	☐	☐	☒
c. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment? (2, 3, 12)	☐	☐	☐	☒
d. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes? (2, 3, 12)	☐	☐	☐	☒

Comments:

- a-d. The proposed project is a remodel of an existing gas station and no changes are proposed to the street system. Therefore, the proposed project would not impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan. The project site is located within the urban center of the City of East Palo Alto. The risk of wildfire is limited in East Palo Alto due to its location in a highly urbanized portion of San Mateo County. The CAL FIRE FHSZ Map for San Mateo County indicates that the City of East Palo Alto is not located within or near a State Responsibility Area for wildfires, which means that local responsibility for fire protection falls to city fire departments, fire protection districts, counties, and CAL FIRE under contract to local government. The proposed project would be required to comply with provisions of federal, state, and local requirements related to wildland fire hazards, including the California Building Code and

applicable fire codes, including incorporating sprinkler systems and hydrants with sufficient water supply to maintain adequate fire flows prior to issuance of building permits. Due to its location, the proposed project would not increase risks of human harm or property damage from wildfires.

21. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation Measures Incorporated	Less-Than- Significant Impact	No Impact
a. Does the project have the potential to substantially degrade the quality of the environment; substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory? (1-6, 13)	☐	☒	☐	☐
b. Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects) (1-4, 7, 13, 27-30)	☐	☒	☐	☐
c. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly? (1, 7, 28)	☐	☒	☐	☐

Comments:

- a. As discussed in Section D.4, Biological Resources, the proposed project has the potential to impact nesting birds. Implementation of Mitigation Measures BIO-1 would reduce this impact to a less-than-significant level.

As described in Section D.5, Cultural Resources, the project site does not contain any known unique cultural resources. However, it is possible that unique cultural resources could be accidentally uncovered during grading and construction activities. In the event this should occur, Mitigation Measures CR-1 and CR-2 would ensure that the potential impacts would not be significant.

- b. The proposed project has the potential to result in cumulatively considerable impacts to air quality (construction), biological resources (potential impacts to nesting birds), and noise (operational impacts). However, with implementation of the mitigation measures identified herein, the proposed project's impacts would not be cumulatively considerable.
- c. The proposed project has the potential to result in adverse environmental effects that could cause substantial adverse effects on human beings from the following: toxic air contaminants (TACs) pollutants that may be expected to result in an increase in mortality or serious illness or may pose a present or potential hazard to human health and construction-related noise and groundborne vibration at nearby sensitive receptors that exceed noise thresholds. In addition, project operations would exceed the city's noise thresholds at adjoining sensitive uses. Implementation of mitigation measures AQ-1 – AQ-2, and mitigation measures N-1 - N-6 would reduce potential impacts that could adversely affect human beings to a less-than-significant level.

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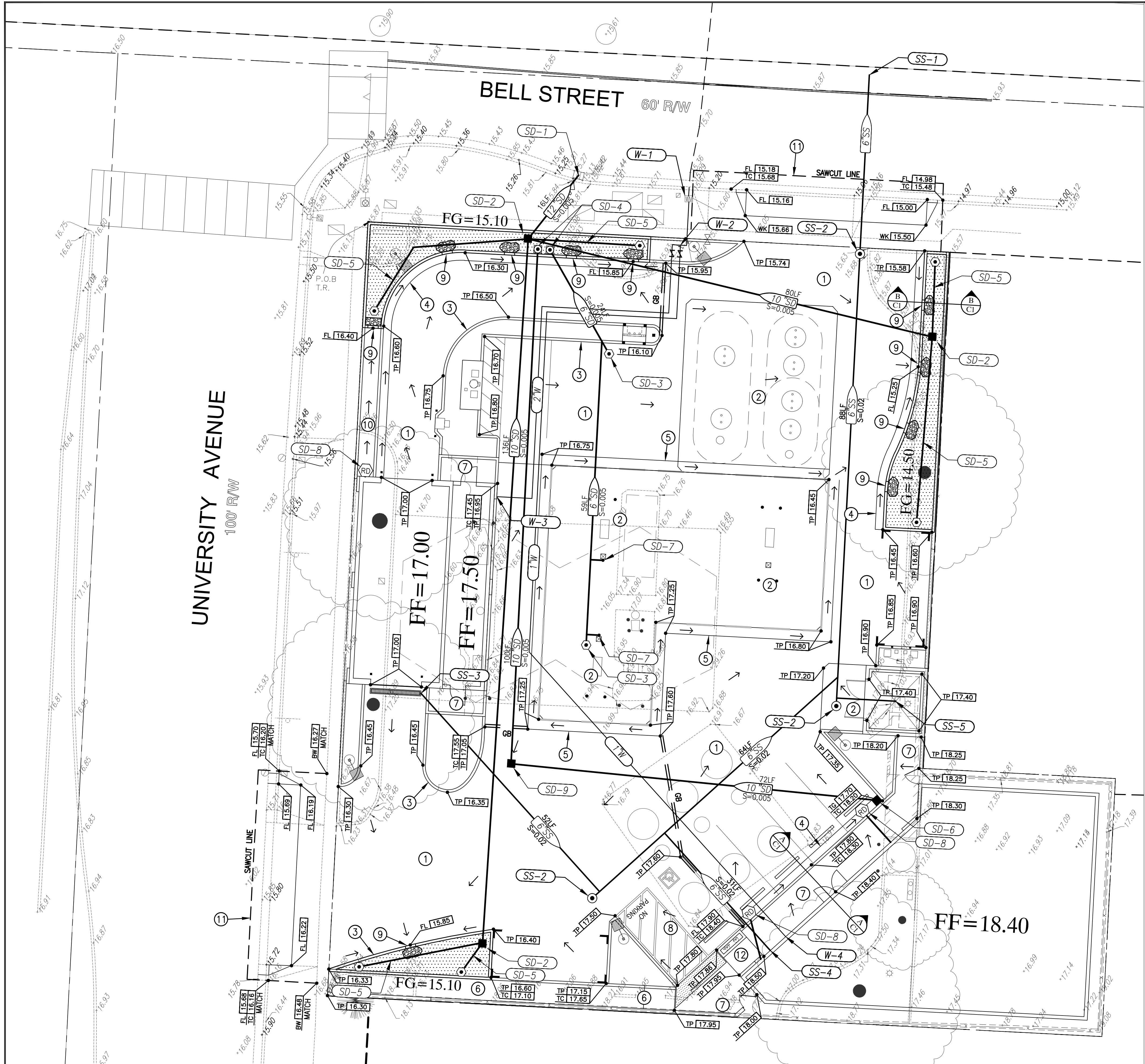
All documents in **bold** are available for review at the **City of East Palo Alto Community and Economic Development Department, 1960 Tate Street, East Palo Alto, CA 94303, (650) 853-3189** during normal business hours.

All documents listed above are available for review at EMC Planning Group Inc., 301 Lighthouse Avenue, Suite C, Monterey, California 93940, (831) 649-1799 during normal business hours.

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APPENDIX A

PROJECT PLANS



PROPOSED IMPROVEMENT NOTES:

- 1 PLACE 3" AC OVER 9" AB COMPACTED TO A MINIMUM 95% COMPACTION.
- 2 PLACE 6" PCC OVER 6" AB COMPACTED TO A MINIMUM 95% COMPACTION.
- 3 CONSTRUCT 6" VERTICAL CURB.
- 4 CONSTRUCT 6" CURB AND 1.5' GUTTER.
- 5 CONSTRUCT 2' VEE-GUTTER WITH 1/2" LIP SURROUNDING FUELING CANOPY.
- 6 PLACE SIDEWALK, 4" PCC OVER 6" AB COMPACTED TO A MINIMUM 95% COMPACTION. SLOPE SIDEWALK WITH 4.8% (MAX) SLOPE IN DIRECTION OF TRAVEL AND 1.9% (MAX) CROSS-SLOPE
- 7 PLACE SIDEWALK, 4" PCC OVER 6" AB COMPACTED TO A MINIMUM 95% COMPACTION. SLOPE WITH 1.9% (MAX) IN ALL DIRECTIONS.
- 8 STRIPE ADA PARKING. SLOPE AC PAVING WITH 1.9% (MAX) IN ALL DIRECTIONS.
- 9 CONSTRUCT 2' CURB ADJACENT TO BIO-RETENTION PLANTER. PLACE 4" COBBLES SURROUND CURB CUT WITHIN BIO-RETENTION PLANTER EXTENDING 2' RADIALLY.
- 10 CONSTRUCT SWALE SLOPED AT 2% TO CARRY STORMWATER FROM ROOF DRAIN TO BIO-RETENTION PLANTER.
- 11 REMOVE AND REPLACE EXISTING DRIVEWAY, SIDEWALK AND STREET PAVING TO SAWCUT LINE. DRIVEWAY TO BE REPLACED WITH CITY STANDARD DRIVEWAY.
- 12 CONSTRUCT CURB RAMP WITH SLOPE IN DIRECTION OF TRAVEL NOT TO EXCEED 8.33% AND CROSS SLOPE OF 2%.

PROPOSED WATER NOTES:

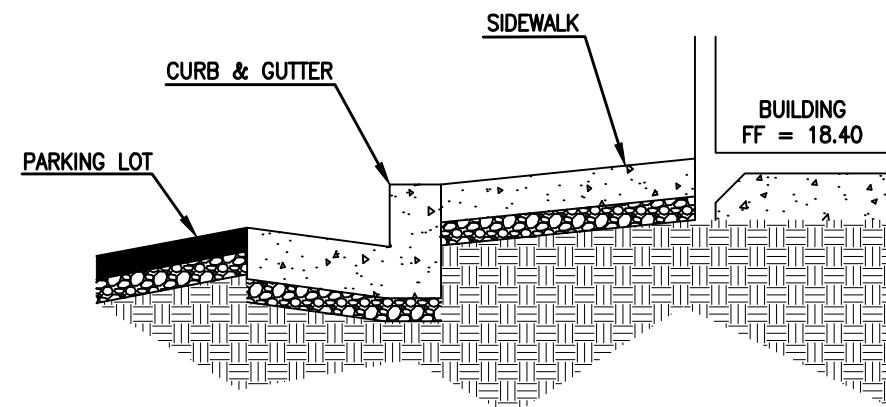
- W-1 CONNECT WATER SERVICE TO EXISTING WATER METER.
- W-2 INSTALL 1" BACK FLOW PREVENTER FOR CONVENIENCE STORE AND 2" BACK FLOW PREVENTER FOR CARWASH.
- W-3 EXTEND 2" WATER SERVICE TO CARWASH.
- W-4 EXTEND 1" WATER SERVICE TO CONVENIENCE STORE.

PROPOSED SEWER NOTES:

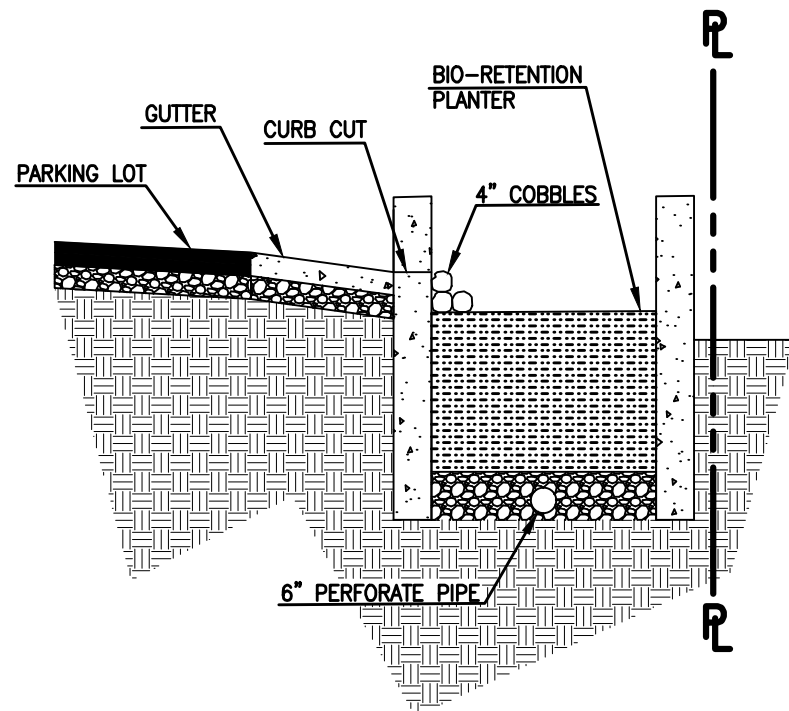
- SS-1 CONNECT SEWER SERVICE TO CITY SEWER MAIN.
- SS-2 INSTALL CLEANOUT TO GRADE.
- SS-3 EXTEND 6" SEWER SERVICE TO CARWASH AND TRENCH DRAIN AT CARWASH EXIT.
- SS-4 EXTEND 6" SEWER SERVICE TO CONVENIENCE STORE.
- SS-5 EXTEND 4" SEWER SERVICE TO FLOOR DRAIN IN TRASH ENCLOSURE.

PROPOSED STORM DRAIN NOTES:

- SD-1 CONNECT ONSITE STORM DRAIN SYSTEM TO CITY STORM DRAIN SYSTEM.
- SD-2 INSTALL STORM DRAIN OVERFLOW WITH TOP OF GRATE 6" ABOVE AND INVERT 2.5' BELOW FINISHED GRADE OF BIO-RETENTION PLANTER.
- SD-3 INSTALL STORM DRAIN CLEANOUT TO GRADE.
- SD-4 INSTALL STORM DRAIN BUBBLE-UP IN BIO-RETENTION PLANTER WITH TOP OF GRATE 7" ABOVE FINISH GRADE OF BIO-RETENTION PLANTER.
- SD-5 INSTALL 6" PERFORATED PIPE IN GRAVEL LAYER OF BIO-RETENTION PLANTER. TERMINATE PIPE WITH CLEANOUT TO GRADE.
- SD-6 INSTALL STORM DRAIN INLET.
- SD-7 CONNECT FUELING CANOPY TO ONSITE STORM DRAIN SYSTEM.
- SD-8 PLACE BUILDING ROOF DRAIN.
- SD-9 PLACE JUNCTION BOX.

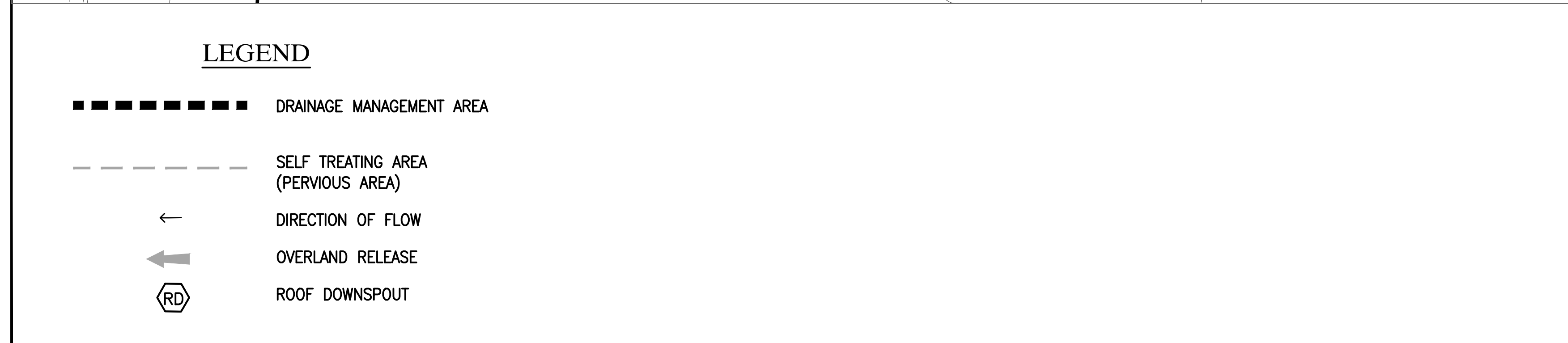


CROSS-SECTION A - A
NTS



CROSS-SECTION B - B
NTS

BANSAL, INC VIKASH BANSAL 809 E. STANLEY BLVD. LIVERMORE, CA 94550 PH: (925) 876-9984		STUKAM CONSULTING ENGINEERS, INC. 11344 COLOMA RD, SUITE 235C GOLD RIVER, CA 95670 (916) 858-8241 PHONE (916) 988-6316 FAX		PRELIMINARY GRADING & UTILITY PLAN 2194 UNIVERSITY AVENUE GAS STATION, CONVENIENCE STORE & CARWASH APN: 063-321-400 CITY OF EAST PALO ALTO SAN MATEO COUNTY CALIFORNIA JOB NO: 2017-024 Designed: FTS Checked: FTS Date: 3/10/2020	
BY		CEPA		DATE	
REVISIONS					



The following are sources of pollutants:

- ☒ Fueling
- ☒ Spills
- ☒ Surface cleaning
- ☒ Air / water supply areas
- ☒ Dumpster and trash can areas

Pollutants can include:

- ☒ Heavy metals (copper, lead, nickel, and zinc)
- ☒ Hydrocarbons (oil and grease, PAHs)
- ☒ Toxic chemicals (benzene, toluene, xylene, MTBE)
- ☒ Detergents
- ☒ Food waste and trash

Reference: California Stormwater BMP Handbook
Industrial and Commercial
www.cabmphandbooks.com

IMP NAME: SCM-1

IMP TYPE: BIO-RETENTION PLANTER

SOIL TYPE:C

DMA NAME	DMA AREA (SQ. FT.)	POST PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP SIZING			
					IMP SIZING FACTOR	RAIN ADJUSTMENT FACTOR	MINIMUM AREA	PROPOSED AREA
DMA 1A	3028	ROOF / PCC PAVING	1.00	3028	0.04	1.00	287	314
DMA 1B	2006	ROOF	1.00	2006				
DMA 1C	1143	ROOF	1.00	1143				
DMA 1D	976	AC PAVING	1.00	976				
			TOTAL:	7153				

IMP NAME: <u>SCM-2</u>									
IMP TYPE: BIO-RETENTION PLANTER									
SOIL TYPE: C									
					IMP SIZING				
DMA NAME	DMA AREA (SQ. FT.)	POST PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP SIZING FACTOR	RAIN ADJUSTMENT FACTOR	MINIMUM AREA	PROPOSED AREA	
DMA 2	3440	AC PAVING	1.00	3440					
TOTAL:				3440	0.04	1.00	138	143	

IMP NAME: SCM-3								
IMP TYPE: BIO-RETENTION PLANTER								
SOIL TYPE:C								
DMA NAME	DMA AREA (SQ. FT.)	POST PROJECT SURFACE TYPE	DMA RUNOFF FACTOR	DMA AREA X RUNOFF FACTOR	IMP SIZING			
					IMP SIZING FACTOR	RAIN ADJUSTMENT FACTOR	MINIMUM AREA	PROPOSED AREA
DMA 3	5907	AC PAVING	1.00	5907				
TOTAL:			5907	0.04	1.00	237	294	

ALL NEW FUELING STATIONS OR EXPANSION OF SUCH USES SHOULD INCLUDE THE FOLLOWING BMPs:

1. INSTALL AND MAINTAIN A TREATMENT CONTROL MEASURE
2. PAVE THE FUELING AREA FLOORS WITH AN IMPERMEABLE SURFACE (I.E., PORTLAND CEMENT CONCRETE OR EQUIVALENT SMOOTH IMPERVIOUS SURFACE).
3. COVER THE FUELING AREAS WITH A CANOPY OR COVER THAT EXTENDS A MINIMUM OF TEN FEET IN EACH DIRECTION FROM EACH PUMP. ALTERNATIVELY, COVER THE FUELING AREAS WITH A CANOPY OR COVER THAT HAS MINIMUM DIMENSIONS EQUAL TO OR GREATER THAN THE AREA WITH THE GRADE BREAK OR FUEL DISPENSING AREA. (THE FUEL DISPENSING AREA IS DEFINED AS THE AREA EXTENDING TEN FEET FROM THE CORNER OF EACH FUEL DISPENSER OR THE LENGTH AT WHICH THE HOSE AND NOZZLE ASSEMBLY MAY BE OPERATED PLUS A MINIMUM OF ONE FOOT, WHICHEVER IS GREATER. IN NO CASE SHOULD THE CANOPY OR COVER DRAIN OUTTO THE FUELING AREA.)
4. GRADE THE FUEL AREA TO PREVENT WATER DRAINING TOWARD THE FUELING AREA.
5. GRADE THE FUEL AREA WITH THE MINIMUM SLOPE NECESSARY TO PREVENT PONDING.
6. SEPARATE THE FUELING AREA FROM THE REST OF THE SITE BY A GRADE BREAK THAT PREVENTS RUN-ON OF STORM WATER TO THE MAXIMUM EXTENT PRACTICABLE.
7. DRY SWEEP THE FUELING AREA ROUTINELY.
8. STENCIL ALL ON-SITE STORM DRAINS IN CONFORMANCE WITH THE CITY'S REQUIREMENTS.
9. PREPARE A SPILL CLEANUP PLAN IN CONFORMANCE WITH THE CITY OF SAN JOSE FIRE CODE.

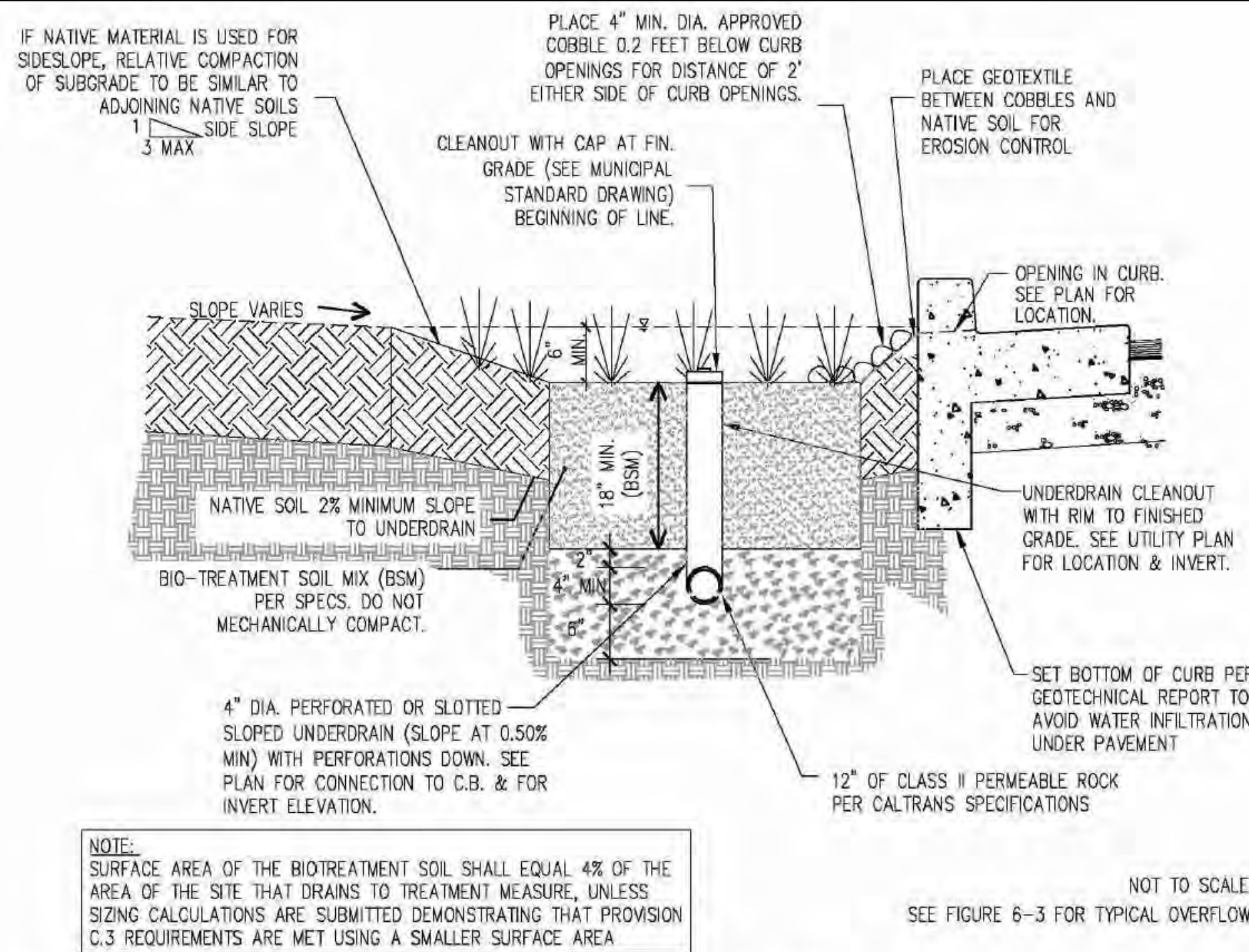
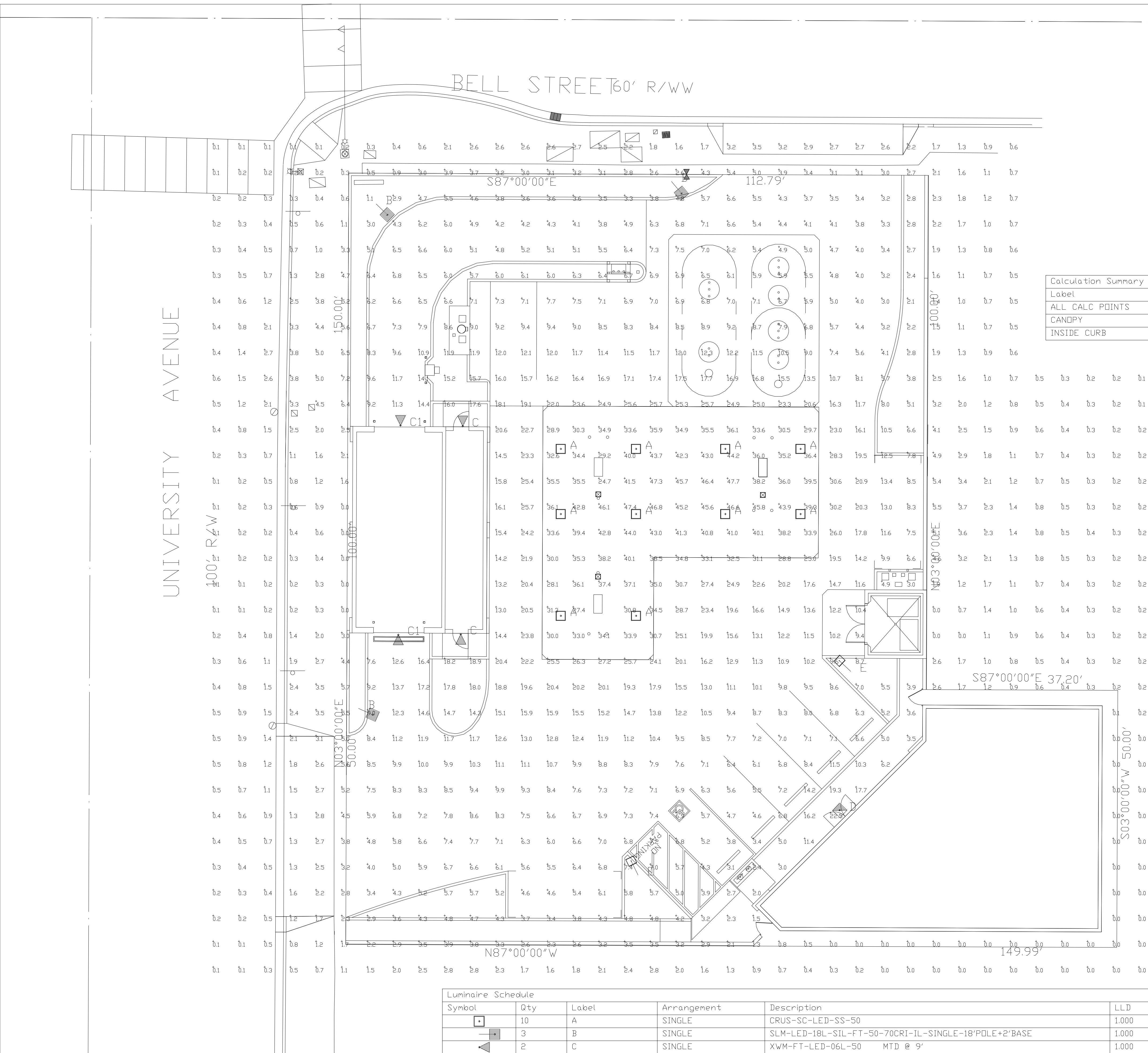


Figure 6-5: Cross section of bioretention area showing inlet from pavement.



Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
ALL CALC POINTS	Illuminance	Fc	8.16	47.7	0.0	N.A.	N.A.
CANDOPY	Illuminance	Fc	36.45	47.7	24.1	1.51	1.98
INSIDE CURB	Illuminance	Fc	10.26	30.7	2.1	4.89	14.62



Luminaire Schedule									
Symbol	Qty	Label	Arrangement	Description	LLD	UDF	LLF	Arr. Lum. Lumens	Arr. Watts
	10	A	SINGLE	CRUS-SC-LED-SS-50	1.000	1.000	1.000	13674	97.9
	3	B	SINGLE	SLM-LED-18L-SIL-FT-50-70CRI-IL-SINGLE-18'POLE+2'BASE	1.000	1.000	1.000	12568	148.5
	2	C	SINGLE	XWM-FT-LED-06L-50 MTD @ 9'	1.000	1.000	1.000	5936	44.7
	2	C1	SINGLE	XWM-FT-LED-06L-50 MTD @ 11'-6"	1.000	1.000	1.000	5936	44.7
	1	D	SINGLE	XSL2-S-LED-50-SS-CW MTD @ 10'	1.000	1.000	1.000	6193	59.9
	2	E	SINGLE	SLM-LED-18L-SIL-FT-50-70CRI-SINGLE-18'POLE+2'BASE	1.000	1.000	1.000	19664	148.5

Based on the information provided, all dimensions and luminaire locations shown represent recommended positions. The engineer and/or architect must determine the applicability of the layout to existing or future field conditions.

This lighting plan represents illumination levels calculated from laboratory data taken under controlled conditions in accordance with The Illuminating Engineering Society (IES) approved methods. Actual performance of any manufacturer's luminaires may vary due to changes in electrical voltage, tolerance in lamps/LED's and other variable field conditions. Calculations do not include obstructions such as buildings, curbs, landscaping, or any other architectural elements unless noted. Fixture nomenclature noted does not include mounting hardware or poles. This drawing is for photometric evaluation purposes only and should not be used as a construction document or as a final document for ordering product.

Total Project Watts
Total Watts = 1960.2

SD1-L



LIGHTING PROPOSAL LD-150299-1

C-STORE
2194 UNIVERSITY AVE
EAST PALO ALTO, CA

BY:MVE DATE:05-20 REV:2-10-20 SHEET 1 OF 1

SCALE: 1"=10'

0 10



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DESIGN
2221 OLYMPIC BLVD.,
SUITE 100
WALNUT CREEK, CA
94595
925-287-1174 Tel
925-943-1581 Fax
925-878-9875 Cell
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PLANTING LEGEND

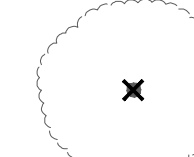
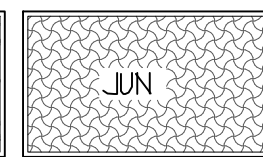
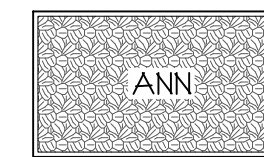
Symbol	BOTANICAL NAME	COMMON NAME	H2O
<u>Tree</u>			
	Tilia tomentosa 'Sterling'	Sterling Silver Linden	L 36" Box
	Gleditsia triacanthos 'Shademaster'	Honey Locust	L 36" Box
<u>Shrubs and Vines</u>			
	Raphiolepis Indica 'Jack Evans'	Pink India Hawthorn	L 5 Gallon
	Xylosma congestum	Shiny Xylosma	L 5 Gallon
	Gelsemium sempervirens	Carolina Jasmine	L 1 Gallon
Note: Shrubs adjacent to sidewalks shall be trimmed to 3' max.			

Ground Cover

ROS	Rosmarinus officinalis 'Huntington Carpet'	Rosemary	L 1 Gallon @ 30" oc
ANN	Geranium incanum	Carpet Geranium	L 1 Gallon @ 18" oc

Bioretenation Planting

JUN	Juncus patens 'Enigma'	Mystery Blue Ca. Gray Rush	L 1 Gallon @ 30" oc
-----	------------------------	----------------------------	---------------------



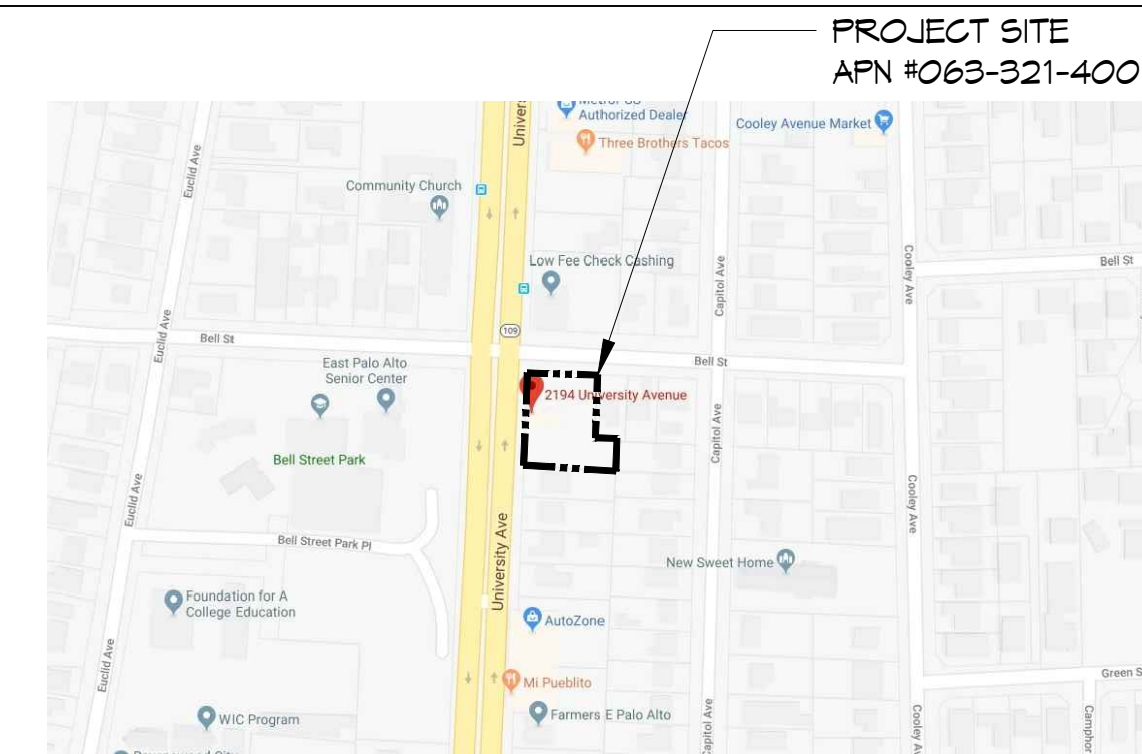
Existing Tree to be removed

PLANTING NOTES

- All trees are to be staked as shown in the staking diagram per city requirement.
- Plant locations are to be adjusted as necessary to screen utilities but not block windows or impede access.
- All ground cover and shrub areas shall be top-dressed with a 3" layer of bark mulch.
- All ground cover planting will be placed no farther than 6" from edge of pavement, edge of header or back of curb. Spacing shall ensure full coverage in one year.
- There shall be no storing of material or equipment, permitting of any burning or operating or parking of equipment under branches of any existing plants to remain. If existing plants to remain are damaged during construction, the plants shall be replaced with the same species an size as those damaged.
- All plant material shall be nursery grown stock. All plant materials shall be tagged at the nursery at least 1 month prior to planting for the Landscape Architects review.
- Review layout of all landscape elements with the Landscape Architect prior to installation. Field modifications may be necessary. Final layout to be reviewed by the Landscape Architect.
- Written dimensions supersede scaled dimension. Measurements are from the wall face, back of curb, edge of walk, building wall, property line or center line as graphically indicated.
- All layout corners are at 90 degrees right angles unless otherwise indicated. All curves shown are segments of circles with noted radii or diameter if noted. Circles can be scaled and be connected by freeform curves.
- HERBICIDE APPLICATION: Herbicide shall not be used until all plant material has been planted a minimum of 20-days. All planting areas shall be kept weed-free by non-herbicide methods during this time period. Herbicide shall not be applied to any areas which are or have been seeded. Contractor must be licensed by the State and County for fertilizer application, and must have current registration on file with the County.
- Landscape shall be maintained in a manner to prevent landscaping from growing above 3' in height in the areas indicated in the plans as being located within a safety visibility triangle area.
- CERTIFICATION: Prior to occupancy, the Landscape Architect shall certify in writing in a manner acceptable to the Building Inspection Division, that the landscaping has been installed in accordance with all aspects of the approved landscape plans.
- A minimum of 8" of non-mechanically compacted soil shall be available for water absorption and root growth in planted areas.
- Incorporate compost or natural fertilizer into the soil to a minimum depth of 8" at a minimum rate of 6 cubic yards per 1000 square feet.
- All Plantings shall be automatically irrigated utilizing state of the art system, components and installation techniques.
- Plant pits shall have their sides and bottoms loosened or otherwise broken to prevent glazed or compacted surfaces, and shall be as shown on the planting detail. Only un-amended soil shall be used beneath the root ball; cultivate bottom of plant pit to improve porosity. Backfill around sides of rootball shall be the amended soil taken from adjacent prepared areas. Spread material excavated from plant pits onto adjacent areas as replacement. Should additional backfill be necessary, a mixture of one-third organic amendment/fertilizer mix and two-thirds topsoil may be used.

I agree to comply with the requirements of the Water Efficient Landscape Ordinance (MELO) and submit a complete Landscape Document Package.

VICINITY MAP



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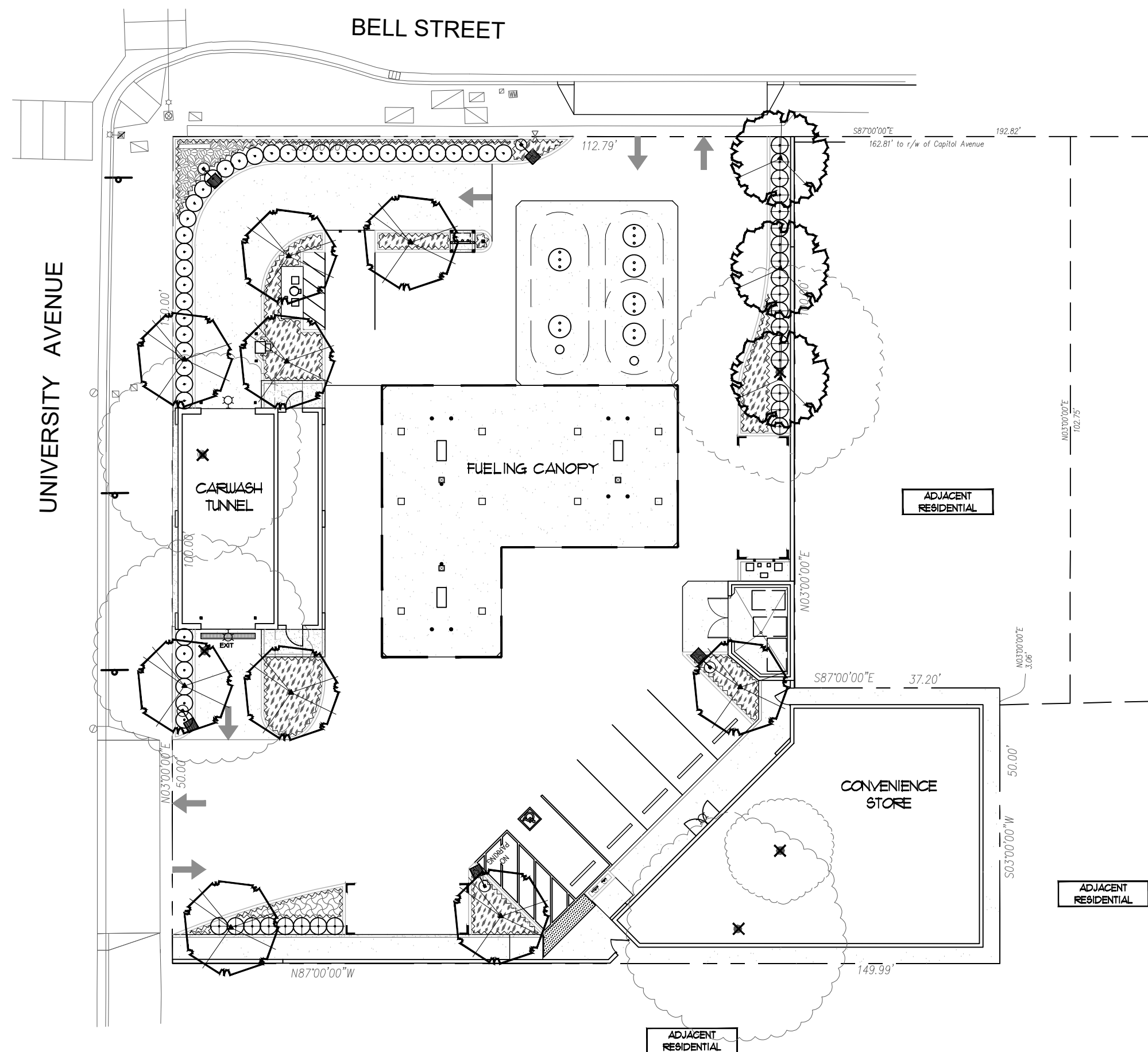
NO.	DATE	DESCRIPTION
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2		
3		
4		

LANDSCAPE PLAN

PROJECT #: 17-13001
DRAWN: rc CHECKED: rc
SCALE: AS NOTED DATE: 07-30-18

LA1

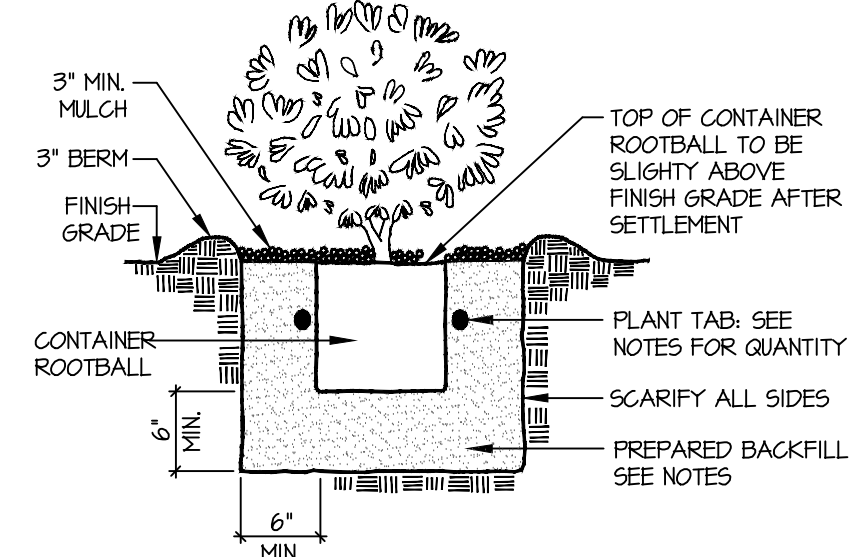
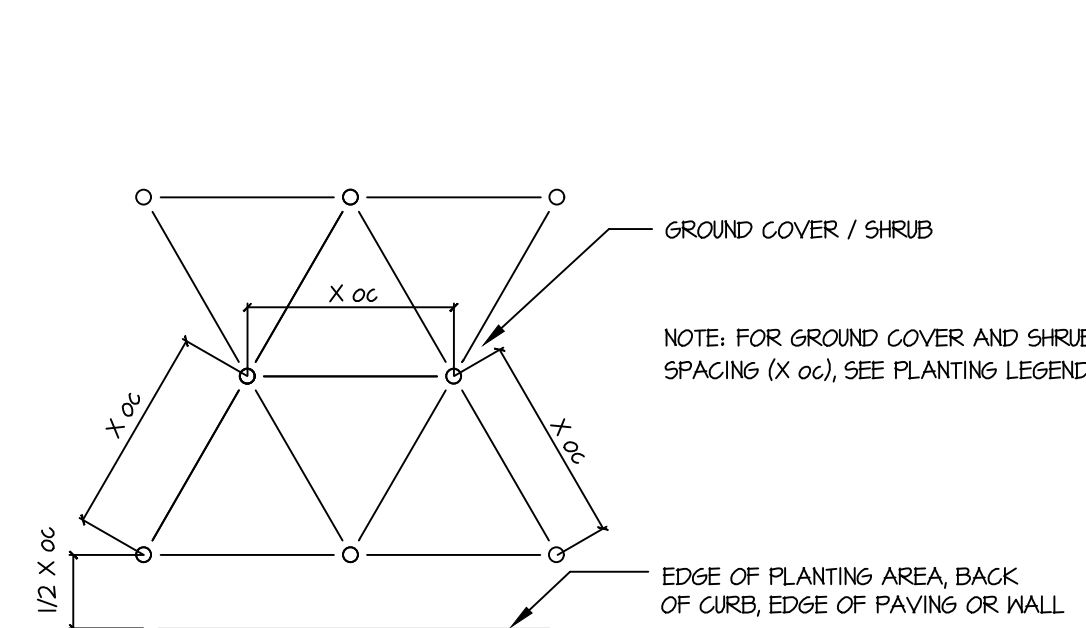
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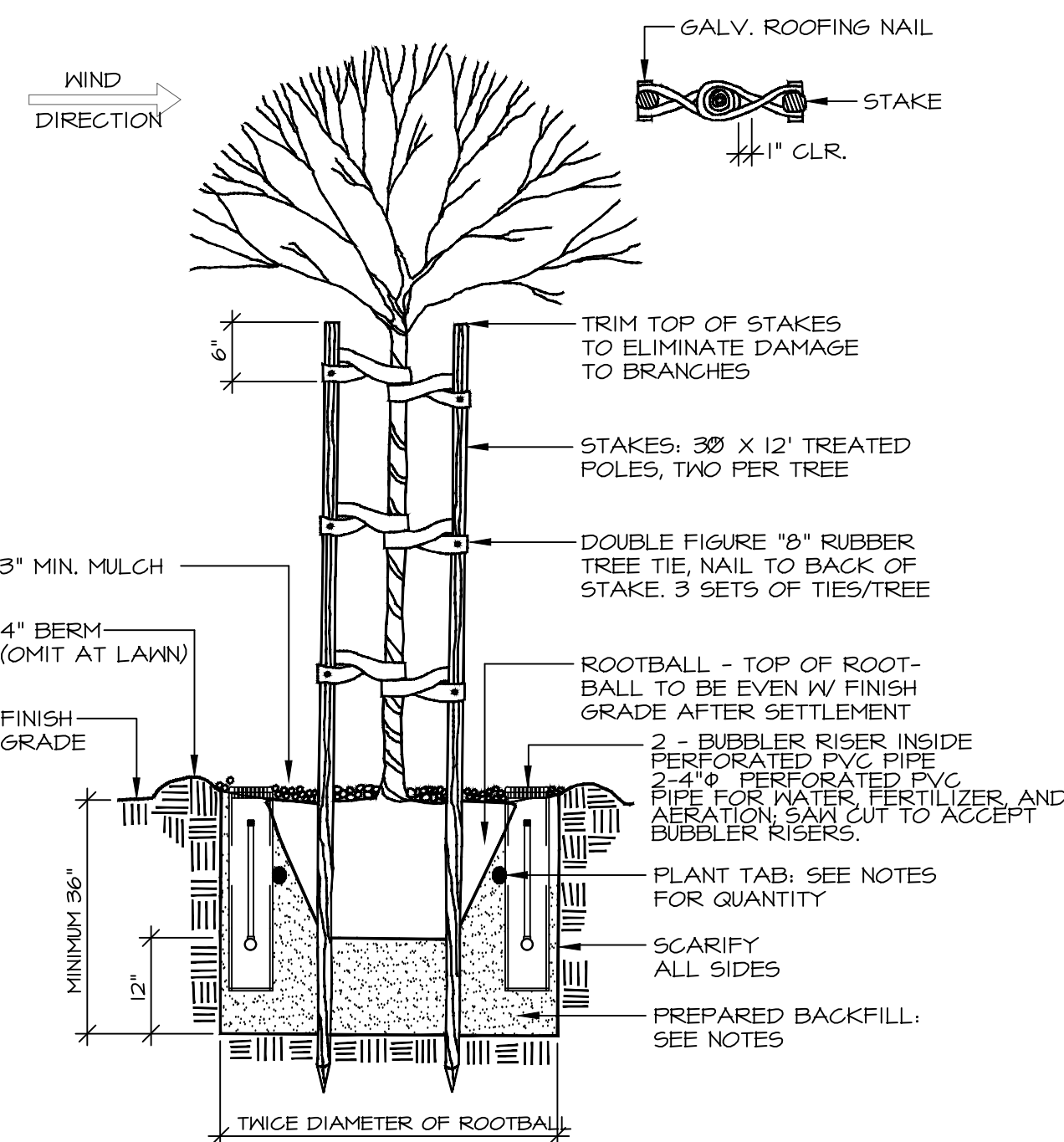
1 PLANTING PLAN

1" = 20'-0"

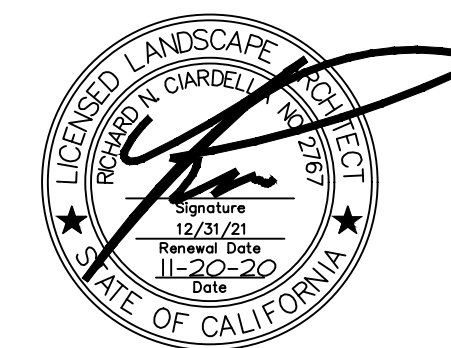
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PLANTING INSTALLATION AND LAYOUT

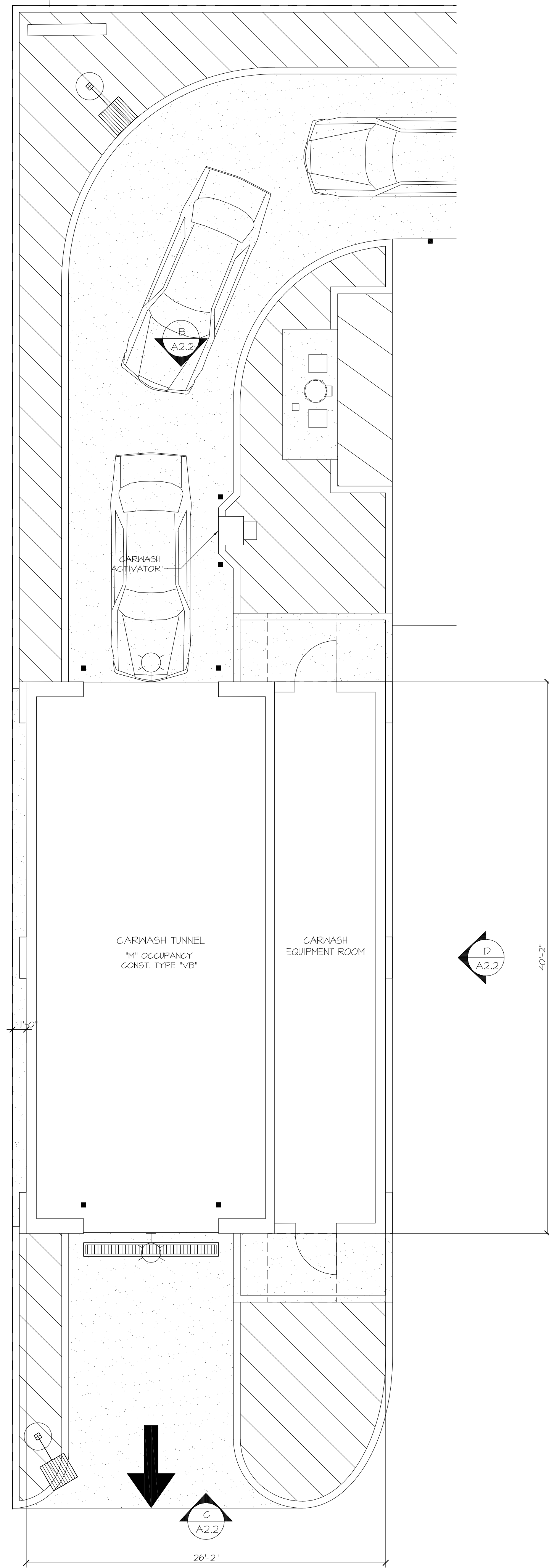


TREE PLANTING AND STAKING

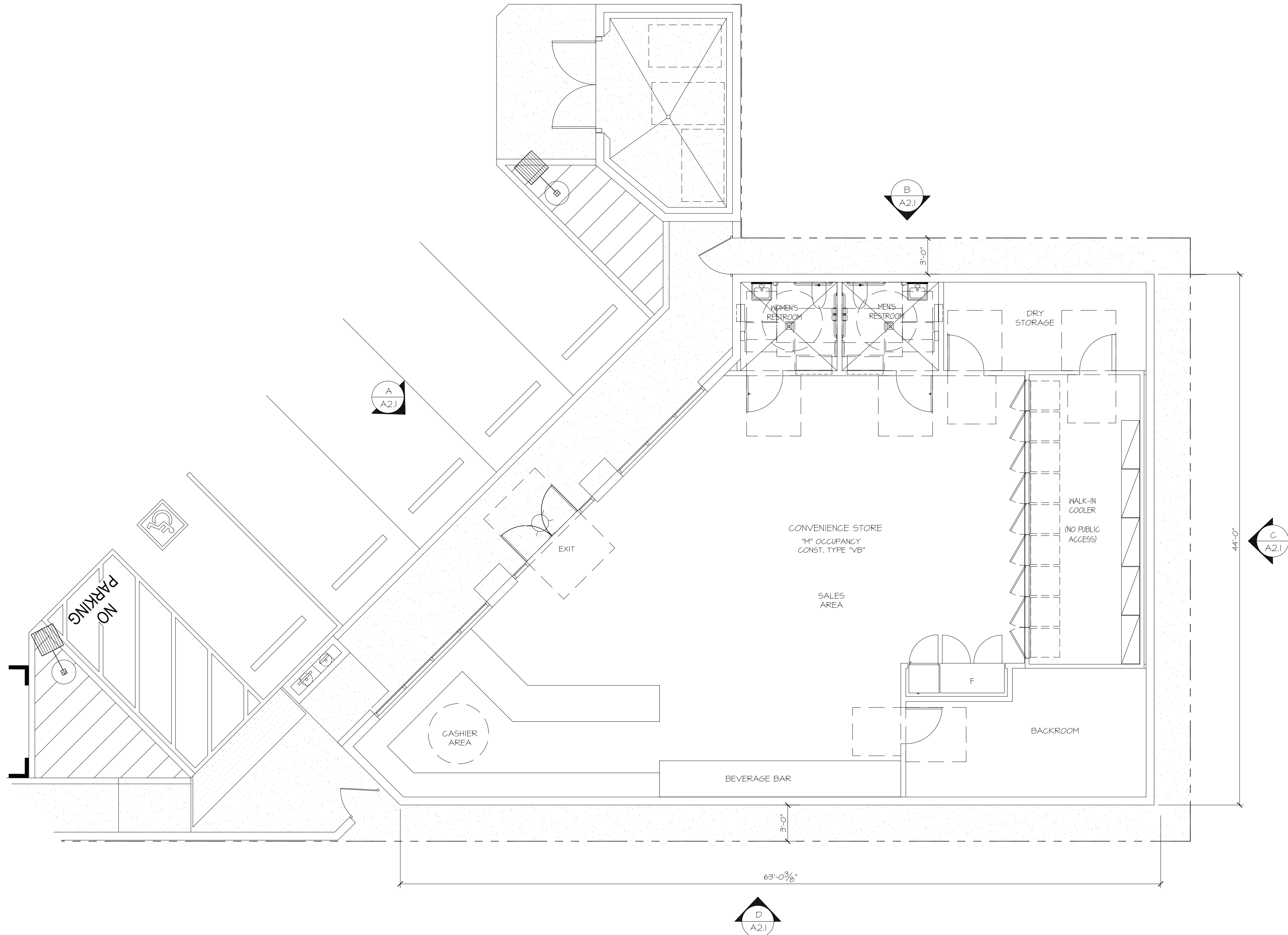


Ciardella
associates
Landscape Architecture
Urban Design
PO Box 3745
200 Clock Tower Place
Suite D100-A
Carmel by the Sea, CA 93901
Tel 831 624 6100
Tel 650 326 6100
ca@ciardella-assoc.com

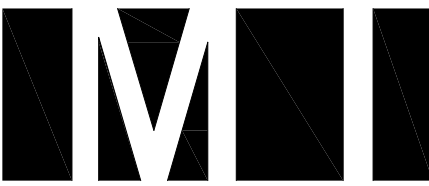
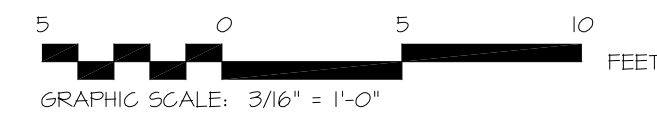
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2 CARWASH FLOOR PLAN
3/16" = 1'-0"



1 CONVENIENCE STORE FLOOR PLAN
3/16" = 1'-0"



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ARCHITECTURE
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MANAGEMENT
DESIGN
2221 OLYMPIC BLVD.,
SUITE 100
WALNUT CREEK, CA
94595
925-287-1174 Tel
925-943-1581 Fax
925-878-9875 Cell
mihouse@miaarchitect.com
www.miaarchitect.com

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STORE & CARWASH
2194 UNIVERSITY AVE.,
EAST PALO ALTO, CA 94549**

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CONVENIENCE STORE AND
CARWASH FLOOR PLAN

PROJECT #: 17-13001
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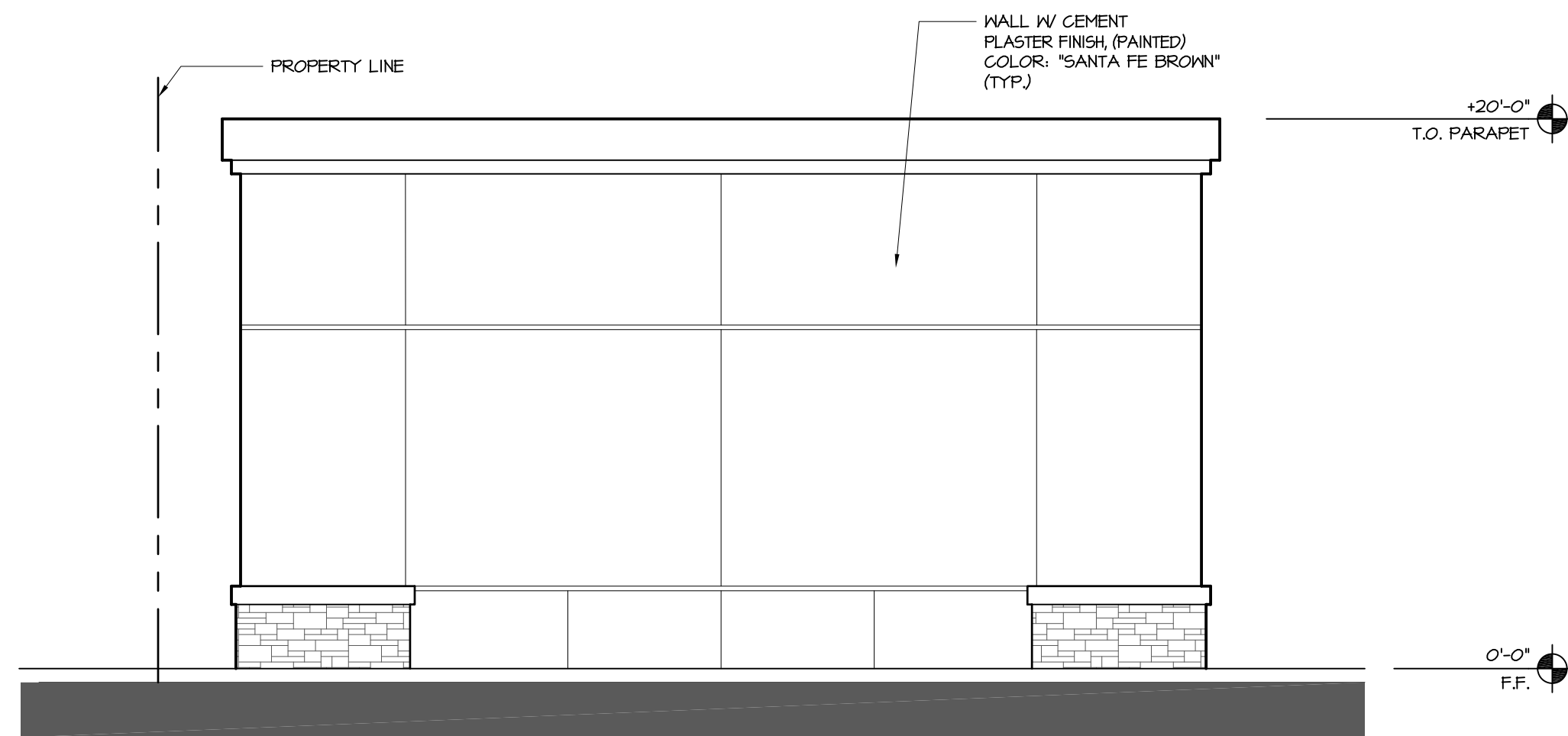
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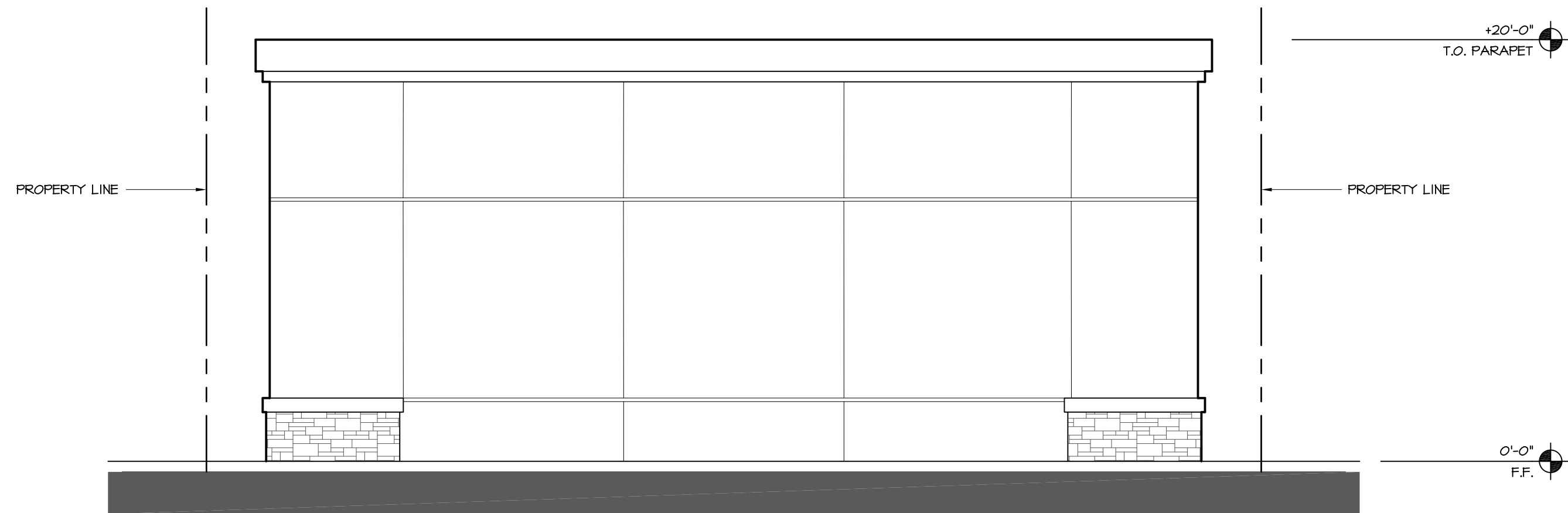
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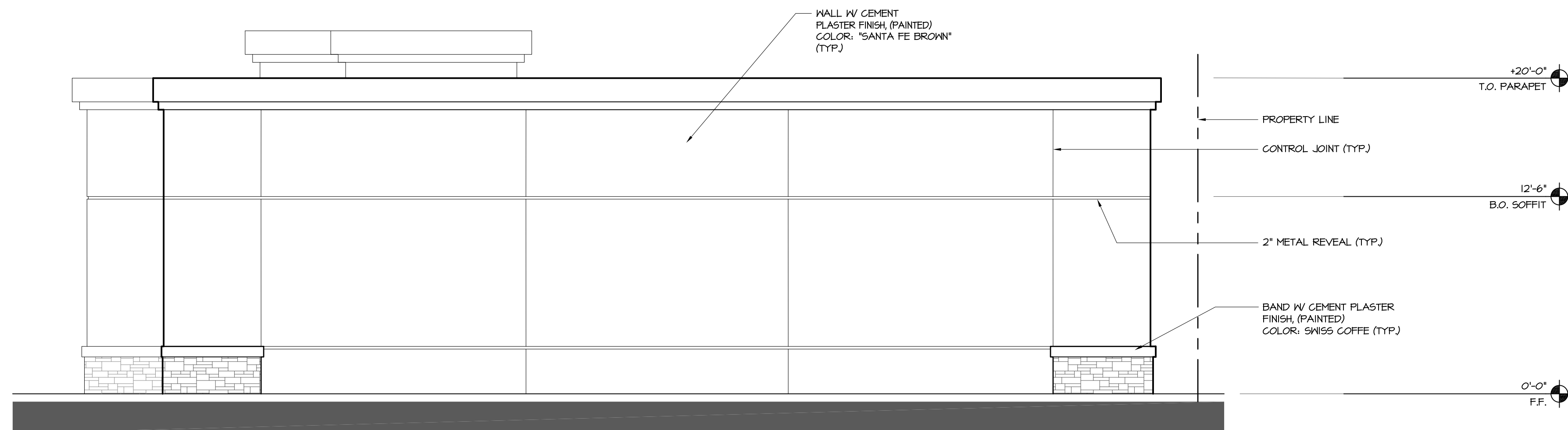
A NORTHWEST BUILDING ELEVATION (FACING UNIVERSITY AVE.)
3/16" = 1'-0"



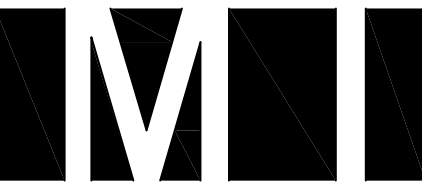
B NORTH BUILDING ELEVATION
3/16" = 1'-0"



C EAST BUILDING ELEVATION
3/16" = 1'-0"



D SOUTH BUILDING ELEVATION
3/16" = 1'-0"



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DESIGN
2221 OLYMPIC BLVD.,
SUITE 100
WALNUT CREEK, CA
94595
925-287-1174 Tel
925-943-1581 Fax
925-878-9875 Cell
muthana@miarchitect.com
www.miarchitect.com

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STORE & CARWASH
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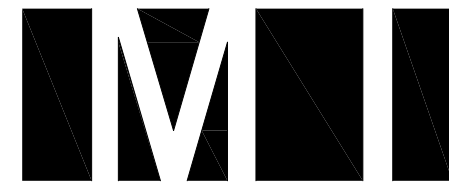
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CONVENIENCE STORE
BUILDING ELEVATIONS

PROJECT #: 17-13001
DRAWN: BM CHECKED: MI
SCALE: AS NOTED DATE: 07-30-18

A2.1

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925-287-1174 Tel
925-943-1581 Fax
925-878-9875 Cell
muthana@miarchitect.com
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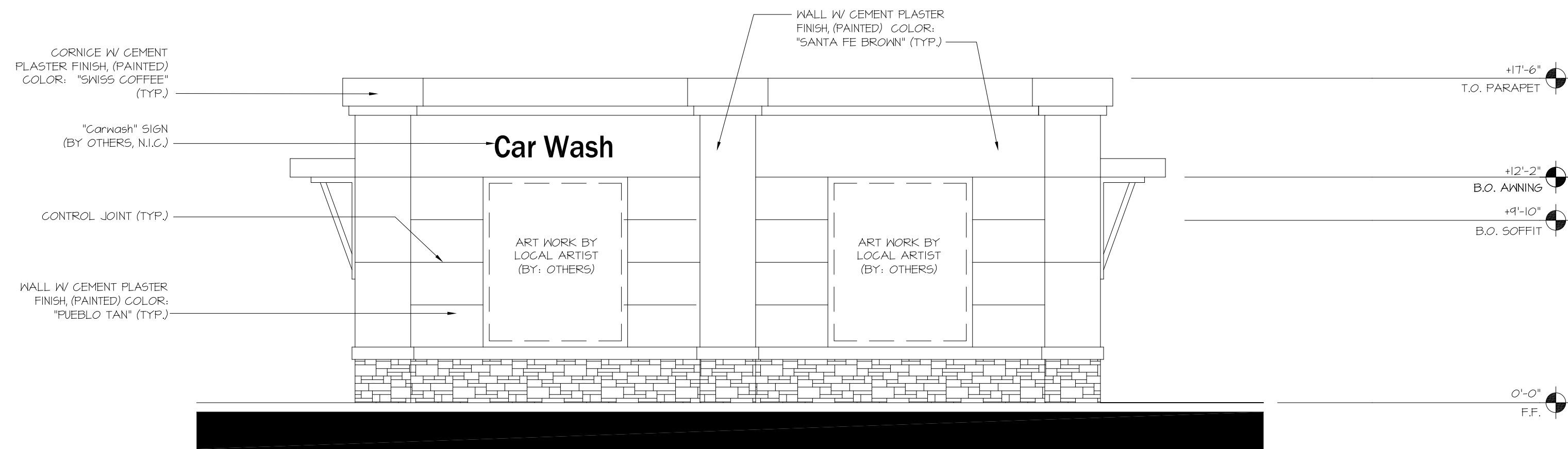
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ISSUED FOR PLAN CHECK
ISSUED FOR PLANNING

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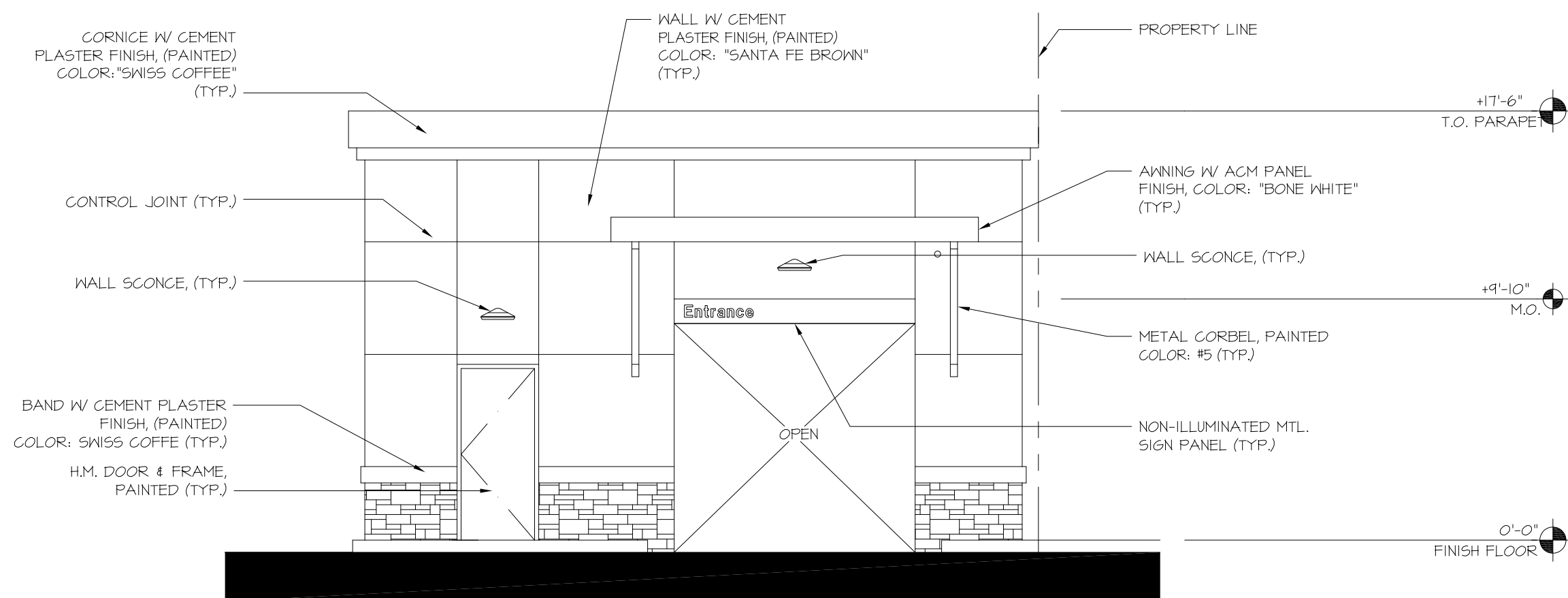
CARWASH
BUILDING ELEVATIONS
PROJECT #: 17-13001
DRAWN: BM CHECKED: MI
SCALE: AS NOTED DATE: 07-30-18

A2.2

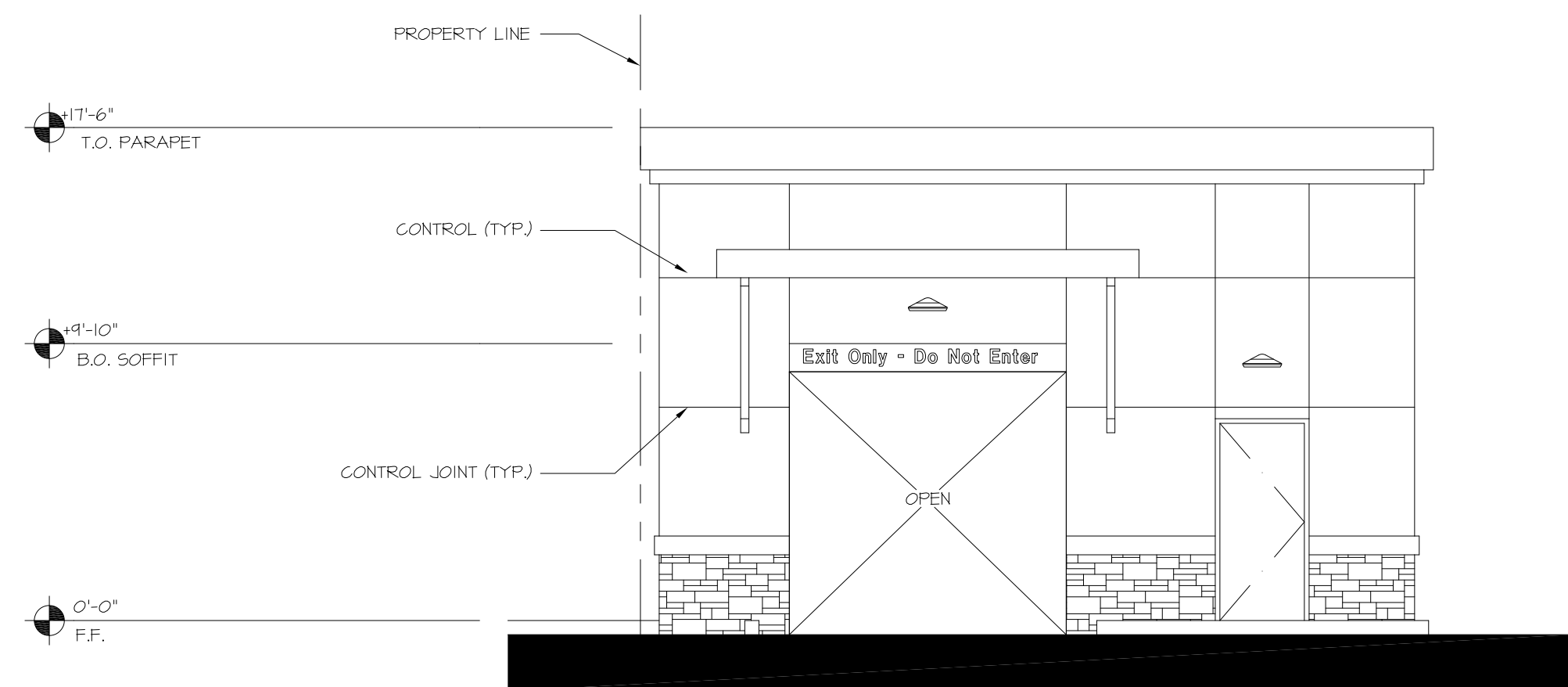
SHEET OF



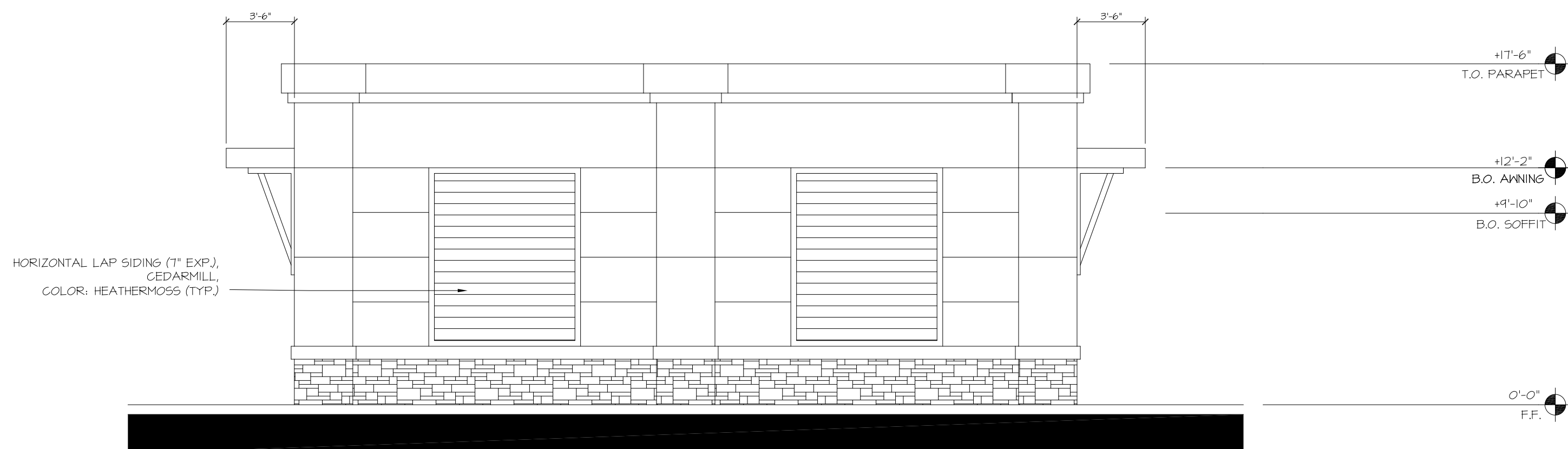
A WEST CARWASH BUILDING ELEVATION (FACING UNIVERSITY AVE.)
3/16" = 1'-0"



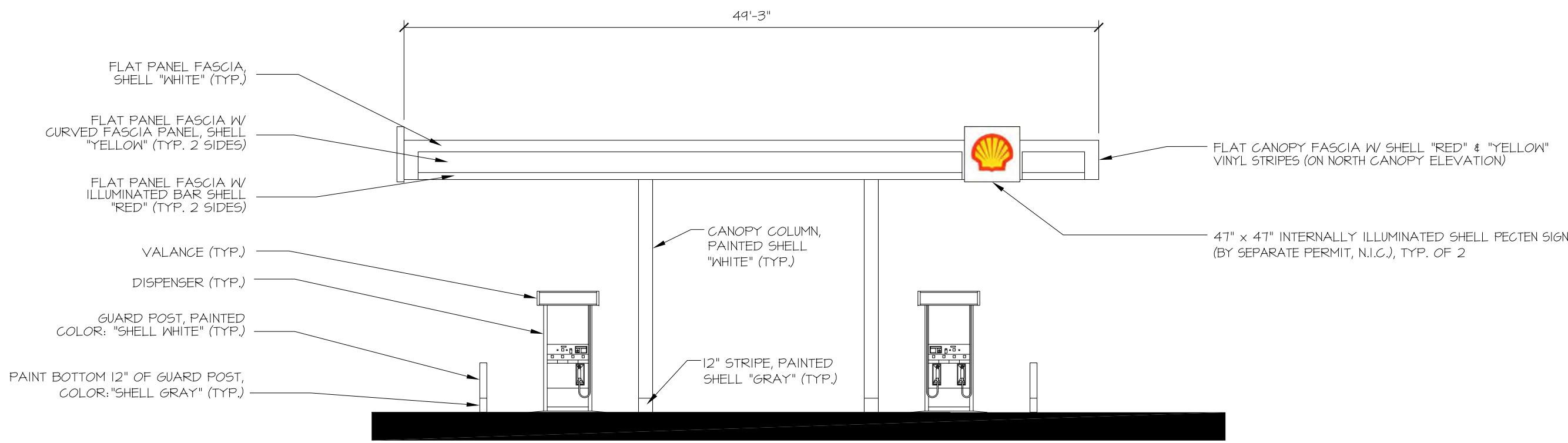
B NORTH CARWASH BUILDING ELEVATION (FACING BELL STREET)
3/16" = 1'-0"



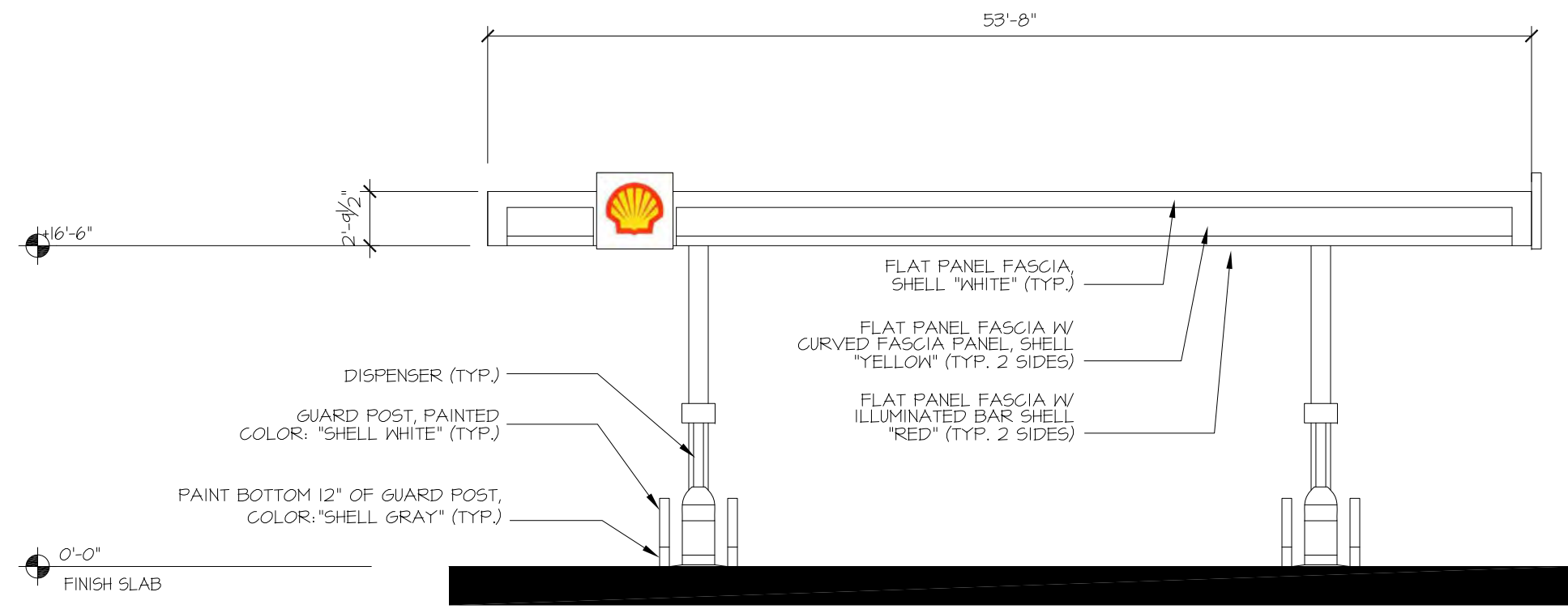
C SOUTH CARWASH BUILDING ELEVATION
3/16" = 1'-0"



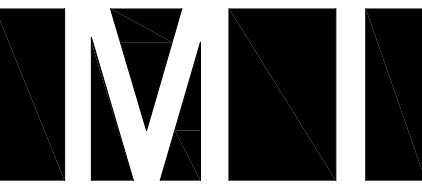
D EAST CARWASH BUILDING ELEVATION
3/16" = 1'-0"



A WEST ELEVATION (UNIVERSITY AVENUE)
1/8" = 1'-0"



B NORTH ELEVATION (BELL STREET)
1/8" = 1'-0"



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2221 OLYMPIC BLVD.,

SUITE 100

WALNUT CREEK, CA

94595

925-287-1174 Tel

925-943-1581 Fax

925-878-9875 Cell

muthana@miarchitect.com

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STORE & CARWASH
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CANOPY ELEVATIONS

PROJECT #: 17-13001
DRAWN: EMQ CHECKED: MII
SCALE: AS NOTED DATE: 07-30-18

CA1

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APPENDIX B

CALEEMOD RESULTS

University Ave, East Palo Alto, Gas Station Existing - Bay Area AQMD Air District, Annual

University Ave, East Palo Alto, Gas Station Existing
Bay Area AQMD Air District, Annual

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	8.00	Space	0.47	20,000.00	0
Gasoline/Service Station	3.00	Pump	0.01	423.52	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2018
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	641.35	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Construction Phase - existing no construction

Grading -

Energy Use -

Water And Wastewater - Connected to City Sewer System

Mobile Land Use Mitigation -

Table Name	Column Name	Default Value	New Value
tblLandUse	LandUseSquareFeet	3,200.00	20,000.00
tblLandUse	LotAcreage	0.07	0.47

2.0 Emissions Summary

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	3.5900e-003	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Energy	6.0000e-005	5.5000e-004	4.6000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	3.6503	3.6503	1.5000e-004	4.0000e-005	3.6658
Mobile	0.1297	0.4400	0.9371	1.6800e-003	0.1085	2.4200e-003	0.1109	0.0291	2.2700e-003	0.0314	0.0000	153.4271	153.4271	0.0107	0.0000	153.6953
Waste						0.0000	0.0000		0.0000	0.0000	0.3289	0.0000	0.3289	0.0194	0.0000	0.8147
Water						0.0000	0.0000		0.0000	0.0000	0.0126	0.0876	0.1002	1.3000e-003	3.0000e-005	0.1422
Total	0.1333	0.4405	0.9377	1.6800e-003	0.1085	2.4600e-003	0.1110	0.0291	2.3100e-003	0.0315	0.3415	157.1651	157.5066	0.0316	7.0000e-005	158.3181

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	0.1297	0.4400	0.9371	1.6800e-003	0.1085	2.4200e-003	0.1109	0.0291	2.2700e-003	0.0314	0.0000	153.4271	153.4271	0.0107	0.0000	153.6953
Unmitigated	0.1297	0.4400	0.9371	1.6800e-003	0.1085	2.4200e-003	0.1109	0.0291	2.2700e-003	0.0314	0.0000	153.4271	153.4271	0.0107	0.0000	153.6953

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Gasoline/Service Station	505.68	505.68	505.68	291,357	291,357
Parking Lot	0.00	0.00	0.00		
Total	505.68	505.68	505.68	291,357	291,357

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-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Gasoline/Service Station	9.50	7.30	7.30	2.00	79.00	19.00	14	27	59
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
Gasoline/Service Station	0.567674	0.042970	0.194260	0.117237	0.019396	0.005375	0.016640	0.023570	0.002459	0.002683	0.006005	0.000868	0.000864
Parking Lot	0.567674	0.042970	0.194260	0.117237	0.019396	0.005375	0.016640	0.023570	0.002459	0.002683	0.006005	0.000868	0.000864

5.0 Energy Detail

Historical Energy Use: N

	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 Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	3.0541	3.0541	1.4000e-004	3.0000e-005	3.0660
NaturalGas Unmitigated	6.0000e-005	5.5000e-004	4.6000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.5962	0.5962	1.0000e-005	1.0000e-005	0.5998

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					
Gasoline/Service Station	11172.5	6.0000e-005	5.5000e-004	4.6000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.5962	0.5962	1.0000e-005	1.0000e-005	0.5998
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	11172.5	6.0000e-005	5.5000e-004	4.6000e-004	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.5962	0.5962	1.0000e-005	1.0000e-005	0.5998

5.3 Energy by Land Use - Electricity
Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Gasoline/Service Station	3498.28	1.0177	5.0000e-005	1.0000e-005	1.0217
Parking Lot	7000	2.0364	9.0000e-005	2.0000e-005	2.0444
Total	4198.28	3.0541	1.4000e-004	3.0000e-005	3.0660

6.0 Area Detail

	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					
Unmitigated	3.5900e-003	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-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	6.4000e-004					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.9500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Total	3.6000e-003	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
--	-----------	-----	-----	------

Category	MT/yr			
Unmitigated	0.1002	1.3000e-003	3.0000e-005	0.1422

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Gasoline/Service Station	0.0398457 / 0.0044615	0.1002	1.3000e-003	3.0000e-005	0.1422
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.1002	1.3000e-003	3.0000e-005	0.1422

8.0 Waste Detail

8.1 Mitigation Measures Waste

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Unmitigated	0.3289	0.0194	0.0000	0.8147

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Gasoline/Service Station	1.62	0.3289	0.0194	0.0000	0.8147
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		0.3289	0.0194	0.0000	0.8147

2194 University Ave, East Palo Alto, Gas Station Renovation - Bay Area AQMD Air District, Annual

2194 University Ave, East Palo Alto, Gas Station Renovation - Operational Emissions
Bay Area AQMD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	8.00	Space	0.07	3,200.00	0
Convenience Market With Gas Pumps	3.00	Pump	0.43	18,777.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	4			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	206	CH4 Intensity (lb/MW hr)	0.029	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor was updated using 2018 (most current) data.

Land Use - From Site Plans, 3 pumps, 6 dispensers.

Construction Phase - From email from project proponent, 5 days demo, 4.5 months total time of construction (135 days).

Demolition - From Construction Spreadsheet.

Grading -

Energy Use -

Water And Wastewater - Connected to City Sewer System

Construction Off-road Equipment Mitigation - BAAQMD requires 3 waterings per day

Mobile Land Use Mitigation -

Energy Mitigation - Title 24 values are updated by increasiing the old values by 30%.

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	100.00	117.00
tblConstructionPhase	NumDays	10.00	5.00
tblGrading	MaterialExported	0.00	250.00
tblGrading	MaterialImported	0.00	750.00
tblLandUse	LandUseSquareFeet	423.52	18,777.00
tblLandUse	LotAcreage	0.01	0.43
tblProjectCharacteristics	CO2IntensityFactor	641.35	206

2.0 Emissions Summary

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	0.0834	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Energy	1.7000e-004	1.5300e-003	1.2800e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	19.0701	19.0701	2.4800e-003	5.4000e-004	19.2923
Mobile	0.2383	0.9597	1.6266	3.7900e-003	0.2639	3.8700e-003	0.2678	0.0708	3.6100e-003	0.0744	0.0000	349.3471	349.3471	0.0206	0.0000	349.8632
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0111	0.0222	0.0333	2.9000e-004	2.0000e-005	0.0480
Total	0.3219	0.9613	1.6280	3.8000e-003	0.2639	3.9900e-003	0.2679	0.0708	3.7300e-003	0.0746	0.0111	368.4395	368.4506	0.0234	5.6000e-004	369.2037

4.0 Operational Detail - 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					
Unmitigated	0.2383	0.9597	1.6266	3.7900e-003	0.2639	3.8700e-003	0.2678	0.0708	3.6100e-003	0.0744	0.0000	349.3471	349.3471	0.0206	0.0000	349.8632

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Convenience Market With Gas Pumps	1,627.80	613.41	500.64	709,054	709,054
Parking Lot	0.00	0.00	0.00		
Total	1,627.80	613.41	500.64	709,054	709,054

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Convenience Market With Gas	9.50	7.30	7.30	0.80	80.20	19.00	14	21	65
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
Convenience Market With Gas Pumps	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768
Parking Lot	0.576985	0.039376	0.193723	0.112069	0.016317	0.005358	0.017943	0.025814	0.002614	0.002274	0.005874	0.000887	0.000768

5.0 Energy Detail

Historical Energy Use: N

	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 Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	17.4078	17.4078	2.4500e-003	5.1000e-004	17.6201
NaturalGas Unmitigated	1.7000e-004	1.5300e-003	1.2800e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6623	1.6623	3.0000e-005	3.0000e-005	1.6722

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					
Convenience Market With Gas	31151	1.7000e-004	1.5300e-003	1.2800e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6623	1.6623	3.0000e-005	3.0000e-005	1.6722
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		1.7000e-004	1.5300e-003	1.2800e-003	1.0000e-005		1.2000e-004	1.2000e-004		1.2000e-004	1.2000e-004	0.0000	1.6623	1.6623	3.0000e-005	3.0000e-005	1.6722

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Convenience Market With Gas	185179	17.3031	2.4400e-003	5.0000e-004	17.5142
Parking Lot	1120	0.1047	1.0000e-005	0.0000	0.1059
Total		17.4078	2.4500e-003	5.0000e-004	17.6201

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					
Unmitigated	0.0834	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004

6.2 Area by SubCategory

Unmitigated

[illegible]

Consumer Products	0.0735					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004
Total	0.0834	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.0000e-004	2.0000e-004	0.0000	0.0000	2.1000e-004

7.0 Water Detail

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Unmitigated	0.0333	2.9000e-004	2.0000e-005	0.0480

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Convenience Market With Gas	0.0313715	0.0333	2.9000e-004	2.0000e-005	0.0480
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		0.0333	2.9000e-004	2.0000e-005	0.0480

APPENDIX C

HEALTH RISK ASSESSMENT

Health Risk Assessment

2194 University Avenue Gas Station

Draft

January 22, 2021



**Prepared by
EMC Planning Group**

HEALTH RISK ASSESSMENT

2194 UNIVERSITY AVENUE GAS STATION

Draft

PREPARED FOR

The City of East Palo Alto

Jia Liu AICP, Associate Planner

1960 Tate Street

East Palo Alto, CA 94303

Tel 650.853.3148

PREPARED BY

EMC Planning Group Inc.

301 Lighthouse Avenue, Suite C

Monterey, CA 93940

Tel 831.649.1799

Fax 831.649.8399

David Craft, Senior Planner

craft@emcplanning.com

www.emcplanning.com

January 22, 2021

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1.0 Introduction

1.1 INTRODUCTION

This report is a construction health risk assessment that analyzes the health risks from emissions generated by the proposed remodeling of the Shell Gas Station C-Store and Carwash located at 2194 University Ave., in the City of East Palo Alto (hereinafter “project”). The impact analysis is based on the guidance for the evaluation of health risks (cancer risk and non-cancer risk) impacts provided by the Bay Area Air Quality Management District (hereinafter “air district”).

This introductory section provides a description of the project. Section 2 describes the existing environmental setting including air quality conditions, and the regulatory setting for addressing emissions-related health risks. Section 3 identifies thresholds of significance and describes the analysis methodology. Section 4 presents an assessment of project-related health risks related to emissions generated by construction of the project, and Section 5 identifies references cited and includes a list of persons who prepared this technical report.

1.2 PURPOSE

The purpose of this report is to address community health risk impacts associated with the emissions generated by construction of the proposed project. Demolition and construction activities associated with the project would generate air pollutant emissions, which were predicted using models. Community health risk assessments typically look at all substantial sources of toxic air contaminants (TACs) that can affect sensitive receptors located within 1,000 feet of a project site, which is referred to as a project’s Zone of Influence. These sources include rail lines, highways, busy surface streets, and stationary sources. The potential health risk impacts to nearby sensitive receptors from exposure to emissions generated by project demolition and construction activity were evaluated in combination with exposures to existing TACs from stationary sources and high-traffic volume roadways.

1.3 PROJECT DESCRIPTION

The project is located on a 0.43-acre project site at the south east corner of the intersection of University Avenue and Bell Street. The site is bound by University Avenue to the west, Bell Street to the north, and single-family residential uses to the east and south. The project site is located in an established commercial zone district and is developed with an existing gas station. [Figure 1-1, Location Map](#), presents the regional location of the project site.

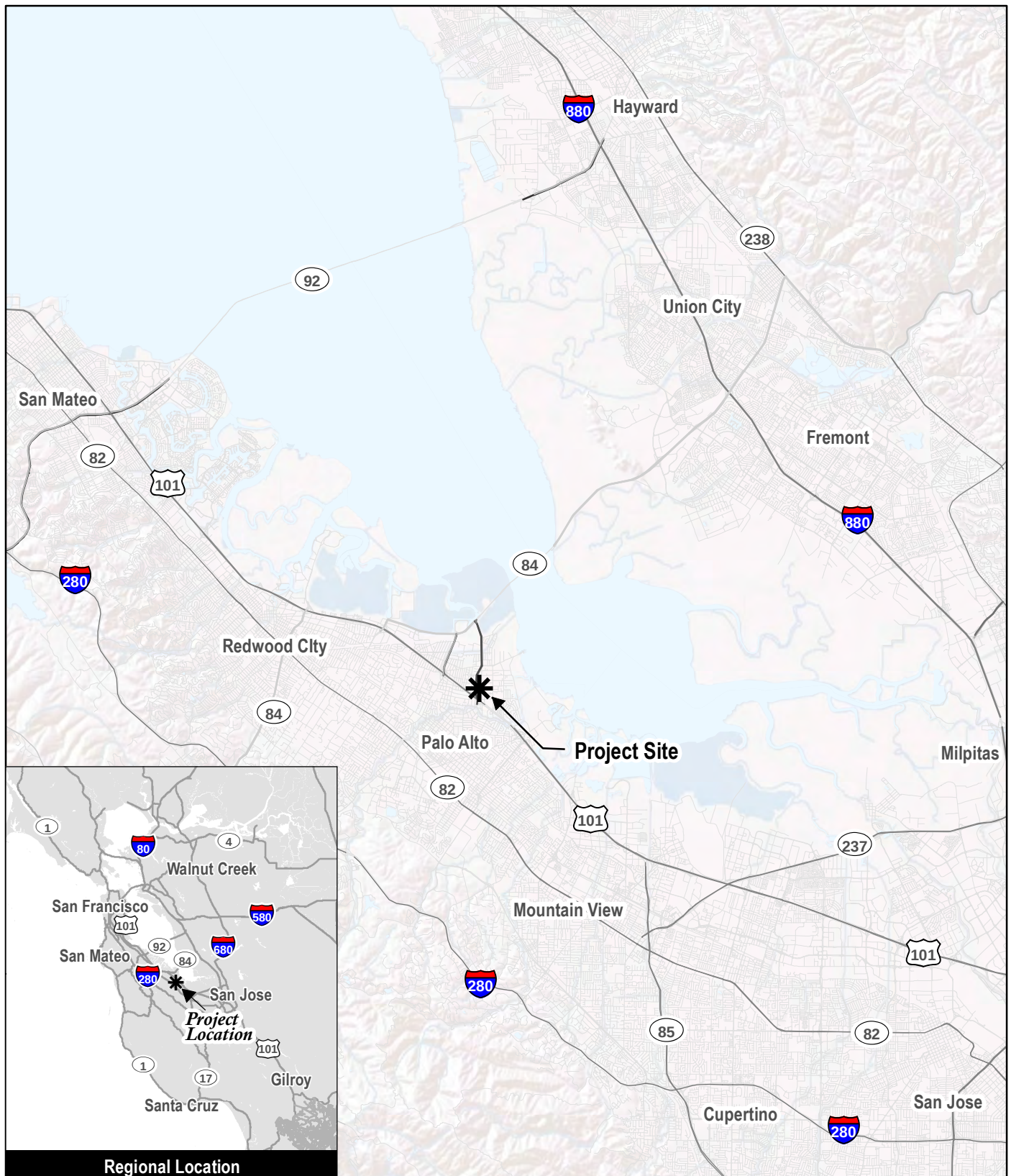
Existing Facility

The existing gas station consists of six fueling stations (three pumps), a 95 square foot service kiosk, a 1,618 square foot overhead canopy, underground storage tanks and associated piping, and an accessory structure.

Proposed Facility

The proposed project would remove all improvements and replace them with an approximately 2,208 square-foot convenience store, 726 square-foot carwash tunnel with a 365 square-foot equipment room, an approximately 2,006 square-foot fueling canopy covering three fuel dispensers, and two 15,000-gallon underground storage tanks with new fuel system. The site improvements include, eight off-street parking spaces, accessible path of travel to the right-of-way, masonry trash enclosure, site lighting, landscaping and self-service air and water equipment. (M. I. Architects, Inc., 2020). Demolition of the existing facility would take approximately five days.

Construction of the new facility is anticipated to occur over a period of approximately 4.5 months. Grading for the proposed project includes excavating and exporting 250 cubic yards of material and importing 750 cubic yards of materials. Excavated soils would be disposed of off-site.



Source: ESRI 2020

Figure 1-1
Location Map



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2.1 ENVIRONMENTAL SETTING

Regional Climate and Topography

The project is located in San Mateo County, which is in the San Francisco Bay Area Air Basin (hereinafter “air basin”). The air basin encompasses all of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, and Santa Clara Counties, and the southern portions of Solano and Sonoma counties.

The topography of the air basin is characterized by complex terrain, consisting of coastal mountain ranges, inland valleys and bays. This complex terrain, especially the higher elevations, distorts the normal wind flow patterns in the air basin. The greatest distortion occurs when low-level inversions are present and the air beneath the inversion flows independently of air above the inversion, a condition that is common in the summer time.

The climate of the air basin is determined largely by a high-pressure system that is usually present over the eastern Pacific Ocean off the west coast of North America. During winter, the Pacific high-pressure system shifts southward, allowing more storms to pass through the region. During summer and early fall, when few storms pass through the region, emissions generated within the Bay Area can combine with abundant sunshine under the restraining influences of topography and subsidence inversions to create conditions that are conducive to the formation of photochemical pollutants, such as ozone, and secondary particulates, such as nitrates and sulfates.

Temperature inversions can often occur during the summer and winter months. An inversion is a layer of warmer air over a layer of cooler air that traps and concentrates pollutants near the ground. As such, the highest air pollutant concentrations in the air basin generally occur during inversions (Bay Area Air Quality Management District 2017).

The project site is located in the Santa Clara Valley climatological subregion. The Santa Clara Valley subregion is bounded by the Bay to the north and by mountains to the east, south and west. Temperatures are warm on summer days and cool on summer nights, and winter temperatures are fairly mild. At the northern end of the valley, mean maximum temperatures are in the low-80's degrees Fahrenheit (°F) during the summer and the high-50's °F during the winter, and mean minimum temperatures range from the high-50's °F in

the summer to the low-40's °F in the winter. Winds in the valley are greatly influenced by the terrain, resulting in a prevailing flow that roughly parallels the valley's northwest-southeast axis. A north-northwesterly sea breeze flows through the valley during the afternoon and early evening, and a light south-southeasterly drainage flow occurs during the late evening and early morning. In the summer the southern end of the valley sometimes becomes a "convergence zone," when air flowing from the Monterey Bay gets channeled northward into the southern end of the valley and meets with the prevailing north-northwesterly winds. Wind speeds are greatest in the spring and summer and weakest in the fall and winter. Nighttime and early morning hours frequently have calm winds in all seasons, while summer afternoons and evenings are quite breezy. Strong winds are rare, associated mostly with the occasional winter storm (Bay Area Air Quality Management District 2017).

The air pollution potential of the Santa Clara Valley is high. High summer temperatures, stable air and mountains surrounding the valley combine to promote ozone formation. In addition to the many local sources of pollution, ozone precursors from San Francisco, San Mateo, Santa Clara, and Alameda counties are carried by prevailing winds to the Santa Clara Valley. The valley tends to channel pollutants to the southeast. In addition, on summer days with low level inversions, ozone can be recirculated by southerly drainage flows in the late evening and early morning and by the prevailing north-westerly winds in the afternoon. A similar recirculation pattern occurs in the winter, affecting levels of carbon monoxide and particulate matter. This movement of the air up and down the valley increases the impact of the pollutants significantly (Bay Area Air Quality Management District 2017).

Air Pollutants of Concern

The air basin is currently designated as a non-attainment area for state and national ozone standards, for state and national fine particulate matter (PM_{2.5}) standards, and state respirable particulate matter (PM₁₀) standards.

Ground-level ozone is caused by the cumulative emissions of reactive organic gases (ROG) and nitrogen oxides (NO_x). These precursor pollutants react under certain meteorological conditions to form ground-level ozone. Controlling the emissions of these precursor pollutants is the focus of the Bay Area's attempts to reduce ozone levels. The highest ozone levels in the Bay Area occur in the eastern and southern inland valleys that are downwind of air pollutant sources. High ozone levels aggravate respiratory and cardiovascular diseases, reduced lung function, and increase coughing and chest discomfort.

Particulate matter is another problematic air pollutant in the Bay Area. Particulate matter is assessed and measured in terms of respirable particulate matter or particles that have a diameter of 10 micrometers or less or PM₁₀ and fine particulate matter where particles have a diameter of 2.5 micrometers or less PM_{2.5}. Elevated concentrations of PM₁₀ and PM_{2.5} are the result of both region-wide (or cumulative) emissions and localized emissions. High

particulate matter levels aggravate respiratory and cardiovascular diseases, reduce lung function, increase mortality (e.g., lung cancer), and result in reduced lung function growth in children.

Toxic Air Contaminants

TACs have the potential to cause adverse health effects in humans, including increasing the risk of cancer upon exposure or acute (short-term) and/or chronic (long-term) non-cancer health effects. Examples of TACs include certain aromatic and chlorinated hydrocarbons, diesel particulate matter (DPM), certain metals, and asbestos. TACs are generated by a number of sources, including stationary sources such as dry cleaners, gas stations, combustion sources, and laboratories; mobile sources, such as automobiles; and area sources, such as landfills. Adverse health effects associated with exposure to TACs may include carcinogenic (i.e., cancer-causing) and non-carcinogenic effects. Non-carcinogenic effects typically affect one or more target organ systems and may be experienced through either acute or chronic exposure to a given TAC.

Construction activity that could affect nearby sensitive receptors include: emissions of TACs from construction equipment, trucks and evaporating gasoline that may have leaked into the soil. The project site is located on the Corner of Bell Street and University Avenue. University Avenue is a busy street with emissions included in the cumulative emissions discussion.

Construction Emissions

Construction emissions are typically generated by the use of heavy equipment, the transport of materials, and construction employee commute trips. Construction-related emissions consist primarily of ROG, NO_x, carbon monoxide, and PM₁₀ and PM_{2.5}. Emissions of ROG, NO_x, carbon monoxide, and exhaust particulate matter are generated primarily by the operation of gas and diesel-powered motor vehicles, asphalt paving activities, and the application of architectural coatings. Fugitive PM₁₀ and PM_{2.5} emissions are generated primarily by wind erosion of exposed graded surfaces.

Existing Emission Sources

Emissions from existing mobile and stationary sources can influence local air quality and contribute to community health risks.

Mobile Sources on Local Roadways

University Avenue is a north-south arterial roadway between Bayfront Expressway and Middlefield Road with weekday average daily traffic (ADT) between 24,765 to 30,122 vehicles per day traveling between Runnymede Street & Bell Street on University Avenue.

A review of the project influence area indicates that the average daily traffic (ADT) on University Avenue and Bell Street would exceed 10,000 vehicles. Other nearby streets are

assumed to have less than 10,000 vehicles per day. The health risk from exposures to emissions from the vehicles traveling along University Avenue at Bell Street is included in this analysis. [Table 2-1, Average Daily Traffic](#), shows the average daily traffic on University Avenue at Bell Street.

Table 2-1 Average Daily Traffic

Day of Week	North Bound	South Bound	Total
Weekday (M-F)	14,995	15,127	30,122
Weekend (S-S)	12,200	12,565	24,765

SOURCES: TJKM, 2019

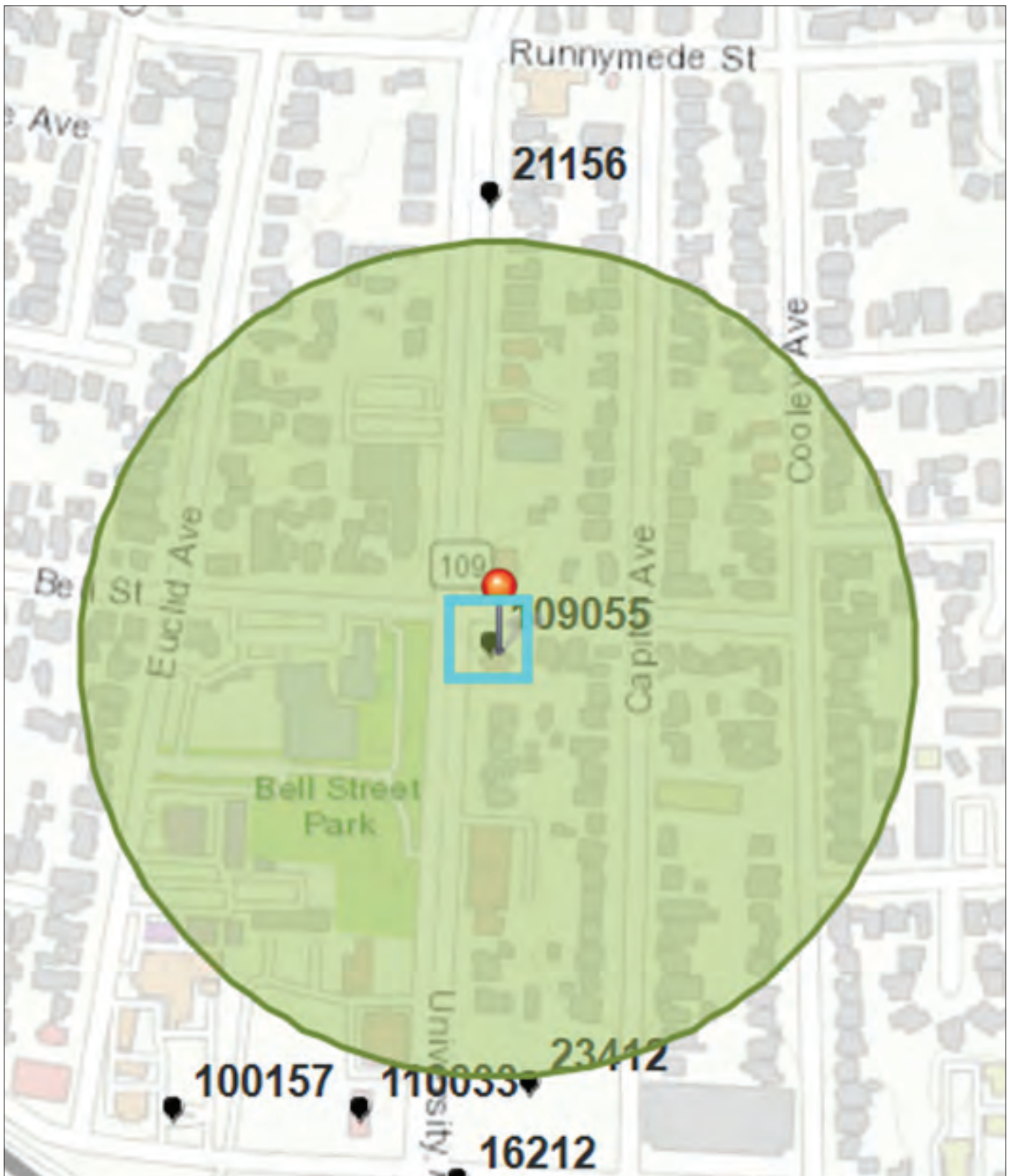
Stationary Sources

A stationary source consists of a single emission source with an identified emission point, such as a stack at an industrial facility. Facilities can have multiple emission point sources located on-site and sometimes the facility as a whole is referred to as a stationary source. Examples of air district-permitted stationary sources include refineries, gasoline dispensing stations, dry cleaning establishments, back-up diesel generators, boilers, heaters, flares, cement kilns, and other types of combustion equipment, as well as non-combustion sources such as coating or printing operations.

The community health risk assessment takes into account existing stationary source emissions that are located within 1,000 feet of a project site in addition to the project construction emissions. According to the air district's Permitted Stationary Source Risks and Hazards geographic information systems (GIS) map tool, no permitted stationary sources are located within 1,000 feet of the proposed project site. [Figure 2-1, Existing Stationary Sources Near the Project Site](#), shows the locations of nearby stationary sources of emissions, none of which are located within 1,000 feet of the site. Therefore, the analysis does not include emissions from these sources.

Sensitive Receptors

There are groups of people more affected by air pollution than others. Children, the elderly, and people with illnesses are especially vulnerable to the effects of air pollution. These groups are classified as sensitive receptors. Locations that may contain a high concentration of these sensitive population groups include residential areas, hospitals, daycare facilities, elder care facilities, and elementary schools. For cancer risk assessments, children are the most sensitive receptors, since they are more susceptible to cancer-causing TACs. Residential locations are assumed to include infants and small children.



1,000 Ft. Radius

Source: BAAQMD 2021

Figure 2-1

Existing Stationary Sources Near the Project Site



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The nearest sensitive receptors are the homes located adjacent to the east side of the property and adjacent to the south side of the property. Additionally, a senior center is located across the street to the west (Google, Inc. 2021). [Figure 2-2, Sensitive Receptor Locations](#), shows the area 1,000 feet from the project.

The closest sensitive receptors to the project site are the two single-family homes adjacent to the southern and eastern project site boundaries. Across University Avenue is a senior center, also a sensitive receptor.

2.2 REGULATORY SETTING

Federal

United States Environmental Protection Agency

The United States Environmental Protection Agency (EPA) was established on December 2, 1970 to create a single agency that covered several agency concerns: federal research, monitoring, standard-setting and enforcement.

The EPA regulates diesel engine design and has implemented a series of measures since 1996 to reduce NO_x and particulate emissions from off-road and highway diesel equipment. EPA Tier 1 non-road diesel engine standards were introduced in 1996, Tier 2 in 2001, Tier 3 in 2006, with final Tier 4 in 2014 (DieselNet 2017). [Table 2-2, Typical Non-road Engine Emissions Standards](#), compares emissions standards for NO_x and particulate matter from non-road engine Tier 1 through Tier 4 for typical engine sizes. As illustrated in the table, emissions for these pollutants have decreased significantly for construction equipment manufactured over the past 20 years, and especially for construction equipment manufactured in the past five years.

Table 2-2 Typical Non-road Engine Emissions Standards

Engine Tier and Year Introduced	NO _x Emissions ¹			Particulate Emissions ¹		
	100-175 HP	175-300 HP	300-600 HP	100-175 HP	175-300 HP	300-600 HP
Tier 1 (1996)	6.90	6.90	6.90	--	0.40	0.40
Tier 2 (2001)	-- ²	-- ²	-- ²	0.22	0.15	0.15
Tier 3 (2006)	-- ²	-- ²	-- ²	-- ³	-- ³	-- ³
Tier 4 (2014)	0.30	0.30	0.30	0.015	0.015	0.015

SOURCE: DieselNet 2017

NOTES:

1. Expressed in g/bhp-hr, where g/bhp-hr stands for grams per brake horsepower-hour.
2. Tier 1 standards for NO_x remained in effect.
3. Not adopted, engines must meet Tier 2 PM standard.

State

California Air Resources Board

The California Air Resources Board (CARB) oversees regional air district activities and regulates air quality at the state level. CARB has adopted and implemented a number of regulations for stationary and mobile sources to reduce emissions of DPM. Several of these regulatory programs affect medium and heavy-duty diesel trucks that represent the bulk of DPM emissions from California highways.

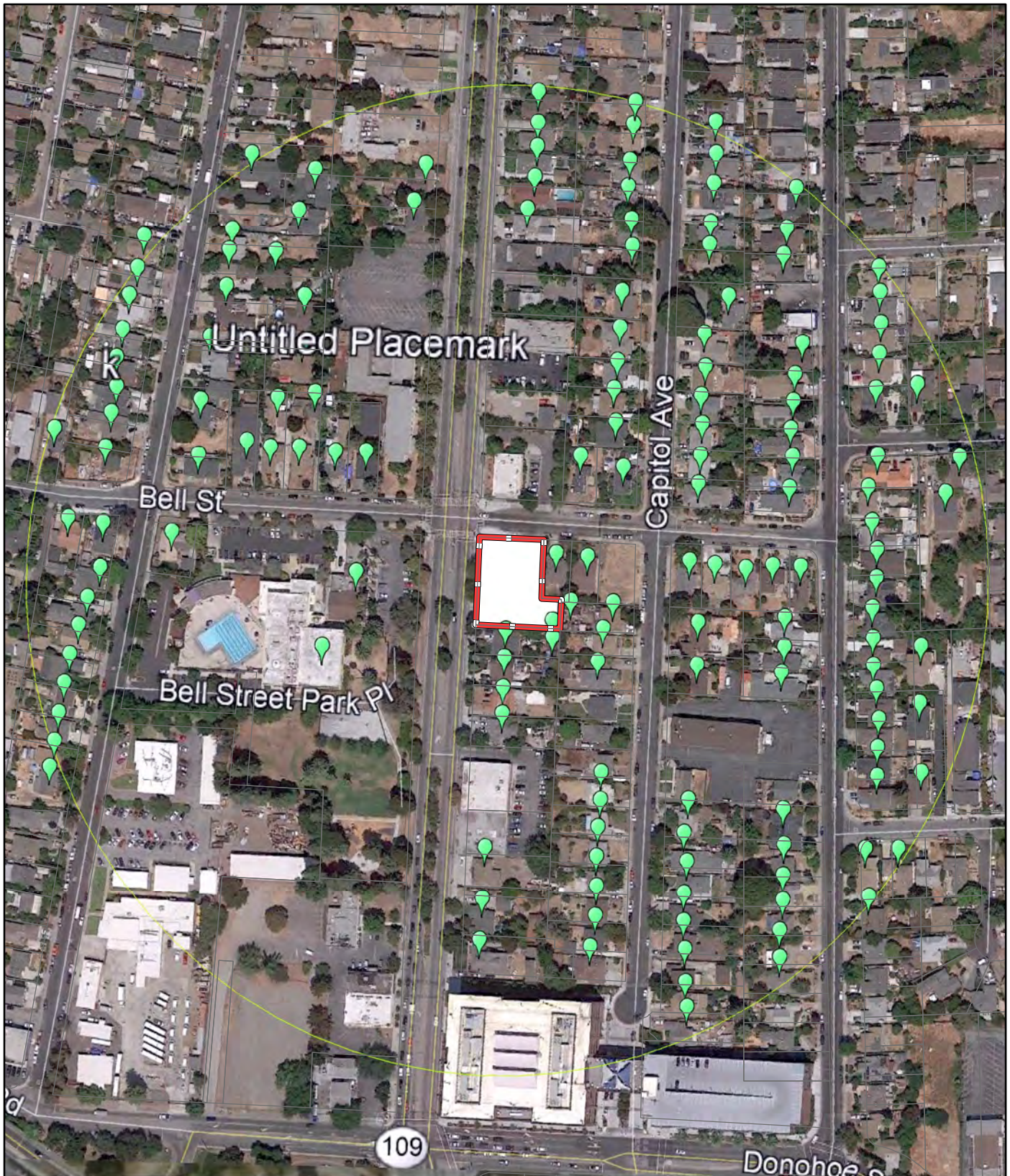
California Air Toxics Program

The Toxic Air Contaminant Identification and Control Act of 1983 or Assembly Bill 1807 established the California Air Toxics Program that was designed to reduce exposure to air toxics. The program involves a two-step process: risk identification and risk management. In the risk identification step, upon CARB's request, the Office of Environmental Health Hazard Assessment evaluates the health effects of substances other than pesticides and their pesticidal uses. Substances with the potential to be emitted or are currently being emitted into the ambient air may be identified as a TAC. Once a substance is identified as a TAC, and with the participation of local air districts, industry, and interested public, CARB prepares a report that outlines the need and degree to regulate the TAC through a control measure (California Air Resources Board 2020a).

The Air Toxics Hot Spots Information and Assessment Act or AB 2588 was enacted in 1987, and requires stationary sources to report the types and quantities of certain substances their facilities routinely release into the air. The goals of AB 2588 are to collect emission data, to identify facilities having localized impacts, to ascertain health risks, to notify nearby residents of significant risks, and to reduce those significant risks to acceptable levels (California Air Resources Board 2020b).

The State of California Office of Environmental Health Hazard Assessment (OEHHA) and California Air Resources Board (CARB) have developed recommended methods for conducting health risk assessments. The *Air Toxics Hot Spots Program Risk Assessment Guidelines: Guidance Manual for Preparation of Health Risk Assessments* (2015 guidelines) are the most recent OEHHA risk assessment guidelines. These guidelines incorporate substantial changes designed to provide for enhanced protection of children, as required by State law, compared to previous published risk assessment guidelines.

The air district has adopted the OEHHA's recommended procedures as part of Regulation 2, Rule 5: New Source Review of Toxic Air Contaminants. Exposure parameters from the 2015 guidelines and the *BAAQMD Air Toxics NSR Program Health Risk Assessment Guidelines* were used in this report.



0 300 feet



Construction Area



Receptor

Source: ESRI 2020, San Mateo County GIS 2020

Figure 2-2

Sensitive Receptor Locations

2194 University Avenue Gas Station Health Risk Assessment



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Truck and Bus Regulation

As heavy-duty on-road vehicles are a significant source of TACs, the Truck and Bus Regulation is one of the most far-reaching and important tools to reduce smog-forming and toxic emissions and protect public health in disadvantaged communities. The Truck and Bus Regulation requires all trucks and buses, by January 1, 2023, to have 2010 or newer model year engines to reduce DPM and NO_x emissions (California Air Resources Board 2020c). To help ensure that the benefits of this regulation are achieved, starting January 1, 2020, only vehicles compliant with this regulation will be registered by the California Department of Motor Vehicles.

In-Use Off-Road Diesel Vehicle Regulation

The goal of the In-Use Off-Road Diesel-Fueled Fleets Regulation is to reduce DPM and NO_x emissions from in-use (existing) off-road heavy-duty diesel vehicles in California (e.g., loaders, tractors, bulldozers, backhoes, off-highway trucks, etc.) (California Air Resources Board 2020d). This regulation applies to all diesel-powered off-road vehicles with engines 25 horsepower or greater. The regulations are intended to reduce DPM and NO_x exhaust emissions by requiring owners to turn over their fleet (replace older equipment with newer equipment) or retrofit existing equipment in order to achieve specified fleet averaged emission rates.

Regional/Local

Bay Area Air Quality Management District

The air district is charged with regulatory authority over stationary sources of air emissions, monitoring air quality within the air basin, providing guidelines for analysis of air quality impacts pursuant to California Environmental Quality Act (CEQA), and preparing an air quality management plan to maintain or improve air quality in the air basin. The air district's *2017 CEQA Air Quality Guidelines* (2017 CEQA Guidelines) contain instructions on how to evaluate, measure, and mitigate air quality impacts generated from land development construction and operation activities. The 2017 CEQA Guidelines Table 8-3, *Additional Construction Mitigation Measures Recommended for Projects with Construction Emissions Above the Threshold* suggests that all construction equipment, diesel trucks, and generators be equipped with Best Available Control Technology for emission reductions of NO_x and PM. This generally means Tier 4 diesel engines are needed. Additionally, all contractors should use equipment that meets CARB's most recent certification standard for off-road heavy-duty diesel engines.

These guidelines apply throughout the Bay Area. They are very useful when evaluating the impacts on communities which experience greater exposures to toxic emissions. Six communities within the Bay Area have been identified. These are called by the acronym

CARE Community Air Risk Evaluation (CARE) communities. They were identified, among other reasons, so that proposed projects within those areas are carefully reviewed to determine if the air quality impacts from a proposed project are acceptable.

General Plan

The *Vista 2035 - East Palo Alto General Plan* (general plan) includes goals, policies, and actions to reduce exposures of the City's sensitive population to air pollutant and TAC emissions.:

General plan Goal HE-4 calls for safely and systemically addressing toxics, legacy pollutants, and hazardous materials. Policy 4.2 calls for coordination with state, federal, regional, and local agencies to eliminate and reduce concentrations of regulated legacy pollutants. There are no policies directly related to construction emissions.

Significance Criteria and Methodology

3.1 BAY AREA AIR QUALITY MANAGEMENT DISTRICT SIGNIFICANCE THRESHOLDS

The air district's 2017 CEQA Guidelines provide cancer and non-cancer thresholds to establish the level at which TACs would cause significant health risks in sensitive receptors. Project compliance with Qualified Community Risk Reduction Plan would result in a less than significant impact. For communities without a Qualified Community Risk Reduction Plan, compliance with the air district's quantified community risk significance thresholds would be a less than significant impact. A summary of the air district community risk thresholds of significance is presented in [Table 3-1, Community Risk Significance Thresholds](#).

Table 3-1 Community Risk Significance Thresholds

Health Risks and Hazards	Single Sources Within 1,000-foot Zone of Influence	Cumulative Sources Within 1,000-foot Zone of Influence
Excess Cancer Risk	>10.0 per one million	>100 per one million
Non-Cancer Hazard Index	>1.0	>10.0
Incremental annual PM _{2.5}	>0.3 µg/m ³	>0.8 µg/m ³

SOURCE: Bay Area Air Quality Management District 2017

3.2 METHODOLOGY AND APPROACH

Construction emissions were estimated using the California Emissions Estimator Model Version 2016.3.2 (CalEEMod) model. Dispersion modeling was conducted using the EPA's AERMOD model and hourly meteorological data from the most representative monitoring station (Palo Alto Airport). Emissions obtained from CalEEMod were used to develop construction period emission rates based on project-specific information. The cancer risks associated with modeled construction-period DPM concentrations were computed following air district risk management policy guidance. The estimated risks were compared to the air district's single-source thresholds for cancer risk of 10 in one million, non-cancer hazards and PM_{2.5} concentrations, presented previously in Table 3-1.

Permitted stationary source data obtained from the air district were used to predict the cumulative community risk impacts at the maximally exposed individual (MEI). Local roadways in the vicinity of the project site where the average daily traffic exceeds 10,000 vehicles would require dispersion modeling using the AERMOD model to estimate risks and hazards. The cumulative risks were then compared against the air district's cumulative thresholds for cancer risk, non-cancer hazards, and PM_{2.5} concentration.

Significant impacts can be mitigated using equipment that can meet Tier 4 standards applicable to diesel construction equipment.

A list of reasonable and feasible dust control measures to control PM_{2.5} was developed to reduce construction air quality impacts and, if necessary, additional measures to reduce construction community risk or air emissions to acceptable levels.

CalEEMod Modeling

The model output from CalEEMod is included as [Appendix A](#).

CalEEMod provided annual emissions for both on- and off-site construction activities. On-site activities are primarily made up of construction equipment emissions, while off-site activity includes worker, hauling, and vendor traffic. CalEEMod defaults were used for the equipment types, quantity, and usage when information was not available.

Based on information provided by the project applicant, construction would begin in April 2021 and last 4.5 months. Demolition of existing structures and paved areas would occur over five days. The proposed demolition/earthwork volumes and construction activity were modeled as follows:

- Three pumps, six nozzles, and 18,777 square feet, or 0.43 acres square feet entered as "Convenience Market with Gas Pumps";
- Eight parking spaces totaling 3,200 square feet entered as "Parking Lot";
- 750 cubic yards of soil imported during grading; and 250 cubic yards exported; and
- 200 square feet of existing buildings and paved areas demolition.

CalEEMod estimated total annual exhaust PM₁₀ emissions (assumed to be DPM) from the off-road construction equipment and on-road vehicles for the overall construction period at 0.0290 tons per year. The on-road emissions are a result of haul truck travel during demolition and grading activities, worker travel, and vendor deliveries during construction. A trip length of one mile was used to represent vehicle travel while at or near the construction site. It was assumed that these emissions from on-road vehicles traveling at or near the site would occur at the construction site.

Fugitive PM_{2.5} emissions were also calculated by CalEEMod to be 1.1821 lbs per day during the less than 5-month construction period.

Dispersion Modeling

For short-term construction, a dispersion modeling analysis was conducted of DPM emitted from diesel vehicles and construction equipment on the proposed project site for the health risk assessment to assess the health risk impacts of the project's construction on nearby off-site sensitive receptors. The dispersion modeling was performed using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), which is an air district-recommended model for modeling atmospheric dispersion of emissions. Principal parameters of AERMOD for the project included the following:

- The 5-year meteorological data set (2013-2017) from the Palo Alto Airport provided by the California Air Resources Board;
- Construction emissions were modeled as occurring daily between 8:00 a.m. to 6:00 p.m. from Monday through Friday;
- Combustion equipment exhaust emissions (DPM) were modeled as an area source with an emission release height of 3.5 meters (10 feet). The elevated source height reflects the height of the equipment exhaust pipes plus an additional distance for the height of the exhaust plume above the exhaust pipes to account for plume rise of the exhaust gases; and
- Receptor height of 1.5 meters were used to represent the breathing heights of residents in the nearby homes.

Health Risk Calculations

Cancer Risk

Potential increased cancer risk from inhalation of TACs are calculated based on the TAC concentration over the period of exposure, inhalation dose, the TAC cancer potency factor, and an age sensitivity factor to reflect the greater sensitivity of infants and children to cancer causing TACs. The inhalation dose depends on a person's breathing rate, exposure time and frequency and duration of exposure. These parameters vary depending on the age, or age range, of the persons being exposed and whether the exposure is considered to occur at a residential location or other sensitive receptor location.

The 2015 guidelines recommend that cancer risk be calculated by age groups to account for different breathing rates and sensitivity to TACs. Specifically, they recommend evaluating risks for the third trimester of pregnancy to age zero, ages zero to less than two (infant exposure), ages two to less than 16 (child exposure), and ages 16 to 70 (adult exposure). Age sensitivity factors (ASF) associated with the different types of exposure include: ASF of 10 for the third trimester and infant exposures, ASF of three for a child exposure, and ASF of one for an adult exposure. Also associated with each exposure type are different breathing rates, expressed as liters per kilogram of body weight per day (L/kg-day). As recommended by the

air district for residential exposures, 95th percentile breathing rates are used for the third trimester and infant exposures, and 80th percentile breathing rates for child and adult exposures. For children at schools and daycare facilities, the air district recommends using the 95th percentile breathing rates. Additionally, CARB and the air district recommend the use of a residential exposure duration of 30 years for sources with long-term emissions (e.g., roadways). For workers, assumed to be adults, a 25-year exposure period is recommended by the air district.

Under previous OEHHA and air district guidance, residential receptors were assumed to be at their home 24 hours a day, or 100 percent of the time. In the 2015 risk assessment guidelines, OEHHA includes adjustments to exposure duration to account for the fraction of time at home (FAH), which can be less than 100 percent of the time, based on updated population and activity statistics. The FAH factors are age-specific and are: 0.85 for third trimester of pregnancy to less than two years old, 0.72 for ages two to less than 16 years, and 0.73 for ages 16 to 70 years. Use of the FAH factors is allowed by the air district if there are no schools in the project vicinity that would have a cancer risk of one in a million or greater assuming 100 percent exposure (FAH = 1.0).

Functionally, cancer risk is calculated using the following parameters and formulas:

$$\text{Cancer Risk (per million)} = \text{CPF} \times \text{Inhalation Dose} \times \text{ASF} \times \text{ED/AT} \times \text{FAH} \times 10^6$$

Where:

- CPF is Cancer potency factor (mg/kg-day)⁻¹;
- ASF is Age sensitivity factor for specified age group;
- ED is Exposure duration (years);
- AT is Averaging time for lifetime cancer risk (years);
- FAH is Fraction of time spent at home (unitless); and
- Inhalation Dose = $C_{\text{air}} \times \text{DBR} \times A \times (\text{EF}/365) \times 10^{-6}$.

Where:

- C_{air} is Concentration in air (µg/m³);
- DBR is Daily breathing rate (L/kg body weight-day);
- A is Inhalation absorption factor;
- EF is Exposure frequency (days/year); and
- 10⁻⁶ is Conversion factor.

A summary of the health risk parameters used in this evaluation are presented in [Table 3-2, Health Risk Parameters](#).

Table 3-2 Health Risk Parameters

Parameter	Exposure Type →	Infant		Child		Adult
	Age Range →	3 rd Trimester	0<2	2<9	9<16	16-30
DPM Cancer Potency Factor (mg/kg-day) ⁻¹		1.10E+00	1.10E+00	1.10E+00	1.10E+00	1.10E+00
Daily Breathing Rate (L/kg-day) 80 th Percentile Rate		273	758	631	572	261
Daily Breathing Rate (L/kg-day) 95 th Percentile Rate		361	1,090	861	745	335
Inhalation Absorption Factor		1	1	1	1	1
Averaging Time (years)		70	70	70	70	70
Exposure Duration (years)		0.25	2	14	14	14
Exposure Frequency (days/year)		350	350	350	350	350
Age Sensitivity Factor		10	10	3	3	1
Fraction of Time at Home		0.85-1.0	0.85-1.0	0.72-1.0	0.72-1.0	0.73

SOURCES: Bay Area Air Quality Management District 2016 and Office of Environmental Health Hazard Assessment 2015

The Air District provides guidance for short term projects in the *Air Toxics NSR Program Health Risk Assessment Guidelines*, section 2.1.3.2, which suggest that:

“To ensure that short-term projects do not result in unanticipated higher cancer impacts due to short-duration high-exposure rates, the Air District recommends that the cancer risk be evaluated assuming that the average daily dose for short-term exposure lasts a minimum of three years for projects lasting three years or less. For residential exposures, the cancer risk calculations should include the most sensitive age groups (beginning with the third trimester of pregnancy) and should use the 95th percentile breathing rates. The Air District recommends following OEHHA guidelines for other aspects of short-term projects. In summary, the Air District recommends the use of actual emission rates over a minimum 3-year duration for cancer risk assessments involving projects lasting 3 years or less, and the use of actual project duration for cancer risk assessments on projects lasting longer than 3 years.”

Non-Cancer Hazards

Potential non-cancer health hazards from TAC exposure are expressed in terms of a hazard index, which is the ratio of the TAC concentration to a reference exposure level. OEHHA has defined acceptable concentration levels for contaminants that pose non-cancer health hazards. TAC concentrations below the reference exposure level are not expected to cause

adverse health impacts, even for sensitive individuals. The total hazard index is calculated as the sum of the hazard indexes for each TAC evaluated and the total hazard index is compared to the air district's significance thresholds to determine whether a significant non-cancer health impact from a project would occur. Typically, for construction projects the primary TAC of concern with non-cancer health effects is DPM from the diesel construction equipment. For DPM, the chronic inhalation reference exposure level is $5 \mu\text{g}/\text{m}^3$.

Annual PM_{2.5} Concentrations

While not a TAC, PM_{2.5} has been identified by the air district as a pollutant with potential non-cancer health effects that should be included when evaluating potential community health impacts under CEQA. The thresholds of significance for PM_{2.5} (project-level and cumulative) are in terms of an increase in the annual average concentration. When considering PM_{2.5} impacts, the contribution from all sources of PM_{2.5} emissions should be included. For projects with potential impacts from nearby local roadways, the PM_{2.5} impacts should include those from vehicle exhaust emissions, PM_{2.5} generated from vehicle tire and brake wear, and fugitive emissions from re-suspended dust on the roads.

4.0 Analysis

4.1 CONSTRUCTION HEALTH RISKS

Project construction activity would generate TACs, dust and equipment exhaust on a temporary basis that could affect nearby sensitive receptors. A construction community health risk assessment was prepared to address project construction impacts on the surrounding off-site sensitive receptors.

Cancer Risk from Diesel Particulate Emissions

The average daily construction emissions of DPM and PM_{2.5} were calculated using CALHEMOD over the 4.5-month construction period. CalHEMOD estimates construction criteria air pollutant emissions in tons per year. CalHEMOD estimates a total of 389 construction days. Average daily emissions (in pounds per day) are computed by dividing the annual construction emissions (in pounds per year) by the number of construction days.

Downwind concentrations of DPM were calculated using AERMOD. Sensitive, residential, and commercial receptors were included within a 1000-foot radius of the construction activity (refer also to Figure 2-2). The highest average downwind concentration is the Point of Maximum Impact (PMI). The Point of maximum impact (PMI) and the Maximally Exposed Individual (MEI) is located at the single-family home located adjacent to the project site to the south. [Figure 4-1, Location of the PMI/MEI](#), shows the PMI and MEI located at the same place. Figure

The average annual unmitigated concentration of DPM at the MEI would be 0.49 ug/m³. The average annual concentration of DPM at the at the home adjacent to the project to the east would be approximately 1.43e-2 ug/m³. The average annual concentration of DPM at the at the senior center across the street to the west of the project would be 6.0e-3 ug/m³. [Figure 4-2, Concentrations of DPM](#), shows the PMI and the modeled concentrations of DPM from construction activity on the site.

[Table 4-1, Unmitigated and Mitigated Average Daily Diesel Particulate Matter \(DPM\) Emissions](#), show average daily emissions of DPM and PM_{2.5} with and without diesel exhaust emissions reducing measures.

Table 4-1 Unmitigated and Mitigated Average Daily Diesel Particulate Matter (DPM) Emissions.

Emissions Year	Unmitigated Exhaust DPM (PM ₁₀)	Mitigated Exhaust DPM (PM ₁₀)	% Reduction
2021 Construction Emissions (tons/year)	0.0290	0.00456	85%

SOURCE: EMC Planning Group 2021

NOTES: Results may vary due to rounding.

The maximum cancer risks for project-related construction activities at the MEI are summarized in [Table 4-2, Unmitigated Construction Cancer Risks at the MEI](#). Detailed health risk calculations are included in [Appendix B](#).

Table 4-2 Unmitigated Construction Cancer Risks at the MEI^{1,2}

Construction Year	DPM PM ₁₀ Concentration (ug/m ³)	Infant/Child Cancer Risk (per million)	Adult Cancer Risk (per million)
2021 (0.25 years during pregnancy)	0.49	6.66	NA
2021	0.49	40.24	0.703
Air District Single-Source Threshold	-	10.0	10.0
<i>Exceeds Thresholds?</i>	-	Yes	No

SOURCES: EMC Planning Group 2021 and Bay Area Air Quality Management District 2017

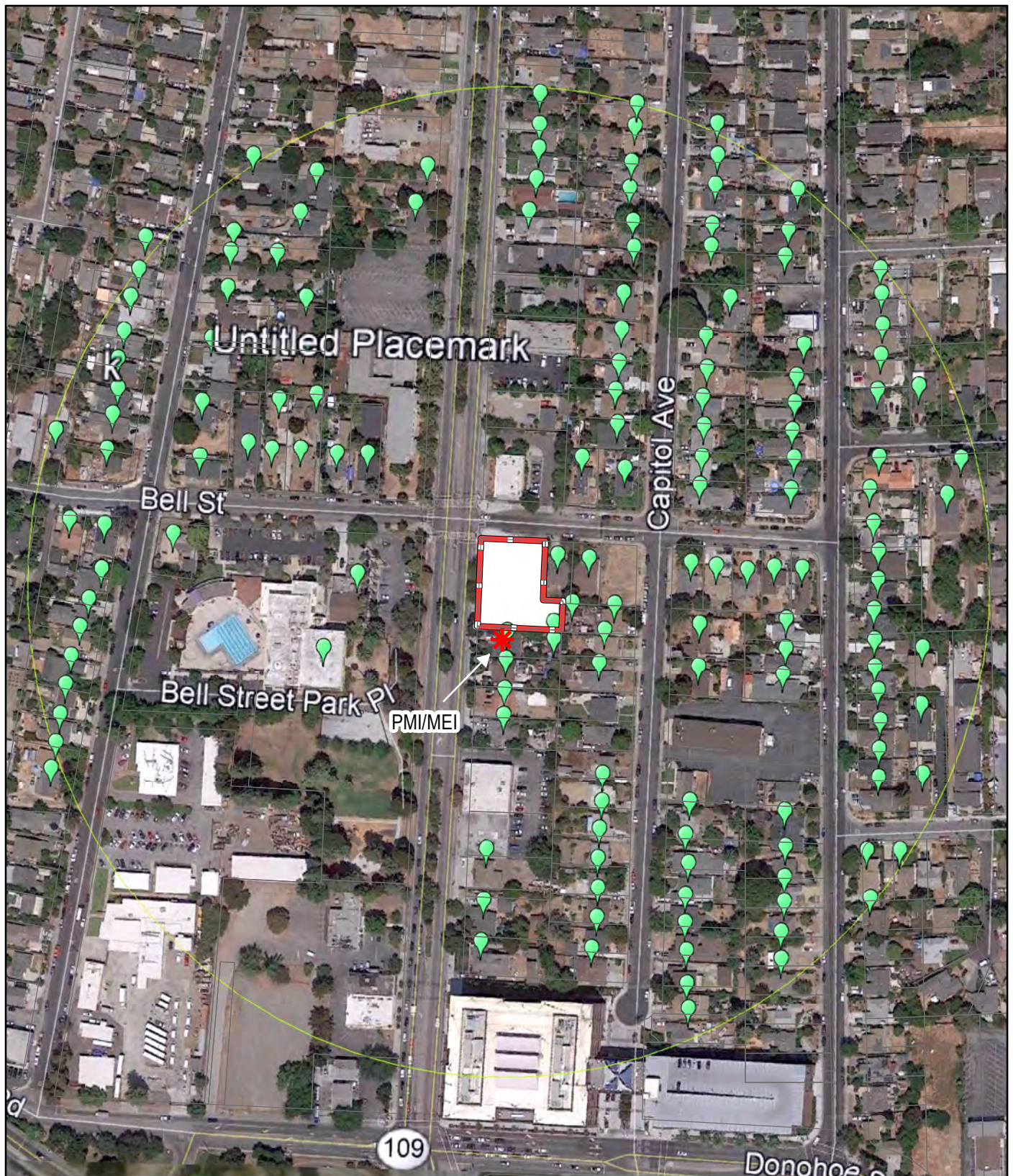
NOTES:

- Results have been rounded, and may, therefore, vary slightly.
- The MEI is located at a house located to the south of the project site. The UTM coordinates are approximately 575951.50 meters Easting and 4146814.35 Northing (Refer to Figure 4-1).

As shown in Table 4-2, construction of the proposed project would generate emissions that would increase infant/child cancer risks that exceed the air district's single source threshold. Mitigation is required to reduce the emissions to a level that does not increase cancer risks to unacceptable levels. The downwind concentration of DPM can be reduced by 85 percent (BAAQMD, Alison Kirk, 2020) using diesel particulate filters on construction equipment, or by using construction equipment that meets Tier III standards.

Mitigation Measures

The following mitigation measures would reduce TAC emissions that increase risks of cancer at the MEI.



0 300 feet



Construction Area



Receptor



PMI/MEI

Source: ESRI 2020, San Mateo County GIS 2020

Figure 4-1

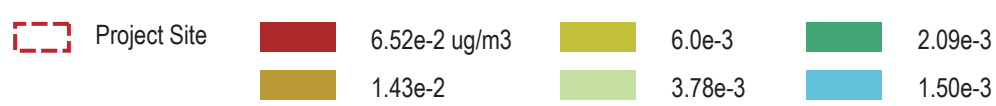
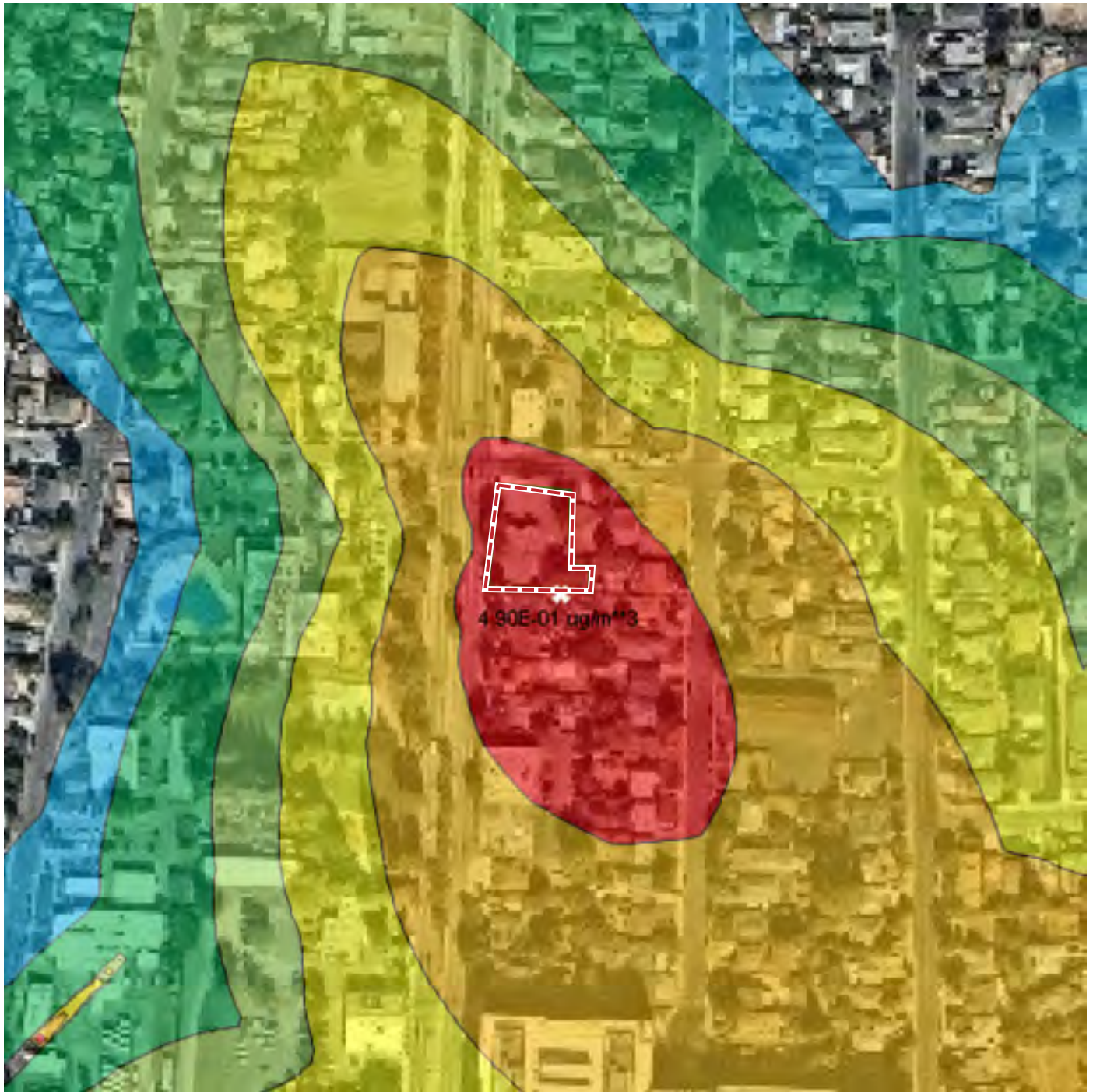
Location of the PMI/MEI

E

M

C

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Source: EMC Planning Group 2021

Figure 4-2

Concentrations of DPM

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Mitigation Measures

- AQ-1 During construction, the project contractor shall implement the following measures to reduce emissions of fugitive and exhaust particulate matter, subject to review and approval by the City of East Palo Alto Planning Director:
- a. All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered three times a day and at a frequency adequate to maintain minimum soil moisture of 12 percent. Moisture content can be verified by lab samples or moisture probe;
 - b. All haul trucks transporting soil, sand, or other loose material off-site shall be covered;
 - c. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited;
 - d. All vehicle speeds on unpaved roads shall be limited to 15 mph;
 - e. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used;
 - f. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points;
 - g. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation; and
 - h. Post a publicly visible sign with the telephone number and person to contact at the City of East Palo Alto regarding dust complaints. This person shall respond and take corrective action within 48 hours. The air district's phone number shall also be visible to ensure compliance with applicable regulations.
- AQ-2 The project developer shall prepare, and the project contractor shall implement, a plan to reduce construction particulate matter exhaust emissions by using equipment that can meet Tier III standards. The plan shall be prepared prior to

the issuance of a demolition or grading permit and shall be reviewed and approved by the City of East Palo Alto Planning Director and may include the following measures:

- a. All construction equipment larger than 25 horsepower used at the site for more than two continuous days or 20 hours total will reduce diesel particulate emissions by 85 percent;
- b. Use of alternatively fueled equipment or equipment with zero emissions (i.e., electrical equipment); and/or
- c. Provide line power to the site during the early phases of construction to minimize the use of diesel-powered stationary equipment, such as generators.

The plan shall utilize the above measures or equivalent measures, and must demonstrate that particulate matter exhaust emissions would be reduced to meet Tier III standards, and any alternative measures shall be subject to review and approval of the City of East Palo Alto Planning Director, prior to issuance of grading permits.

Table 4-3, [Mitigated Construction Cancer Risks at the MEI](#), shows the reduction that can be achieved with use of Tier III engines and/or diesel particulate filters on construction equipment. Detailed health risk calculations are included in [Appendix B](#).

Table 4-3 Mitigated Construction Cancer Risks at the MEI^{1,2}

Construction Year	DPM PM ₁₀ Concentration (ug/m ³)	Infant/Child Cancer Risk (per million)	Adult Cancer Risk (per million)
2021 (0.25 years during pregnancy)	0.08	1.05	-
2021	0.08	6.32	0.111
Air District Single-Source Threshold	-	10.0	10.0
<i>Exceeds Thresholds?</i>	-	<i>No</i>	<i>No</i>

SOURCES: EMC Planning Group 2021 and Bay Area Air Quality Management District 2017

NOTES:

1. Results have been rounded, and may, therefore, vary slightly.
2. The MEI is located at an adjacent house to the south of the project site. The UTM coordinates are approximately 575951.50 meters Easting and 4146814.35 Northing (Refer to Figure 4-1).

The amount of mitigation emission reductions is based on the assumption that all the diesel equipment will meet Tier III standards.

Chronic Risk from Diesel Particulate Emissions

Diesel particulate matter is evaluated for chronic toxicity using the Reference Exposure Level (REL) for DPM developed by OEHHA. The chronic risk is determined by dividing the downwind concentration by the REL. If the result is one or greater, then the chronic risk is would exceed the air district threshold. The unmitigated Hazard Index is shown in [Table 4-4, Chronic risk during construction at the MEI.](#)

Table 4-4 MEI Chronic Risks During Construction^{1,2}

Project Concentrations	DPM REL (ug/m ³)	DPM Concentration (ug/m ³)	Hazard Index
Unmitigated	5	0.49	0.1
Air District Single-Source Threshold	-	-	1.0
Exceeds Thresholds?	-	-	No

SOURCES: EMC Planning Group 2021 and Bay Area Air Quality Management District 2017

NOTES:

1. Results have been rounded, and may, therefore, vary slightly.
2. The MEI is located at a house located to the south of the project site. The UTM coordinates are approximately 575951.50 meters Easting and 4146814.35 Northing (Refer to Figure 4-1).

The unmitigated hazard index does not exceed the air district threshold. No mitigation is required.

Conclusion

Mitigation measures AQ-1 and AQ-2 require that the project contractor ensure best management practices and best available control technologies are implemented to reduce emissions of fugitive and exhaust particulate matter that contribute to cancer risks, and to implement a plan to reduce construction particulate matter exhaust emissions to meet Tier III standards. These conditions would need to be satisfied prior to issuance of grading permits. Implementation of mitigation measures AQ-1 and AQ-2 would reduce the cancer risks and PM_{2.5} concentrations at off-site sensitive receptors during project construction to a less-than-significant level.

4.2 CUMULATIVE HEALTH RISKS

Local Roadways

The BAAQMD Roadway Screening Analysis Calculator shows the health risks near high volume surface streets, such as University Avenue. Although the calculator is no longer used because the current risk assessment methodology accounts for more accurate higher risks results, even when using the older methodology, the cancer risk exceeds 10 per million at a distance of 50 feet from University Avenue at Bell Street. The PM_{2.5} threshold is also exceeded 50 feet from University Avenue at Bell Street (Illingworth Rodkin, Inc., 2016).

The cancer risk from mobile source emissions on University Avenue can be compared to the cancer risk from vehicle emissions on U.S. Highway 101, a high-volume freeway with far greater average daily traffic volumes than University Avenue. A recent study of emissions exposures for the Light Tree Apartment Projects identified a cancer risk of 64 per million for exposures to U. S. Highway 101 (Illingworth and Rodkin 2018). The ADT for U.S. Highway 101 in vicinity of East Palo Alto is over 200,000 vehicles per day, which is nearly six times greater than traffic volumes on University Avenue near the project site. For the purposes of this analysis the cancer risks from University Avenue is assumed to be approximately 10 per million.

Air District Permitted Stationary Sources

As noted previously in Section 2.1, according to the air district's Permitted Stationary Source Risks and Hazards GIS mapping tool, no permitted stationary sources exist within a 1,000-foot radius of the project site (Refer also to Figure 2-1).

Cumulative Community Risk

The cumulative community risk at the sensitive receptors most affected by the proposed project construction (at the construction MEIs) are summarized in [Table 4-5, Cumulative Cancer Risks at Construction MEIs](#).

Table 4-5 Cumulative Cancer Risks at Construction MEI.

Source	Unmitigated Cancer Risk (per million)	Unmitigated Chronic Hazard Index
Project Construction	40.24	0.08
University Avenue Traffic (30,122 ADT)	10.00	<1.00
Cumulative	50.24	<1
Air District Cumulative-Source Threshold	100.00	10.0
Exceeds Thresholds?	No	No

SOURCE: EMC Planning Group 2021

NOTES:

1. Results have been rounded, and may, therefore, vary slightly.
2. Includes the mitigation using Tier III engines.
3. A recent study of emissions exposures for the Light Tree Apartment Projects identified a cancer risk of 64 per million for exposures to US 101 a high-volume freeway. The University Avenue adjacent cancer risk will be much smaller due to the difference in traffic volumes.

PM_{2.5} Impacts

Emissions of PM_{2.5} were compared to the Air District's cumulative and project unmitigated PM_{2.5} significance thresholds. [Table 4-6, Project PM_{2.5} Health Risks at the MEI](#), shows the project's unmitigated contribution to cumulative PM_{2.5} health risks. The proposed project PM_{2.5} emissions will not exceed district standards. No mitigation is required.

Table 4-6 Project PM_{2.5} Health Risks at the MEI^{1,2}

Source	Unmitigated Annual PM_{2.5} Concentration (ug/m³)
Project Construction	0.077
Air District Cumulative-Source Threshold	0.80
<i>Exceeds Thresholds?</i>	<i>No</i>

SOURCE: EMC Planning Group 2021

NOTES:

1. Results have been rounded, and may, therefore, vary slightly.
2. Concentrations reported in µg/m³.

Conclusion

The proposed project would not result in a significant community health risk.

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5.0 Sources

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APPENDIX A

CALEEMOD RESULTS

University Ave, East Palo Alto, Gas Station Remodel - Bay Area AQMD Air District, Annual

University Ave, East Palo Alto, Gas Station Remodel
Bay Area AQMD Air District, Annual

1.0 Project Characteristics**1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	8.00	Space	0.07	3,200.00	0
Convenience Market With Gas Pumps	3.00	Pump	0.43	18,777.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	2.2	Precipitation Freq (Days)	64
Climate Zone	6			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	206	CH4 Intensity (lb/MWhr)	0.029	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor was updated using 2018 (most current) data.

Land Use - From Site Plans, 3 pumps, 6 dispensers.

Construction Phase - From email from project proponent, 5 days demo, 4.5 months total time of construction (135 days).

Demolition - From Construction Spreadsheet.

Grading -

Energy Use -

Water And Wastewater - Connected to City Sewer System

Construction Off-road Equipment Mitigation - BAAQMD requires 3 waterings per day

Mobile Land Use Mitigation -

Energy Mitigation - Title 24 values are updated by increasiiing the old values by 30%.

Table Name	Column Name	Default Value	New Value
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	DPF	No Change	Level 3
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	8.00
tblConstructionPhase	NumDays	100.00	117.00
tblConstructionPhase	NumDays	10.00	5.00
tblGrading	MaterialExported	0.00	250.00
tblGrading	MaterialImported	0.00	750.00
tblLandUse	LandUseSquareFeet	423.52	18,777.00
tblLandUse	LotAcreage	0.01	0.43
tblProjectCharacteristics	CO2IntensityFactor	641.35	206
tblWater	AerobicPercent	87.46	97.79
tblWater	AerobicPercent	87.46	97.79

tblWater	SepticTankPercent	10.33	0.00
tblWater	SepticTankPercent	10.33	0.00

2.0 Emissions Summary

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					
2021	0.1522	0.5595	0.4965	9.0000e-004	7.6800e-003	0.0290	0.0367	2.2400e-003	0.0268	0.0290	0.0000	79.7433	79.7433	0.0211	0.0000	80.2707
Maximum	0.1522	0.5595	0.4965	9.0000e-004	7.6800e-003	0.0290	0.0367	2.2400e-003	0.0268	0.0290	0.0000	79.7433	79.7433	0.0211	0.0000	80.2707

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					
2021	0.1522	0.5595	0.4965	9.0000e-004	6.9600e-003	4.5600e-003	0.0115	1.9600e-003	4.2100e-003	6.1700e-003	0.0000	79.7433	79.7433	0.0211	0.0000	80.2707
Maximum	0.1522	0.5595	0.4965	9.0000e-004	6.9600e-003	4.5600e-003	0.0115	1.9600e-003	4.2100e-003	6.1700e-003	0.0000	79.7433	79.7433	0.0211	0.0000	80.2707

	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
Percent Reduction	0.00	0.00	0.00	0.00	9.38	84.28	68.57	12.50	84.27	78.73	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	4/1/2021	4/7/2021	5	5	
2	Site Preparation	Site Preparation	4/8/2021	4/8/2021	5	1	
3	Grading	Grading	4/9/2021	4/12/2021	5	2	
4	Building Construction	Building Construction	4/13/2021	9/22/2021	5	117	
5	Paving	Paving	9/23/2021	9/29/2021	5	5	
6	Architectural Coating	Architectural Coating	9/30/2021	10/6/2021	5	5	

Acres of Grading (Site Preparation Phase): 0.5

Acres of Grading (Grading Phase): 0

Acres of Paving: 0.07

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 28,166; Non-Residential Outdoor: 9,389; Striped Parking Area:

OffRoad Equipment

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	1.00	247	0.40
Demolition	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Site Preparation	Graders	1	8.00	187	0.41
Site Preparation	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Grading	Concrete/Industrial Saws	1	8.00	81	0.73
Grading	Rubber Tired Dozers	1	1.00	247	0.40
Grading	Tractors/Loaders/Backhoes	2	6.00	97	0.37
Building Construction	Cranes	1	4.00	231	0.29
Building Construction	Forklifts	2	6.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Cement and Mortar Mixers	4	6.00	9	0.56
Paving	Pavers	1	7.00	130	0.42
Paving	Rollers	1	7.00	80	0.38
Paving	Tractors/Loaders/Backhoes	1	7.00	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	4	10.00	0.00	1.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	2	5.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Grading	4	10.00	0.00	125.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	5	7.00	4.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Paving	7	18.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	1.00	0.00	0.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use DPF for Construction Equipment

Water Exposed Area

3.2 Demolition - 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										M1/yr					
Fugitive Dust					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9900e-003	0.0181	0.0189	3.0000e-005		1.0200e-003	1.0200e-003		9.7000e-004	9.7000e-004	0.0000	2.6023	2.6023	4.8000e-004	0.0000	2.6145
Total	1.9900e-003	0.0181	0.0189	3.0000e-005	1.0000e-004	1.0200e-003	1.1200e-003	1.0000e-005	9.7000e-004	9.8000e-004	0.0000	2.6023	2.6023	4.8000e-004	0.0000	2.6145

Unmitigated Construction Off-Site

[illegible]

Worker	8.0000e-005	5.0000e-005	5.6000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1670	0.1670	0.0000	0.0000	0.1671
Total	8.0000e-005	1.8000e-004	5.9000e-004	0.0000	2.1000e-004	0.0000	2.1000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2048	0.2048	0.0000	0.0000	0.2050

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					4.0000e-005	0.0000	4.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.9900e-003	0.0181	0.0189	3.0000e-005		2.2000e-004	2.2000e-004		2.1000e-004	2.1000e-004	0.0000	2.6023	2.6023	4.8000e-004	0.0000	2.6145
Total	1.9900e-003	0.0181	0.0189	3.0000e-005	4.0000e-005	2.2000e-004	2.6000e-004	1.0000e-005	2.1000e-004	2.2000e-004	0.0000	2.6023	2.6023	4.8000e-004	0.0000	2.6145

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	1.3000e-004	3.0000e-005	0.0000	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0378	0.0378	0.0000	0.0000	0.0379
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	8.0000e-005	5.0000e-005	5.6000e-004	0.0000	2.0000e-004	0.0000	2.0000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.1670	0.1670	0.0000	0.0000	0.1671
Total	8.0000e-005	1.8000e-004	5.9000e-004	0.0000	2.1000e-004	0.0000	2.1000e-004	5.0000e-005	0.0000	5.0000e-005	0.0000	0.2048	0.2048	0.0000	0.0000	0.2050

3.3 Site Preparation - 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					
Fugitive Dust					2.7000e-004	0.0000	2.7000e-004	3.0000e-005	0.0000	3.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.2000e-004	3.9100e-003	2.0100e-003	0.0000		1.5000e-004	1.5000e-004		1.4000e-004	1.4000e-004	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310
Total	3.2000e-004	3.9100e-003	2.0100e-003	0.0000	2.7000e-004	1.5000e-004	4.2000e-004	3.0000e-005	1.4000e-004	1.7000e-004	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310

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	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0167	0.0167	0.0000	0.0000	0.0167
Total	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0167	0.0167	0.0000	0.0000	0.0167

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					1.0000e-004	0.0000	1.0000e-004	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Off-Road	3.2000e-004	3.9100e-003	2.0100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310
Total	3.2000e-004	3.9100e-003	2.0100e-003	0.0000	1.0000e-004	2.0000e-005	1.2000e-004	1.0000e-005	2.0000e-005	3.0000e-005	0.0000	0.4276	0.4276	1.4000e-004	0.0000	0.4310

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	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0167	0.0167	0.0000	0.0000	0.0167
Total	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0167	0.0167	0.0000	0.0000	0.0167

3.4 Grading - 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					
Fugitive Dust					8.1000e-004	0.0000	8.1000e-004	4.2000e-004	0.0000	4.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005		4.1000e-004	4.1000e-004		3.9000e-004	3.9000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458
Total	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005	8.1000e-004	4.1000e-004	1.2200e-003	4.2000e-004	3.9000e-004	8.1000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458

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	4.9000e-004	0.0169	3.5900e-003	5.0000e-005	1.0600e-003	5.0000e-005	1.1100e-003	2.9000e-004	5.0000e-005	3.4000e-004	0.0000	4.7284	4.7284	2.4000e-004	0.0000	4.7344
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	2.2000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0668	0.0668	0.0000	0.0000	0.0668
Total	5.2000e-004	0.0169	3.8100e-003	5.0000e-005	1.1400e-003	5.0000e-005	1.1900e-003	3.1000e-004	5.0000e-005	3.6000e-004	0.0000	4.7952	4.7952	2.4000e-004	0.0000	4.8013

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					3.2000e-004	0.0000	3.2000e-004	1.6000e-004	0.0000	1.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005		9.0000e-005	9.0000e-005		8.0000e-005	8.0000e-005	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458
Total	8.0000e-004	7.2500e-003	7.5700e-003	1.0000e-005	3.2000e-004	9.0000e-005	4.1000e-004	1.6000e-004	8.0000e-005	2.4000e-004	0.0000	1.0409	1.0409	1.9000e-004	0.0000	1.0458

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	4.9000e-004	0.0169	3.5900e-003	5.0000e-005	1.0600e-003	5.0000e-005	1.1100e-003	2.9000e-004	5.0000e-005	3.4000e-004	0.0000	4.7284	4.7284	2.4000e-004	0.0000	4.7344

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	2.2000e-004	0.0000	8.0000e-005	0.0000	8.0000e-005	2.0000e-005	0.0000	2.0000e-005	0.0000	0.0668	0.0668	0.0000	0.0000	0.0668
Total	5.2000e-004	0.0169	3.8100e-003	5.0000e-005	1.1400e-003	5.0000e-005	1.1900e-003	3.1000e-004	5.0000e-005	3.6000e-004	0.0000	4.7952	4.7952	2.4000e-004	0.0000	4.8013

3.5 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	0.0453	0.4671	0.4249	6.7000e-004		0.0262	0.0262		0.0241	0.0241	0.0000	58.5480	58.5480	0.0189	0.0000	59.0214
Total	0.0453	0.4671	0.4249	6.7000e-004		0.0262	0.0262		0.0241	0.0241	0.0000	58.5480	58.5480	0.0189	0.0000	59.0214

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	7.4000e-004	0.0244	6.1000e-003	6.0000e-005	1.5300e-003	5.0000e-005	1.5900e-003	4.4000e-004	5.0000e-005	4.9000e-004	0.0000	6.0687	6.0687	3.0000e-004	0.0000	6.0761
Worker	1.2600e-003	8.7000e-004	9.1800e-003	3.0000e-005	3.2400e-003	2.0000e-005	3.2600e-003	8.6000e-004	2.0000e-005	8.8000e-004	0.0000	2.7354	2.7354	6.0000e-005	0.0000	2.7370
Total	2.0000e-003	0.0253	0.0153	9.0000e-005	4.7700e-003	7.0000e-005	4.8500e-003	1.3000e-003	7.0000e-005	1.3700e-003	0.0000	8.8041	8.8041	3.6000e-004	0.0000	8.8131

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	0.4671	0.4249	6.7000e-004		3.9300e-003	3.9300e-003		3.6100e-003	3.6100e-003	0.0000	58.5479	58.5479	0.0189	0.0000	59.0213
Total	0.0453	0.4671	0.4249	6.7000e-004		3.9300e-003	3.9300e-003		3.6100e-003	3.6100e-003	0.0000	58.5479	58.5479	0.0189	0.0000	59.0213

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	7.4000e-004	0.0244	6.1000e-003	6.0000e-005	1.5300e-003	5.0000e-005	1.5900e-003	4.4000e-004	5.0000e-005	4.9000e-004	0.0000	6.0687	6.0687	3.0000e-004	0.0000	6.0761
Worker	1.2600e-003	8.7000e-004	9.1800e-003	3.0000e-005	3.2400e-003	2.0000e-005	3.2600e-003	8.6000e-004	2.0000e-005	8.8000e-004	0.0000	2.7354	2.7354	6.0000e-005	0.0000	2.7370
Total	2.0000e-003	0.0253	0.0153	9.0000e-005	4.7700e-003	7.0000e-005	4.8500e-003	1.3000e-003	7.0000e-005	1.3700e-003	0.0000	8.8041	8.8041	3.6000e-004	0.0000	8.8131

3.6 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	1.8000e-003	0.0168	0.0177	3.0000e-005		8.8000e-004	8.8000e-004		8.2000e-004	8.2000e-004	0.0000	2.3481	2.3481	6.8000e-004	0.0000	2.3652

Paving	9.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.8900e-003	0.0168	0.0177	3.0000e-005		8.8000e-004	8.8000e-004		8.2000e-004	8.2000e-004	0.0000	2.3481	2.3481	6.8000e-004	0.0000	2.3652

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	1.4000e-004	1.0000e-004	1.0100e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3006	0.3006	1.0000e-005	0.0000	0.3008
Total	1.4000e-004	1.0000e-004	1.0100e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3006	0.3006	1.0000e-005	0.0000	0.3008

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	1.8000e-003	0.0168	0.0177	3.0000e-005		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	2.3481	2.3481	6.8000e-004	0.0000	2.3652
Paving	9.0000e-005					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	1.8900e-003	0.0168	0.0177	3.0000e-005		1.3000e-004	1.3000e-004		1.2000e-004	1.2000e-004	0.0000	2.3481	2.3481	6.8000e-004	0.0000	2.3652

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	1.4000e-004	1.0000e-004	1.0100e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3006	0.3006	1.0000e-005	0.0000	0.3008
Total	1.4000e-004	1.0000e-004	1.0100e-003	0.0000	3.6000e-004	0.0000	3.6000e-004	9.0000e-005	0.0000	1.0000e-004	0.0000	0.3006	0.3006	1.0000e-005	0.0000	0.3008

3.7 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	0.0986					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5000e-004	3.8200e-003	4.5400e-003	1.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6394
Total	0.0991	3.8200e-003	4.5400e-003	1.0000e-005		2.4000e-004	2.4000e-004		2.4000e-004	2.4000e-004	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6394

Unmitigated Construction Off-Site

[illegible]

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	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0167	0.0167	0.0000	0.0000	0.0167
Total	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0167	0.0167	0.0000	0.0000	0.0167

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	0.0986					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.5000e-004	3.8200e-003	4.5400e-003	1.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6394
Total	0.0991	3.8200e-003	4.5400e-003	1.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	0.6383	0.6383	4.0000e-005	0.0000	0.6394

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	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0167	0.0167	0.0000	0.0000	0.0167
Total	1.0000e-005	1.0000e-005	6.0000e-005	0.0000	2.0000e-005	0.0000	2.0000e-005	1.0000e-005	0.0000	1.0000e-005	0.0000	0.0167	0.0167	0.0000	0.0000	0.0167

APPENDIX B

CONSTRUCTION HEALTH RISK CALCULATIONS

University Avenue, East Palo Alto, CA - Construction Impacts, Mitigated
Maximum DPM Cancer Risk and PM_{2.5} Calculations from Construction
Impacts at Off-site MEI location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E+06

Where: CPF = Cancer Potency Factor (mg/kg-day)⁻¹
 ASF = Age Sensitivity Factor for specified age group
 ED = Exposure Duration (years)
 AT = Averaging Time for lifetime cancer risk (years)
 FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = Concentration in air (µg/m³)
 DBR = Daily Breathing Rate (L/kg body weight-day)
 A = Inhalation Absorption Factor
 EF = Exposure Frequency (days/year)
 10⁻⁶ = Conversion Factor

Values

Age -->	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF=	10	10	3	3	1
CPF=	1.1	1.1	1.1	1.1	1.1
DBR *=	361	1090	631	572	261
A=	1	1	1	1	1
EF=	350	350	350	350	350
AT=	70	70	70	70	70
FAH=	1	1	1	1	0.73

*95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)
			DPM Conc (µg/m³)		Age Sensitivity Factor		DPM Conc (µg/m³)		Age Sensitivity Factor	
			Year	Annual			Year	Annual		
0	0.25	-0.25 - 0*	2021	0.07700	10	1.05	2021	0.07700	-	-
1	0.5	0 - 1	2021	0.07700	10	6.32	2021	0.07700	1	0.111
2	1	1 - 2	0	0.00000	10	0.00	0	0.00000	1	0.0000
3	1	2 - 3	0	0.00000	3	0.00	0	0.00000	1	0.0000
4	1	3 - 4	0	0.0000	3	0.00	0	0.0000	1	0.00
5	1	4 - 5	0	0.0000	3	0.00	0	0.0000	1	0.00
6	1	5 - 6	0	0.0000	3	0.00	0	0.0000	1	0.00
7	1	6 - 7	0	0.0000	3	0.00	0	0.0000	1	0.00
8	1	7 - 8	0	0.0000	3	0.00	0	0.0000	1	0.00
9	1	8 - 9	0	0.0000	3	0.00	0	0.0000	1	0.00
10	1	9 - 10	0	0.0000	3	0.00	0	0.0000	1	0.00
11	1	10 - 11	0	0.0000	3	0.00	0	0.0000	1	0.00
12	1	11 - 12	0	0.0000	3	0.00	0	0.0000	1	0.00
13	1	12 - 13	0	0.0000	3	0.00	0	0.0000	1	0.00
14	1	13 - 14	0	0.0000	3	0.00	0	0.0000	1	0.00
15	1	14 - 15	0	0.0000	3	0.00	0	0.0000	1	0.00
16	1	15 - 16	0	0.0000	3	0.00	0	0.0000	1	0.00
17	1	16 - 17	0	0.0000	1	0.00	0	0.0000	1	0.00
18	1	17 - 18	0	0.0000	1	0.00	0	0.0000	1	0.00
19	1	18 - 19	0	0.0000	1	0.00	0	0.0000	1	0.00
20	1	19 - 20	0	0.0000	1	0.00	0	0.0000	1	0.00
21	1	20 - 21	0	0.0000	1	0.00	0	0.0000	1	0.00
22	1	21 - 22	0	0.0000	1	0.00	0	0.0000	1	0.00
23	1	22 - 23	0	0.0000	1	0.00	0	0.0000	1	0.00
24	1	23 - 24	0	0.0000	1	0.00	0	0.0000	1	0.00
25	1	24 - 25	0	0.0000	1	0.00	0	0.0000	1	0.00
26	1	25 - 26	0	0.0000	1	0.00	0	0.0000	1	0.00
27	1	26 - 27	0	0.0000	1	0.00	0	0.0000	1	0.00
28	1	27 - 28	0	0.0000	1	0.00	0	0.0000	1	0.00
29	1	28 - 29	0	0.0000	1	0.00	0	0.0000	1	0.00
30	1	29 - 30	0	0.0000	1	0.00	0	0.0000	1	0.00
Total Increased Cancer Risk						7.37				0.11

* Third Trimester of Pregnancy

Maximum	
Fugitive PM _{2.5}	Total PM _{2.5}
0.1601	0.2371
0.0829	0.0829

University Avenue, East Palo Alto, CA - Construction Impacts, Mitigated
Maximum DPM Cancer Risk and PM_{2.5} Calculations from Construction
Impacts at Off-site MEI location - 1.5 meter receptor height

Cancer Risk (per million) = CPF x Inhalation Dose x ASF x ED/AT x FAH x 1.0E+06

Where: CPF = Cancer Potency Factor (mg/kg-day)⁻¹
 ASF = Age Sensitivity Factor for specified age group
 ED = Exposure Duration (years)
 AT = Averaging Time for lifetime cancer risk (years)
 FAH = Fraction of time spent at home (unitless)

Inhalation Dose = C_{air} x DBR x A x (EF/365) x 10⁻⁶

Where: C_{air} = Concentration in air (µg/m³)
 DBR = Daily Breathing Rate (L/kg body weight-day)
 A = Inhalation Absorption Factor
 EF = Exposure Frequency (days/year)
 10⁻⁶ = Conversion Factor

Values

Age --> Parameter	Infant/Child				Adult
	3rd Trimester	0 - 2	2 - 9	2 - 16	16 - 30
ASF=	10	10	3	3	1
CPF=	1.1	1.1	1.1	1.1	1.1
DBR*=	361	1090	631	572	261
A=	1	1	1	1	1
EF=	350	350	350	350	350
AT=	70	70	70	70	70
FAH=	1	1	1	1	0.73

*95th percentile breathing rates for infants and 80th percentile for children and adults

Construction Cancer Risk by Year - Maximum Impact Receptor Location

Exposure Year	Exposure Duration (years)	Age	Infant/Child - Exposure Information			Infant/Child Cancer Risk (per million)	Adult - Exposure Information			Adult Cancer Risk (per million)
			DPM Conc (µg/m³)		Age Sensitivity Factor		DPM Conc (µg/m³)		Age Sensitivity Factor	
			Year	Annual			Year	Annual		
0	0.25	-0.25 - 0*	2021	0.07700	10	1.05	2021	0.07700	-	-
1	0.5	0 - 1	2021	0.07700	10	6.32	2021	0.07700	1	0.111
2	1	1 - 2	0	0.00000	10	0.00	0	0.00000	1	0.000
3	1	2 - 3	0	0.00000	3	0.00	0	0.00000	1	0.000
4	1	3 - 4	0	0.0000	3	0.00	0	0.0000	1	0.00
5	1	4 - 5	0	0.0000	3	0.00	0	0.0000	1	0.00
6	1	5 - 6	0	0.0000	3	0.00	0	0.0000	1	0.00
7	1	6 - 7	0	0.0000	3	0.00	0	0.0000	1	0.00
8	1	7 - 8	0	0.0000	3	0.00	0	0.0000	1	0.00
9	1	8 - 9	0	0.0000	3	0.00	0	0.0000	1	0.00
10	1	9 - 10	0	0.0000	3	0.00	0	0.0000	1	0.00
11	1	10 - 11	0	0.0000	3	0.00	0	0.0000	1	0.00
12	1	11 - 12	0	0.0000	3	0.00	0	0.0000	1	0.00
13	1	12 - 13	0	0.0000	3	0.00	0	0.0000	1	0.00
14	1	13 - 14	0	0.0000	3	0.00	0	0.0000	1	0.00
15	1	14 - 15	0	0.0000	3	0.00	0	0.0000	1	0.00
16	1	15 - 16	0	0.0000	3	0.00	0	0.0000	1	0.00
17	1	16 - 17	0	0.0000	1	0.00	0	0.0000	1	0.00
18	1	17 - 18	0	0.0000	1	0.00	0	0.0000	1	0.00
19	1	18 - 19	0	0.0000	1	0.00	0	0.0000	1	0.00
20	1	19 - 20	0	0.0000	1	0.00	0	0.0000	1	0.00
21	1	20 - 21	0	0.0000	1	0.00	0	0.0000	1	0.00
22	1	21 - 22	0	0.0000	1	0.00	0	0.0000	1	0.00
23	1	22 - 23	0	0.0000	1	0.00	0	0.0000	1	0.00
24	1	23 - 24	0	0.0000	1	0.00	0	0.0000	1	0.00
25	1	24 - 25	0	0.0000	1	0.00	0	0.0000	1	0.00
26	1	25 - 26	0	0.0000	1	0.00	0	0.0000	1	0.00
27	1	26 - 27	0	0.0000	1	0.00	0	0.0000	1	0.00
28	1	27 - 28	0	0.0000	1	0.00	0	0.0000	1	0.00
29	1	28 - 29	0	0.0000	1	0.00	0	0.0000	1	0.00
30	1	29 - 30	0	0.0000	1	0.00	0	0.0000	1	0.00
Total Increased Cancer Risk						7.37				0.11

* Third Trimester of Pregnancy

APPENDIX D

NOISE AND VIBRATION ASSESSMENTS

2194 UNIVERSITY AVENUE GAS STATION IMPROVEMENTS PROJECT NOISE AND VIBRATION ASSESSMENT

East Palo Alto, California

December 22, 2020

Prepared for:

**Stuart Poulter, AICP, MCRP
Associate Planner
EMC Planning Group
301 Lighthouse Avenue, Suite C
Monterey, California 93940**

Prepared by:

**Steve J. Deines
Dana M. Lodico, PE, INCE Bd. Cert.
Michael S. Thill**

ILLINGWORTH & RODKIN, INC.
/// Acoustics • Air Quality ///
**429 East Cotati Avenue
Cotati, CA 94931
(707) 794-0400**

Project: 20-178

INTRODUCTION

The 2194 University Avenue Gas Station Improvements project proposes to demolish existing site improvements and construct a 2,006 square foot (sf) fueling canopy with three fuel dispensers, 2,208 sf convenience store, two 15,000 gallon underground fuel storage tanks, and a 726 sf car wash tunnel with 365 sf equipment room. This report evaluates the project's potential to result in significant noise or vibration impacts with respect to applicable California Environmental Quality Act (CEQA) guidelines. The report is divided into two sections: 1) the Setting Section provides a brief description of the fundamentals of environmental noise and groundborne vibration, summarizes applicable regulatory criteria, and discusses existing noise conditions in the project vicinity; and, 2) the Impacts and Mitigation Measures Section describes the significance criteria used to evaluate project impacts, provides a discussion of each project impact, and recommends mitigation measures to reduce project impacts to less-than-significant levels.

SETTING

Fundamentals of Environmental Noise

Noise may be defined as unwanted sound. Noise is usually objectionable because it is disturbing or annoying. The objectionable nature of sound could be caused by its *pitch* or its *loudness*. *Pitch* is the height or depth of a tone or sound, depending on the relative rapidity (*frequency*) of the vibrations by which it is produced. Higher pitched signals sound louder to humans than sounds with a lower pitch. *Loudness* is intensity of sound waves combined with the reception characteristics of the ear. Intensity may be compared with the height of an ocean wave in that it is a measure of the amplitude of the sound wave.

In addition to the concepts of pitch and loudness, there are several noise measurement scales which are used to describe noise in a particular location. A *decibel (dB)* is a unit of measurement which indicates the relative amplitude of a sound. The zero on the decibel scale is based on the lowest sound level that the healthy, unimpaired human ear can detect. Sound levels in decibels are calculated on a logarithmic basis. An increase of 10 decibels represents a ten-fold increase in acoustic energy, while 20 decibels is 100 times more intense, 30 decibels is 1,000 times more intense, etc. There is a relationship between the subjective noisiness or loudness of a sound and its intensity. Each 10 decibel increase in sound level is perceived as approximately a doubling of loudness over a fairly wide range of intensities. Technical terms are defined in Table 1.

There are several methods of characterizing sound. The most common in California is the *A-weighted sound level (dBA)*. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 2. Because sound levels can vary markedly over a short period of time, a method for describing either the average character of the sound or the statistical behavior of the variations must be utilized. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This *energy-equivalent sound/noise descriptor* is called L_{eq} . The most common averaging period is hourly, but L_{eq} can describe any series of noise events of arbitrary duration.

The scientific instrument used to measure noise is the sound level meter. Sound level meters can accurately measure environmental noise levels to within about plus or minus 1 dBA. Various computer models are used to predict environmental noise levels from sources, such as roadways and airports. The accuracy of the predicted models depends upon the distance the receptor is from the noise source. Close to the noise source, the models are accurate to within about plus or minus 1 to 2 dBA.

Since the sensitivity to noise increases during the evening and at night -- because excessive noise interferes with the ability to sleep -- 24-hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The *Community Noise Equivalent Level* (CNEL) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 pm - 10:00 pm) and a 10 dB addition to nocturnal (10:00 pm - 7:00 am) noise levels. The *Day/Night Average Sound Level* (DNL or L_{dn}) is essentially the same as CNEL, with the exception that the evening time period is dropped and all occurrences during this three-hour period are grouped into the daytime period.

Effects of Noise

Sleep and Speech Interference

The thresholds for speech interference indoors are about 45 dBA if the noise is steady and above 55 dBA if the noise is fluctuating. Outdoors the thresholds are about 15 dBA higher. Steady noises of sufficient intensity (above 35 dBA) and fluctuating noise levels above about 45 dBA have been shown to affect sleep. Interior residential standards for multi-family dwellings are set by the State of California at 45 dBA CNEL. Typically, the highest steady traffic noise level during the daytime is about equal to the CNEL and nighttime levels are 10 dBA lower. The standard is designed for sleep and speech protection and most jurisdictions apply the same criterion for all residential uses. Typical structural attenuation is 12-17 dBA with open windows. With closed windows in good condition, the noise attenuation factor is around 20 dBA for an older structure and 25 dBA for a newer dwelling. Sleep and speech interference is therefore possible when exterior noise levels are about 57-62 dBA CNEL with open windows and 65-70 dBA CNEL if the windows are closed. Levels of 55-60 dBA are common along collector streets and secondary arterials, while 65-70 dBA is a typical value for a primary/major arterial. Levels of 75-80 dBA are normal noise levels at the first row of development outside a freeway right-of-way. In order to achieve an acceptable interior noise environment, bedrooms facing secondary roadways need to be able to have their windows closed, those facing major roadways and freeways typically need special glass windows.

Annoyance

Attitude surveys are used for measuring the annoyance felt in a community for noises intruding into homes or affecting outdoor activity areas. In these surveys, it was determined that the causes for annoyance include interference with speech, radio and television, house vibrations, and interference with sleep and rest. The CNEL as a measure of noise has been found to provide a valid correlation of noise level and the percentage of people annoyed. People have been asked to judge the annoyance caused by aircraft noise and ground transportation noise. There continues to be disagreement about the relative annoyance of these different sources. When measuring the

percentage of the population highly annoyed, the threshold for ground vehicle noise is about 50 dBA CNEL. At a CNEL of about 60 dBA, approximately 12 percent of the population is highly annoyed. When the CNEL increases to 70 dBA, the percentage of the population highly annoyed increases to about 25-30 percent of the population. There is, therefore, an increase of about 2 percent per dBA between a CNEL of 60-70 dBA. Between a CNEL of 70-80 dBA, each decibel increase increases by about 3 percent the percentage of the population highly annoyed. People appear to respond more adversely to aircraft noise. When the CNEL is 60 dBA, approximately 30-35 percent of the population is believed to be highly annoyed. Each decibel increase to 70 dBA adds about 3 percentage points to the number of people highly annoyed. Above 70 dBA, each decibel increase results in about a 4 percent increase in the percentage of the population highly annoyed.

TABLE 1 Definition of Acoustical Terms Used in this Report

Term	Definition
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20 micro Pascals.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e. g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, L_{eq}	The average A-weighted noise level during the measurement period.
L_{max} , L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01} , L_{10} , L_{50} , L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Handbook of Acoustical Measurements and Noise Control, Harris, 1998.

TABLE 2 Typical Noise Levels in the Environment

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110 dBA	Rock band
Jet fly-over at 1,000 feet		
	100 dBA	
Gas lawn mower at 3 feet		
	90 dBA	
Diesel truck at 50 feet at 50 mph		Food blender at 3 feet
	80 dBA	Garbage disposal at 3 feet
Noisy urban area, daytime		
Gas lawn mower, 100 feet	70 dBA	Vacuum cleaner at 10 feet
Commercial area		Normal speech at 3 feet
Heavy traffic at 300 feet	60 dBA	
		Large business office
Quiet urban daytime	50 dBA	Dishwasher in next room
Quiet urban nighttime	40 dBA	Theater, large conference room
Quiet suburban nighttime		
	30 dBA	Library
Quiet rural nighttime		Bedroom at night, concert hall (background)
	20 dBA	
	10 dBA	Broadcast/recording studio
	0 dBA	

Source: Technical Noise Supplement (TeNS), California Department of Transportation, September 2013.

Fundamentals of Groundborne Vibration

Ground vibration consists of rapidly fluctuating motions or waves with an average motion of zero. Several different methods are typically used to quantify vibration amplitude. One method is the Peak Particle Velocity (PPV). The PPV is defined as the maximum instantaneous positive or negative peak of the vibration wave. In this report, a PPV descriptor with units of mm/sec or in/sec is used to evaluate construction generated vibration for building damage and human complaints. Table 3 displays the reactions of people and the effects on buildings that continuous or frequent intermittent vibration levels produce. The guidelines in Table 3 represent syntheses of vibration criteria for human response and potential damage to buildings resulting from construction vibration.

Construction activities can cause vibration that varies in intensity depending on several factors. The use of pile driving and vibratory compaction equipment typically generates the highest construction related groundborne vibration levels. Because of the impulsive nature of such activities, the use of the PPV descriptor has been routinely used to measure and assess groundborne vibration and almost exclusively to assess the potential of vibration to cause damage and the degree of annoyance for humans.

The two primary concerns with construction-induced vibration, the potential to damage a structure and the potential to interfere with the enjoyment of life, are evaluated against different vibration limits. Human perception to vibration varies with the individual and is a function of physical setting and the type of vibration. Persons exposed to elevated ambient vibration levels, such as people in an urban environment, may tolerate a higher vibration level.

Structural damage can be classified as cosmetic only, such as paint flaking or minimal extension of cracks in building surfaces; minor, including limited surface cracking; or major, that may threaten the structural integrity of the building. Safe vibration limits that can be applied to assess the potential for damaging a structure vary by researcher. The damage criteria presented in Table 3 include several categories for ancient, fragile, and historic structures, the types of structures most at risk to damage. Most buildings are included within the categories ranging from “Historic and some old buildings” to “Modern industrial/commercial buildings”. Construction-induced vibration that can be detrimental to the building is very rare and has only been observed in instances where the structure is at a high state of disrepair and the construction activity occurs immediately adjacent to the structure.

The annoyance levels shown in Table 3 should be interpreted with care since vibration may be found to be annoying at lower levels than those shown, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Low-level vibrations frequently cause irritating secondary vibration, such as a slight rattling of windows, doors, or stacked dishes. The rattling sound can give rise to exaggerated vibration complaints, even though there is very little risk of actual structural damage.

TABLE 3 Reaction of People and Damage to Buildings from Continuous or Frequent Intermittent Vibration Levels

Velocity Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.01	Barely perceptible	No effect
0.04	Distinctly perceptible	Vibration unlikely to cause damage of any type to any structure
0.08	Distinctly perceptible to strongly perceptible	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected
0.1	Strongly perceptible	Virtually no risk of damage to normal buildings
0.25	Strongly perceptible to severe	Threshold at which there is a risk of damage to historic and some old buildings.
0.3	Strongly perceptible to severe	Threshold at which there is a risk of damage to older residential dwellings such as plastered walls or ceilings
0.5	Severe - Vibrations considered unpleasant	Threshold at which there is a risk of damage to newer residential structures

Source: Transportation and Construction Vibration Guidance Manual, California Department of Transportation, September 2013.

Regulatory Background - Noise

The State of California and the City of East Palo Alto have established regulatory criteria that are applicable in this assessment. The State CEQA Guidelines, Appendix G, are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. A summary of the applicable regulatory criteria is provided below.

State CEQA Guidelines. CEQA contains guidelines to evaluate the significance of effects of environmental noise attributable to a proposed project. Under CEQA, noise impacts would be considered significant if the project would result in:

- (a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local General Plan or Noise Ordinance, or applicable standards of other agencies;
- (b) Generation of excessive groundborne vibration or groundborne noise levels; or
- (c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted within two miles of a public airport or public use airport, if the project would expose people residing or working in the project area to excessive noise levels.

CEQA does not define what noise level increase would be considered substantial. Typically, an increase in the CNEL noise level resulting from the project at noise-sensitive land uses of 3 dBA or greater would be considered a significant impact when projected noise levels would exceed those considered acceptable for the affected land use. An increase of 5 dBA CNEL or greater would be considered a significant impact when projected noise levels would remain within those considered acceptable for the affected land use.

Santa Clara County Airport Land Use Commission Comprehensive Land Use Plan. The Comprehensive Land Use Plan adopted by the Santa Clara County Airport Land Use Commission contains standards for projects within the vicinity of San José International Airport, which are relevant to this project:

4.3.2.1 Noise Compatibility Policies

Policy N-3 Noise impacts shall be evaluated according to the Aircraft Noise Contours presented on Figure 5 (2022 Aircraft Noise Contours).

2019 California Green Building Standards Code (Cal Green Code). The State of California established exterior sound transmission control standards for new non-residential buildings as set forth in the 2019 California Green Building Standards Code (Section 5.507.4.1 and 5.507.4.2). Section 5.507 states that either the prescriptive (Section 5.507.4.1) or the performance method (Section 5.507.4.2) shall be used to determine environmental control at indoor areas. The prescriptive method is very conservative and not practical in most cases; however, the performance method can be quantitatively verified using exterior-to-interior calculations. For the purposes of this report, the performance method is utilized to determine consistency with the Cal Green Code. The sections that pertain to this project are as follows:

5.507.4.1 Exterior noise transmission, prescriptive method. Wall and roof-ceiling assemblies exposed to the noise source making up the building envelope shall meet a composite STC rating of at least 50 or a composite OITC rating of no less than 40, with exterior windows of a minimum STC of 40 or OITC of 30 when the building falls within the 65 dBA CNEL noise contour of a freeway or expressway, railroad, industrial source or fixed-guideway noise source, as determined by the local general plan noise element.

5.507.4.2 Performance method. For buildings located, as defined by Section 5.507.4.1, wall and roof-ceiling assemblies exposed to the noise source making up the building envelope shall be constructed to provide an interior noise environment attributable to exterior sources that does not exceed an hourly equivalent noise level ($L_{eq(1-hr)}$) of 50 dBA in occupied areas during any hour of operation.

The performance method, which establishes the acceptable interior noise level, is the method typically used when applying these standards.

Vista 2035 East Palo Alto General Plan. The City of East Palo Alto adopted the 2035 General Plan October 4, 2016. The Safety and Noise Chapter of the General Plan¹ provides goals and policies to reduce noise within the community. The goals and policies that apply to the proposed project are as follows:

Goal SN-6: Minimize the effects of noise through proper land use planning.

Intent: To ensure that new noise-sensitive land uses in the City are located in a compatible noise environment or adequately mitigated in order to provide a compatible exterior and interior noise environment.

Policy 6.1. Noise standards. Use the Interior and Exterior Noise Standards (Table 10-1) for transportation noise sources. Use the City's Noise Ordinance for evaluating non-transportation noise sources when making planning and development decisions. Require that applicants demonstrate that the noise standards will be met prior to project approval.

Policy 6.2. Compatibility standards. Utilize noise/land use compatibility standards and the Noise Ordinance as guides for future development decisions.

Policy 6.3. Noise control. Provide noise control measures, such as berms, walls, and sound attenuating construction in areas of new construction or rehabilitation.

Goal SN-7: Minimize transportation- and non-transportation-related noise impacts, especially on noise-sensitive land uses.

Intent: To maintain and improve the noise environment at noise-sensitive land uses throughout the City.

Policy 7.1. Noise ordinance. Continually enforce and periodically review the City's Noise Ordinance for adequacy (including requiring construction activity to comply with established work schedule limits). Amend as needed to address community needs and development patterns.

Policy 7.2. CEQA acoustical analysis. Require an acoustical analysis to evaluate mitigation measures for noise-generating projects that are likely to cause the following criteria to be exceeded or to cause a significant adverse community response:

- Cause the CNEL at noise-sensitive uses to increase by 3 dBA or more and exceed the "normally acceptable" level.
- Cause the CNEL at noise-sensitive uses to increase by 5 dBA or more and remain "normally acceptable."

¹ City of East Palo Alto, *Vista 2035 East Palo Alto General Plan*, Safety and Noise Chapter, October 4, 2016.

Policy 7.7. Site design review. Utilize site design review to identify potential noise impacts on new development, especially from nearby transportation sources. Encourage the use of noise barriers (walls, berms or landscaping), setbacks and/or other buffers.

Policy 7.11. Construction noise. The City shall require that contractors use available noise suppression devices and techniques and limit construction hours near residential uses. Reasonable noise reduction measures shall be incorporated into the construction plan and implemented during all phases of construction activity to minimize the exposure of neighboring properties. The City considers significant construction noise impacts to occur if a project located within 500 feet of residential uses or 200 feet of commercial or office uses would:

- Involve substantial noise generating activities (such as building demolition, grading, excavation, pile driving, use of impact equipment, or building framing) continuing for more than 12 months.

For such large or complex projects, a construction noise logistics plan that specifies hours of construction, noise and vibration minimization measures, posting or notification of construction schedules, and designation of a noise disturbance coordinator who would respond to neighborhood complaints will be required to be in place prior to the start of construction and implemented during construction to reduce noise impacts on neighboring residents and other uses. A typical construction noise logistics plan would include, but not be limited to, the following measures to reduce construction noise levels as low as practical:

- Limit construction activity to weekdays between 7:00 am and 7:00 pm and Saturdays and holidays between 9:00 am and 7:00 pm, with no construction on Sundays;
- Utilize ‘quiet’ models of air compressors and other stationary noise sources where technology exists;
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;
- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses;
- Locate staging areas and construction material areas as far away as possible from adjacent land uses;
- Prohibit all unnecessary idling of internal combustion engines;
- If impact pile driving is proposed, multiple-pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced;

- If impact pile driving is proposed, temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the adjacent land uses. Such noise control blanket barriers can be rented and quickly erected;
- If impact pile driving is proposed, foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile. Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile. Notify all adjacent land uses of the construction schedule in writing;
- Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented; and
- Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction.

Table 10-1. Interior and Exterior Noise Standards

Land Use	Noise Standards ¹	
	Interior ^{2, 3}	Exterior
Residential – Single family, multifamily, duplex, mobile home	CNEL 45 dB	CNEL 65 dB ⁴
Residential – Transient lodging, hotels, motels, nursing home, hospitals	CNEL 45 dB	CNEL 65 dB ⁴
Private offices, church sanctuaries, libraries, board rooms, conference rooms, theaters, auditoriums, concert halls, meeting halls, etc.	Leq(12) 45 dB(A)	-
Schools	Leq(12) 45 dB(A)	Leq(12) 67 dB(A) ⁵
General offices, reception, clerical, etc.	Leq(12) 50 dB(A)	-
Bank lobby, retail store, restaurant, typing pool, etc.	Leq(12) 55 dB(A)	-
Manufacturing, kitchen, warehousing, etc.	Leq(12) 65 dB(A)	-
Parks, playgrounds	-	CNEL 65 dB ⁵
Golf courses, outdoor spectator sports, amusement parks	-	CNEL 70 dB ⁵

Notes:

1. CNEL: Community Noise Equivalent Level; Leq (12): The A-weighted equivalent sound level averaged over a 12-hour period (usually the hours of operation).
2. Noise standard with windows closed. Mechanical ventilation shall be provided per UBC requirements to provide a habitable environment.
3. Indoor environment excluding bathrooms, toilets, closets, and corridors.
4. Outdoor environment limited to rear yard of single family homes, multifamily patios, and balconies (with a depth of 6' or more) and common recreation areas.
5. Outdoor environment limited to playground areas, picnic areas and other areas of frequent human use.

Source: Title 24, California Code of Regulations

City of East Palo Alto Municipal Code. Chapter 8.52, Noise Control, in the City’s Municipal Code seeks to protect the citizens of East Palo Alto from unnecessary, excessive, and annoying noise; to maintain quiet in areas where noise levels are low; and to implement programs to reduce unacceptable noise. The regulations limit the amount of noise that may be created as measured at the exterior of any dwelling unit, school, hospital, church, or public library. Table 4 provides the Municipal Code’s exterior noise standards. In addition, Chapter 8.52 limits the creation of noise that results in excessive noise levels within any dwelling unit. Table 5 provides the standards for interior noise in dwelling units. Exemptions to these standards are provided for activities such as special events and noise sources due to construction activities not taking place between 8:00 p.m. and 7:00 a.m.²

TABLE 4 Exterior Noise Level Standards for Single- or Multi-Family Residences, Schools, Hospitals, Churches, and Public Libraries

Category	Cumulative Number of Minutes in Any 1-Hour Time Period	Noise Level Standards, dBA	
		Daytime (7:00 am – 10:00 pm)	Nighttime (10:00 pm – 7:00 am)
1	30	55	50
2	15	50	55
3	5	65	60
4	1	70	60
5	0	75	70

Source: City of East Palo Alto Municipal Code, 2020.

Notes:

- A. In the event the measured background noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in 5 dBA increments so as to encompass the background noise level.
- B. Each of the noise level standards specified above shall be reduced by 5 dBA for simple tone noises, consisting primarily of speech or music, or for recurring or intermittent impulsive noises.
- C. If the intruding noise source is continuous and cannot reasonably be stopped for a period of time whereby the background noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards in this table.

While Table 4 does summarize the levels provided in the Municipal Code for each category, the original Municipal Code document has two typos: Category 2 should be 60 dBA during daytime hours and 55 dBA during nighttime hours, and Category 4 should be 70 dBA during daytime hours and 65 dBA during nighttime hours. For any analysis involving these categories, the corrected levels described here shall be used.

² City of East Palo Alto, 2020, *East Palo Alto Municipal Code*, Chapter 8.52, Noise Control.

TABLE 5 Interior Noise Level Standards – Dwelling Unit

Category	Cumulative Number of Minutes in Any 1-Hour Time Period	Noise Level Standards, dBA	
		Daytime (7:00 am – 10:00 pm)	Nighttime (10:00 pm – 7:00 am)
1	5	45	40
2	1	50	45
3	0	55	50

Source: City of East Palo Alto Municipal Code, 2020.

Notes:

- A. In the event the measured background noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in 5 dBA increments so as to encompass the background noise level.
- B. Each of the noise level standards specified above shall be reduced by 5 dBA for simple tone noises, consisting primarily of speech or music, or for recurring or intermittent impulsive noises.
- C. If the intruding noise source is continuous and cannot reasonably be stopped for a period of time whereby the background noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards in this table.

Section 15.04.125 of the City’s Municipal Code limits construction activity to the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday and 9:00 a.m. to 5:00 p.m. on Saturdays. No construction activity is allowed on Sundays or national holidays.

Regulatory Background – Vibration

Vista 2035 East Palo Alto General Plan. Policy 6.4 of the East Palo Alto General Plan establishes limits on demolition and construction-generated vibration:

Policy 6.4. Vibration impacts. The City shall require new development to minimize vibration impacts to adjacent uses during demolition and construction. For sensitive historic structures, a vibration limit of 0.08 in/sec PPV will be used to minimize the potential for cosmetic damage to the building. A vibration limit of 0.30 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction.

Existing Noise Environment

The project site is located at 2194 University Avenue in the City of East Palo Alto. The site is bordered to the south and east by single-family residences, to the north by Bell Street, and to the west by University Avenue. The area surrounding the site is primarily residential with the exception of commercial uses located along University Avenue.

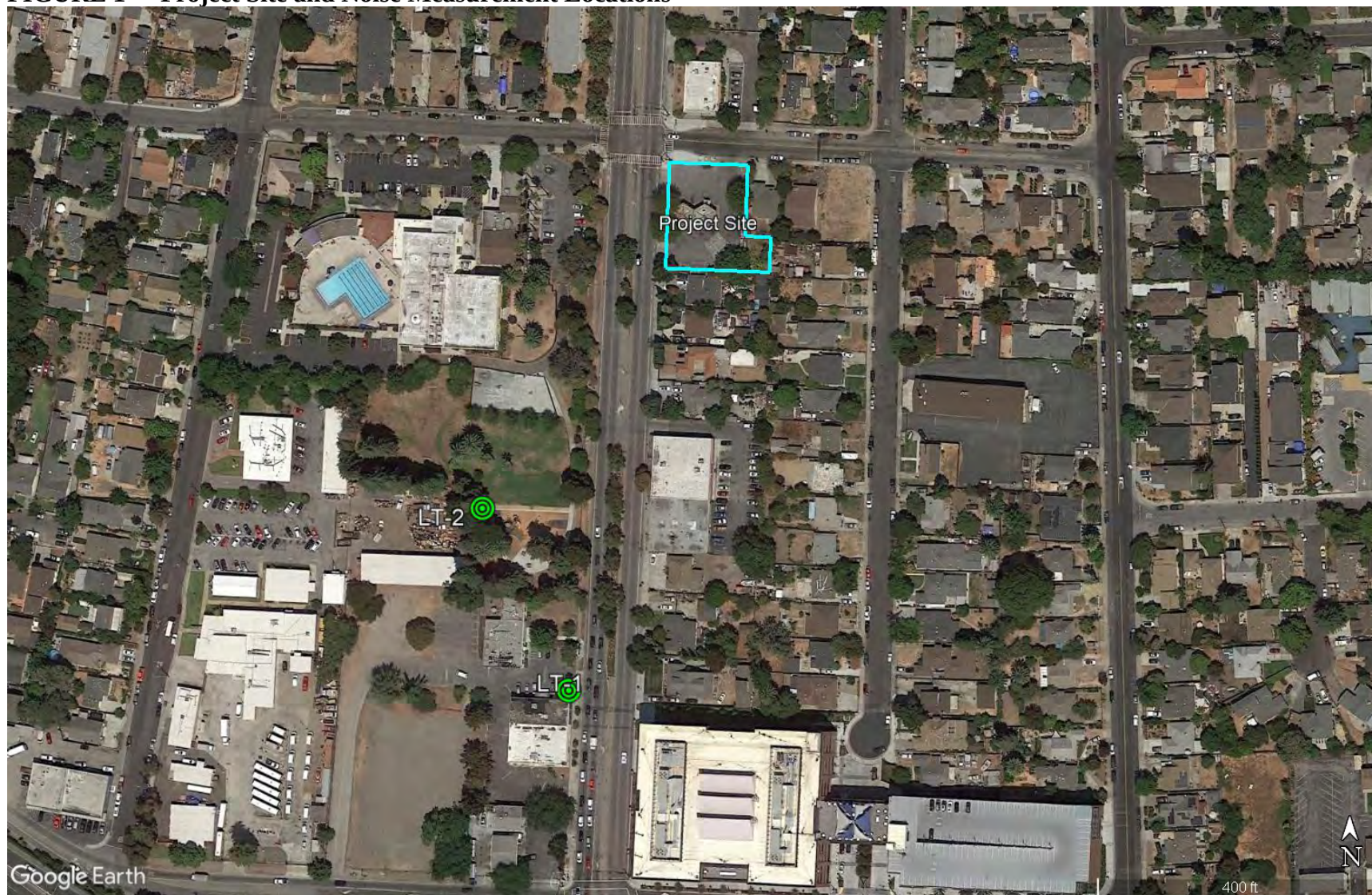
Due to the COVID-19 pandemic, a current noise monitoring survey to characterize the noise environment of the site was unable to be conducted for this study. However, in April 2017, Illingworth & Rodkin, Inc. collected noise data for the University Plaza Phase II project located near the site at 2111 University Avenue. The noise measurement survey quantified noise levels in the site vicinity originating primarily from University Avenue. This noise data is applicable to the existing noise environment of the project site and will be used for the purpose of this analysis.

The noise monitoring survey performed for the University Plaza Phase II project began on Thursday, April 20, 2017 and ended on Monday, April 24, 2017. The monitoring survey included two long-term measurements, as shown in Figure 1. Noise sources identified during the survey included traffic noise along University Avenue, Donohoe Street, and U.S. 101. Frequent aircraft overflights associated with nearby airports including Palo Alto Airport, Moffett Federal Airfield, San Francisco International Airport, and Norman Y. Mineta San José International Airport also affected the noise environment.

Long-term noise measurement LT-1 was made in front of 2111 University Avenue, approximately 55 feet west of the roadway centerline and 300 feet north of the Donohoe Street centerline. Hourly average noise levels at this location typically ranged from 68 to 74 dBA L_{eq} during the day and from 61 to 71 dBA L_{eq} at night. The average community noise equivalent level was 75 dBA CNEL on the weekdays and ranged from 73 to 74 dBA CNEL on the weekends. The daily trend in noise levels measured at LT-1 is shown in Figures 2 through 6.

Long-term noise measurement LT-2 was made in Bell Street Park, north of the University Plaza Phase II site and approximately 195 feet west of the University Avenue centerline. Hourly average noise levels at this location typically ranged from 58 to 66 dBA L_{eq} during the day and from 51 to 60 dBA L_{eq} at night. The average community noise equivalent level was 67 dBA CNEL on the weekdays and ranged from 64 to 65 dBA CNEL on the weekends. The daily trend in noise levels measured at LT-2 is shown in Figures 7 through 11.

FIGURE 1 Project Site and Noise Measurement Locations



Source: Google Earth, 2020.

FIGURE 2 Daily Trend in Noise Levels at LT-1, Thursday, April 20, 2017

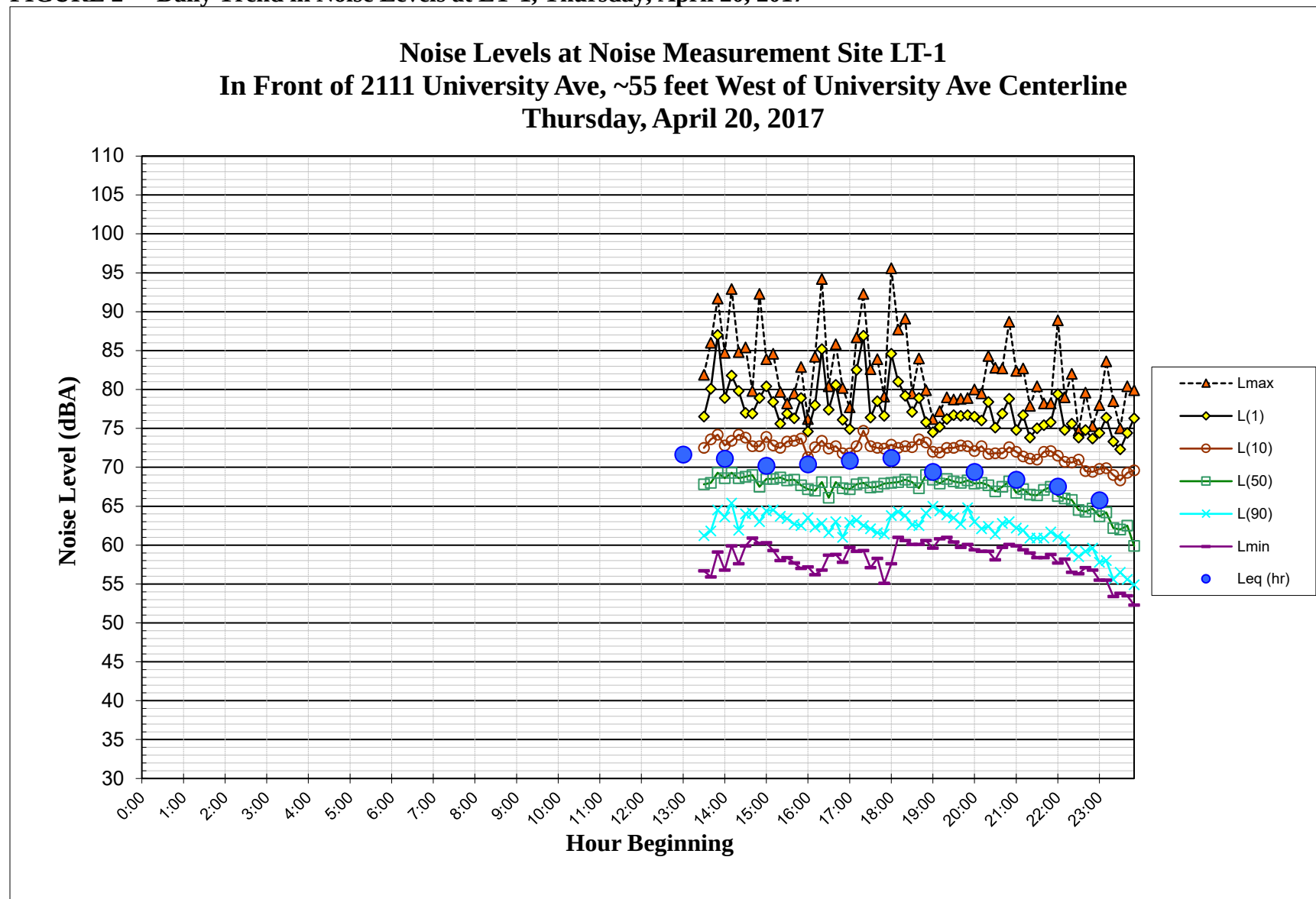


FIGURE 3 Daily Trend in Noise Levels at LT-1, Friday, April 21, 2017

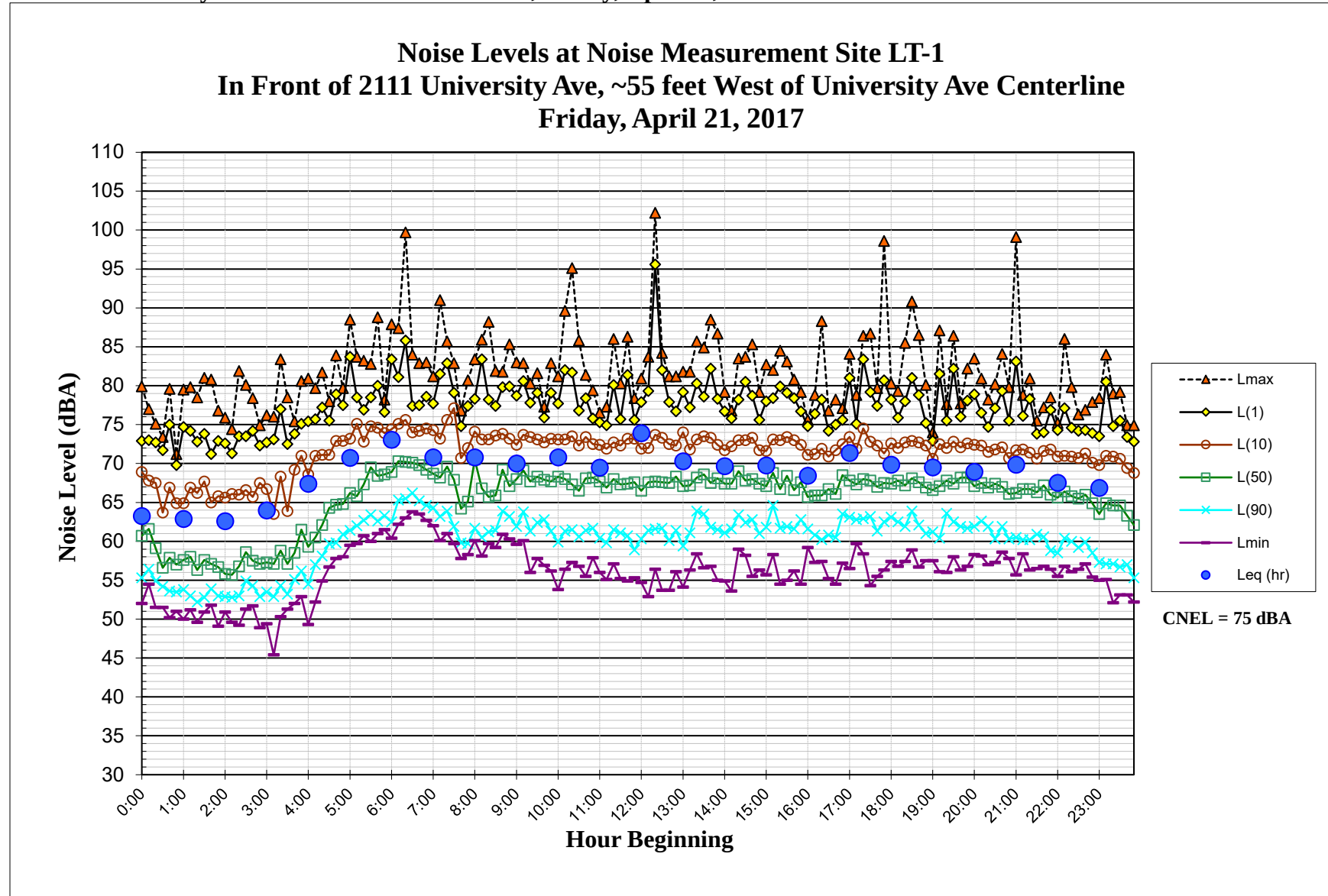


FIGURE 4 Daily Trend in Noise Levels at LT-1, Saturday, April 22, 2017

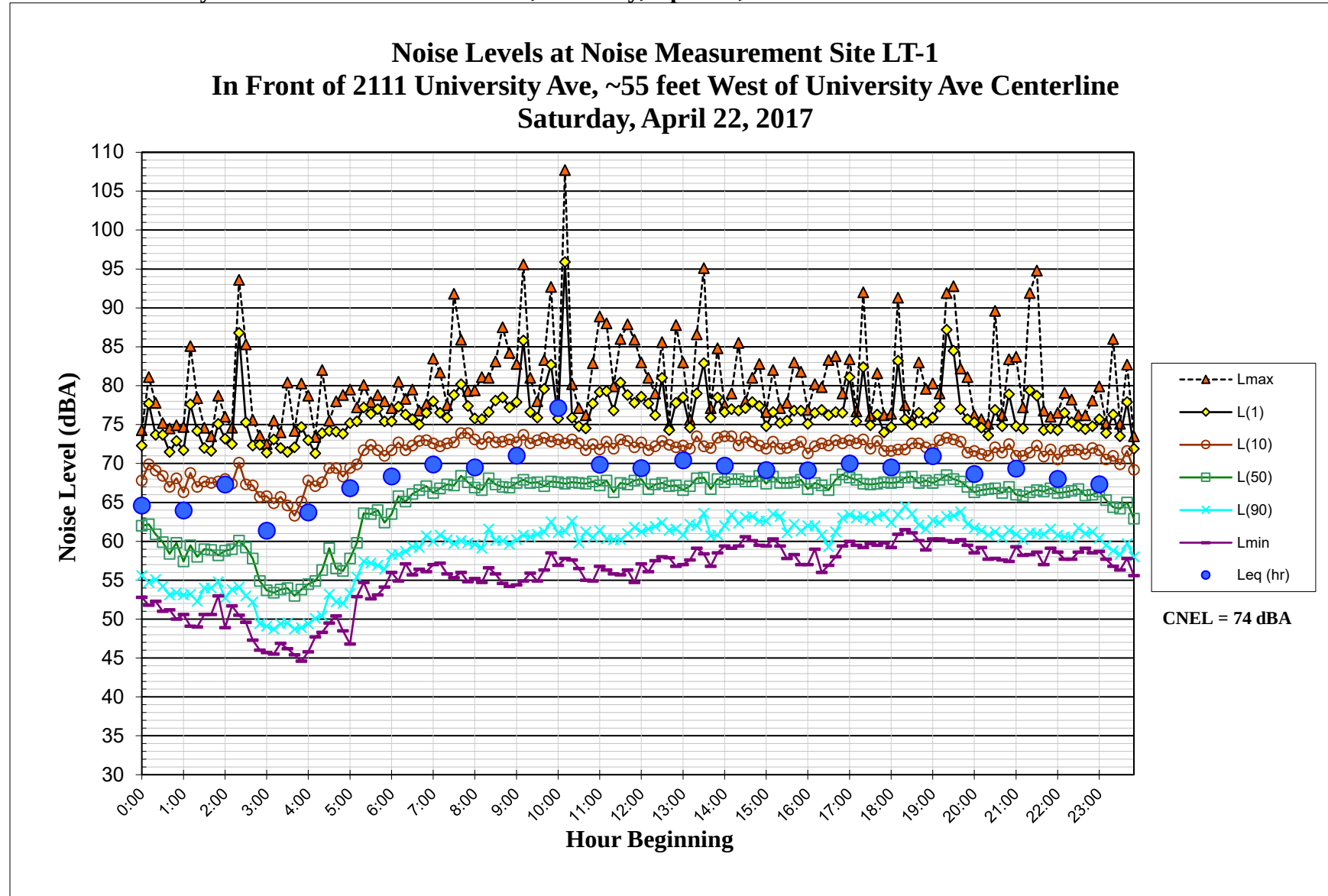


FIGURE 5 Daily Trend in Noise Levels at LT-1, Sunday, April 23, 2017

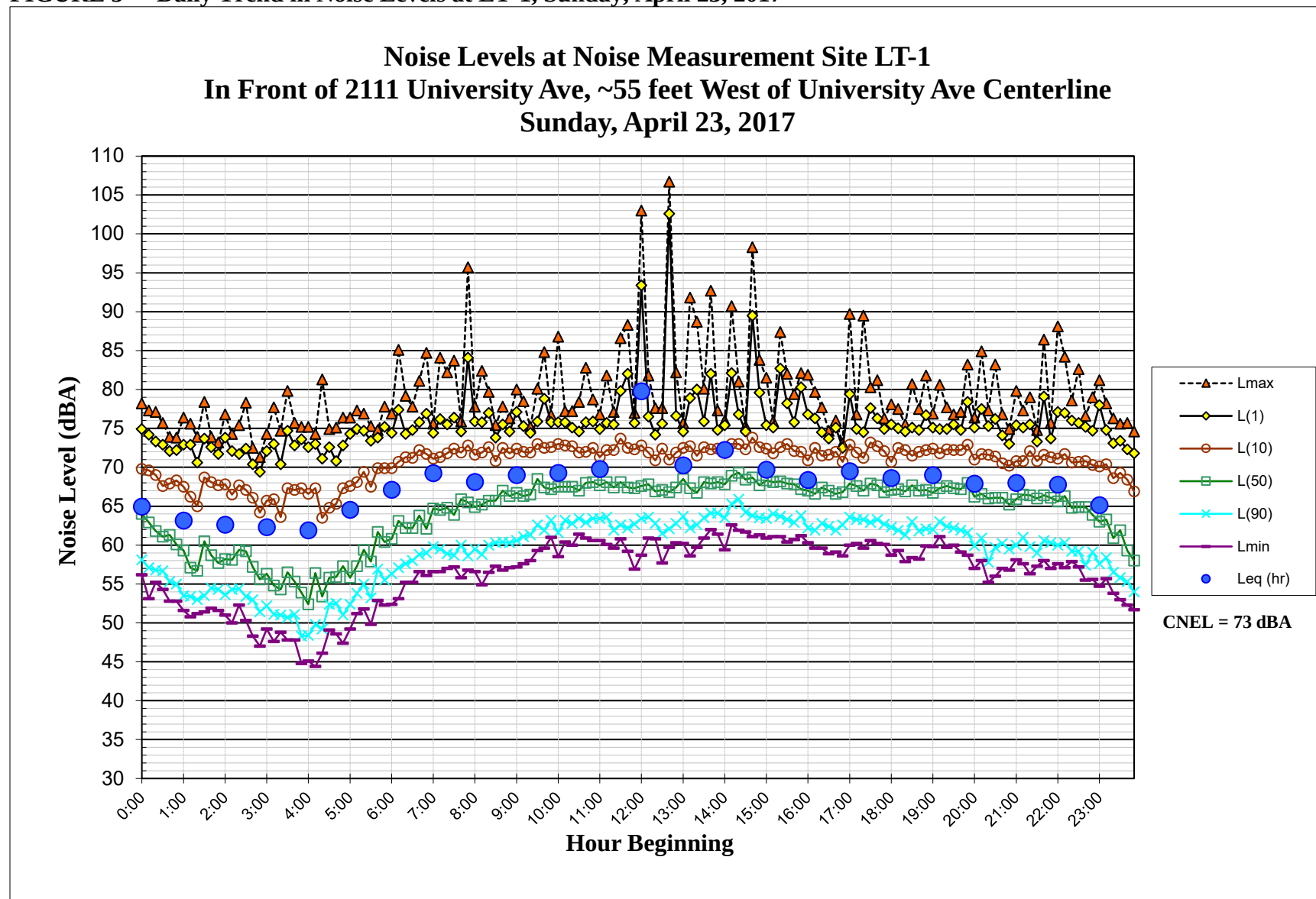


FIGURE 6 Daily Trend in Noise Levels at LT-1, Monday, April 24, 2017

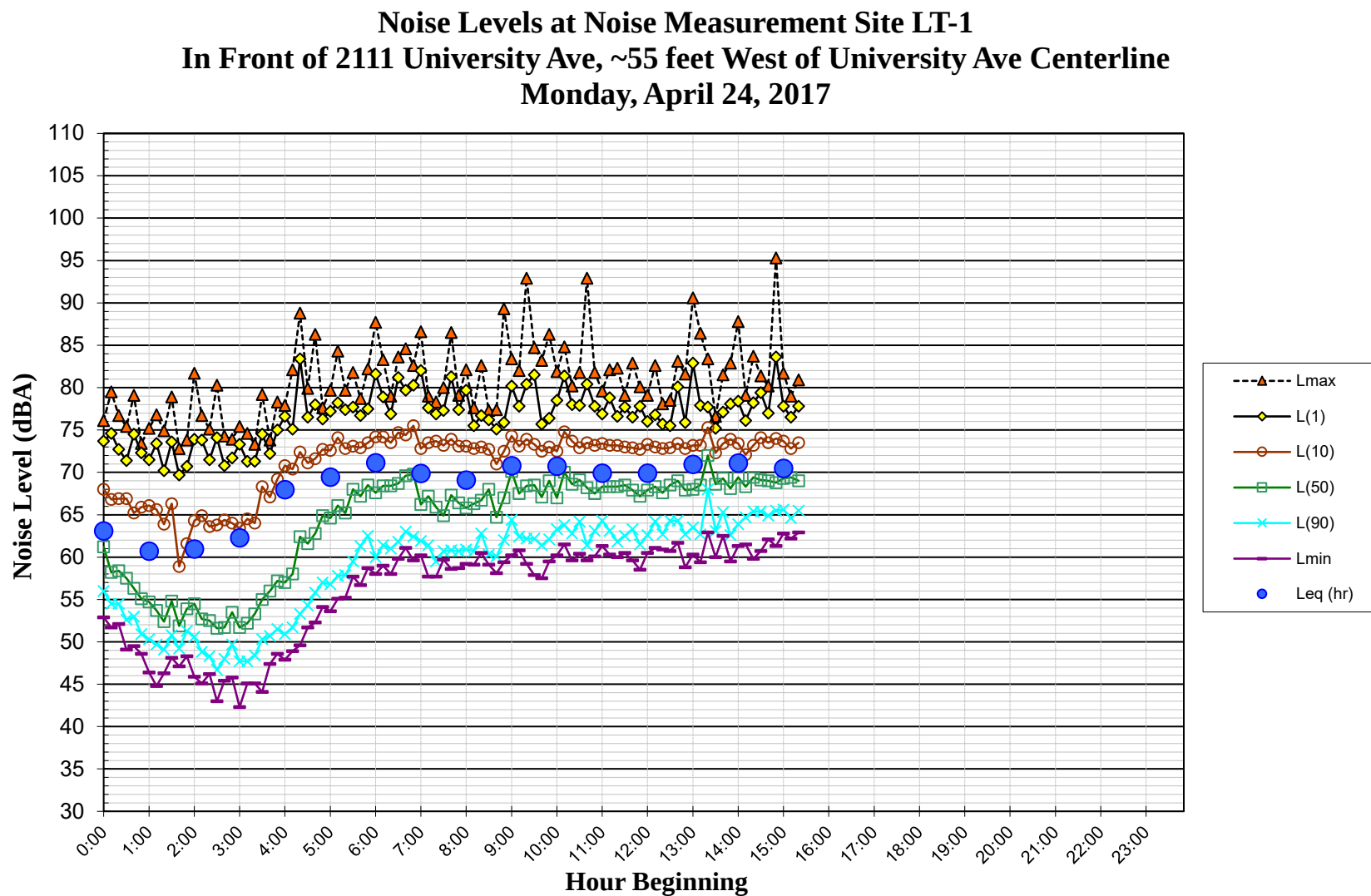


FIGURE 7 Daily Trend in Noise Levels at LT-2, Thursday, April 20, 2017

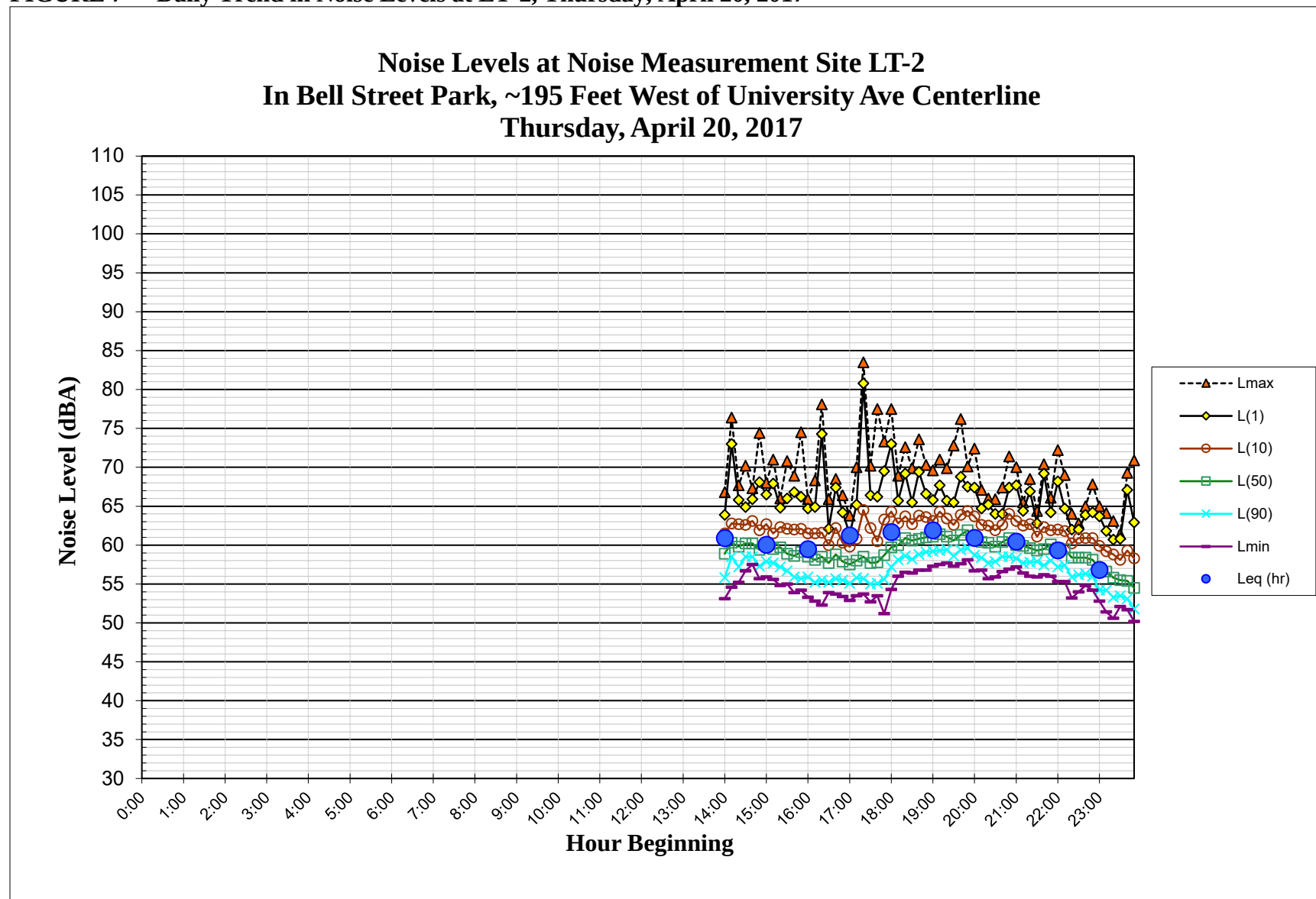


FIGURE 8 Daily Trend in Noise Levels at LT-2, Friday, April 21, 2017

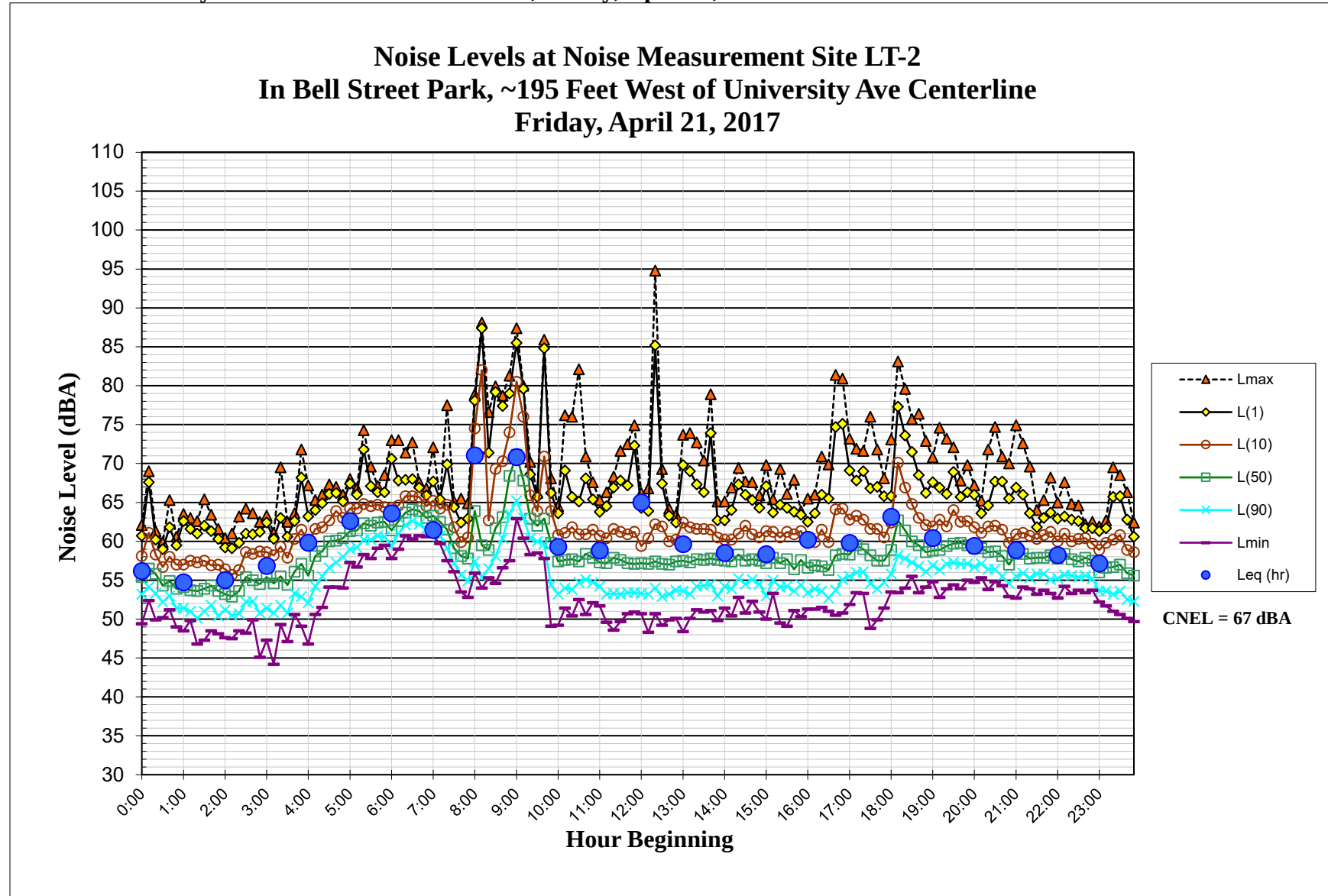


FIGURE 9 Daily Trend in Noise Levels at LT-2, Saturday, April 22, 2017

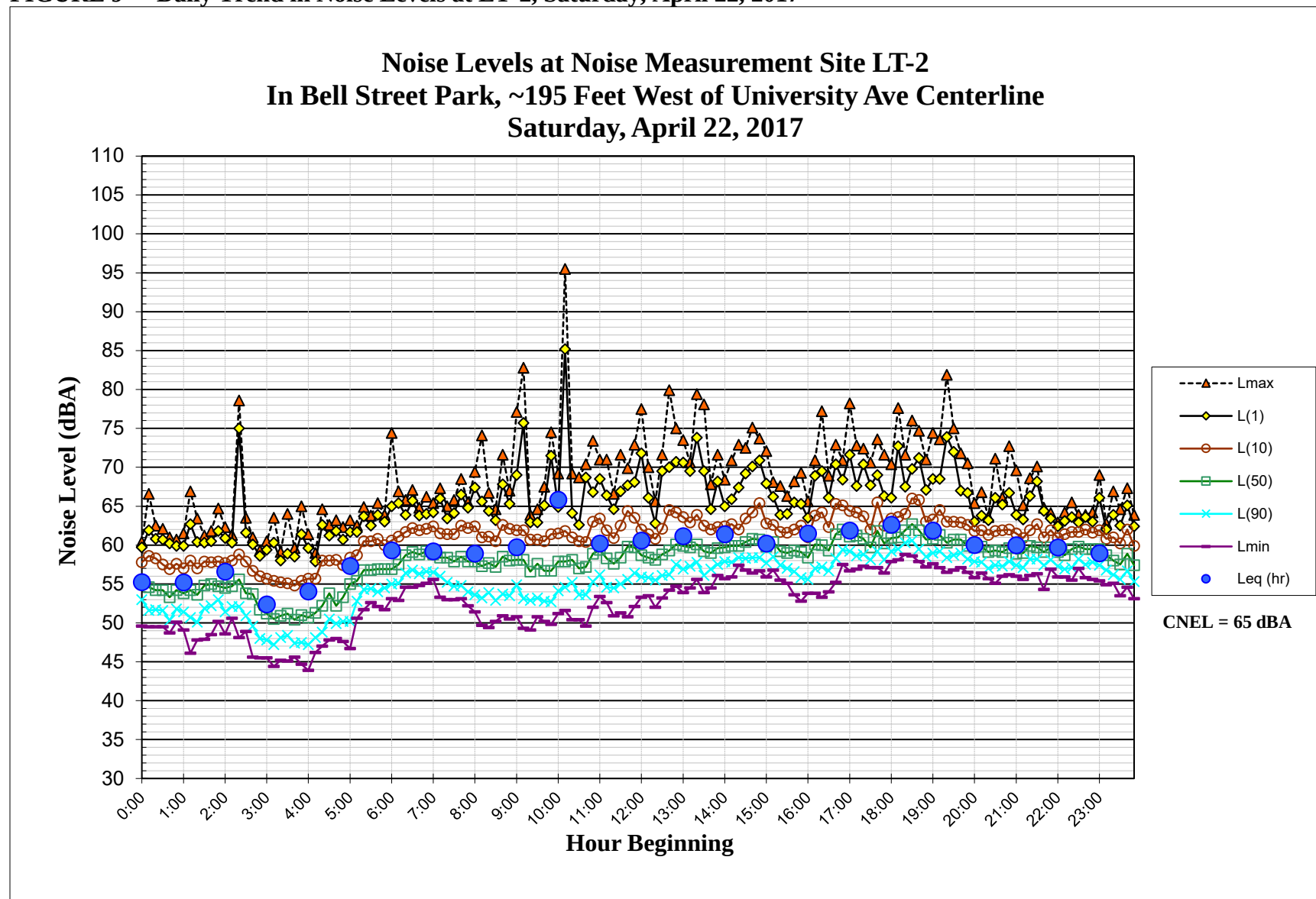


FIGURE 10 Daily Trend in Noise Levels at LT-2, Sunday, April 23, 2017

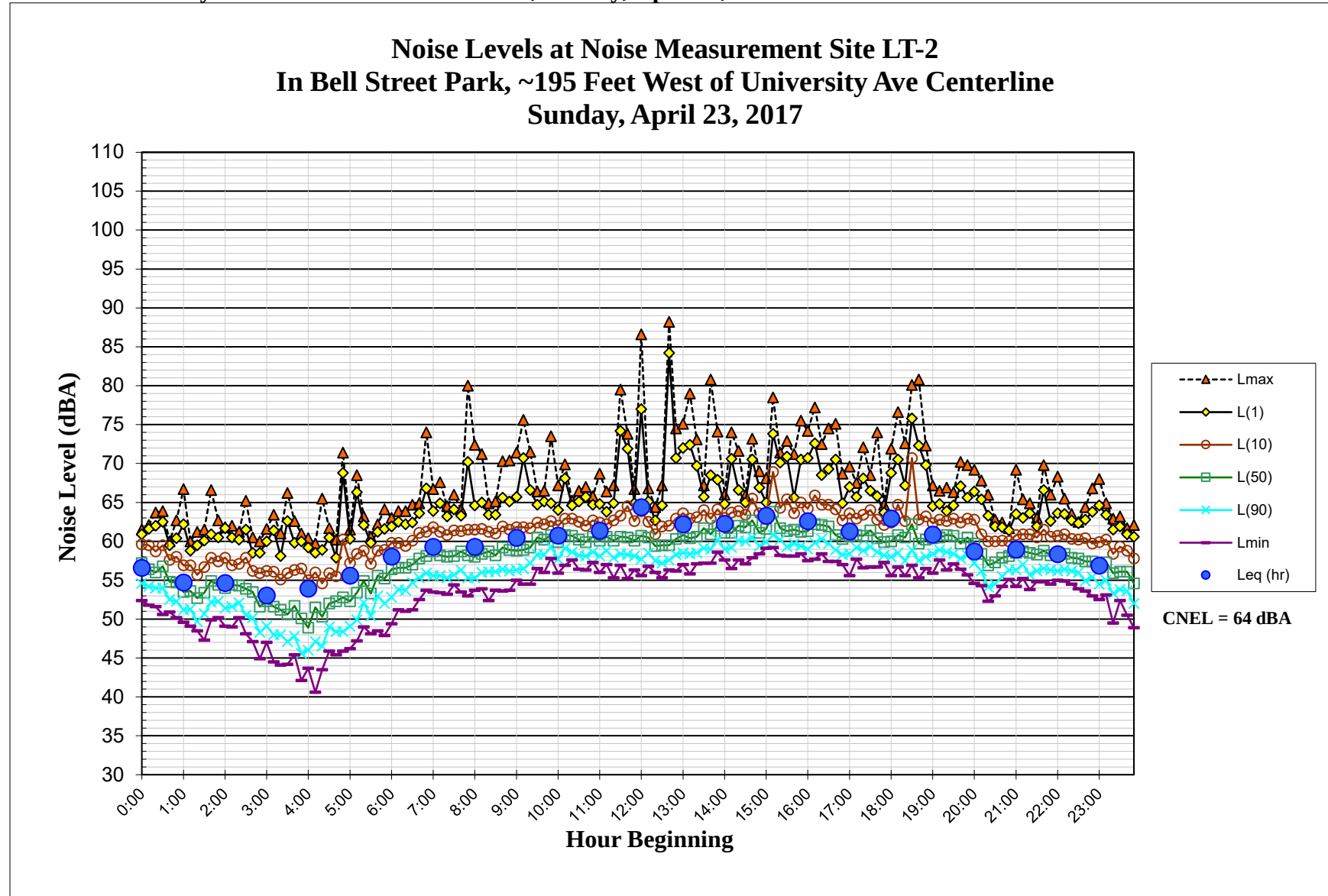
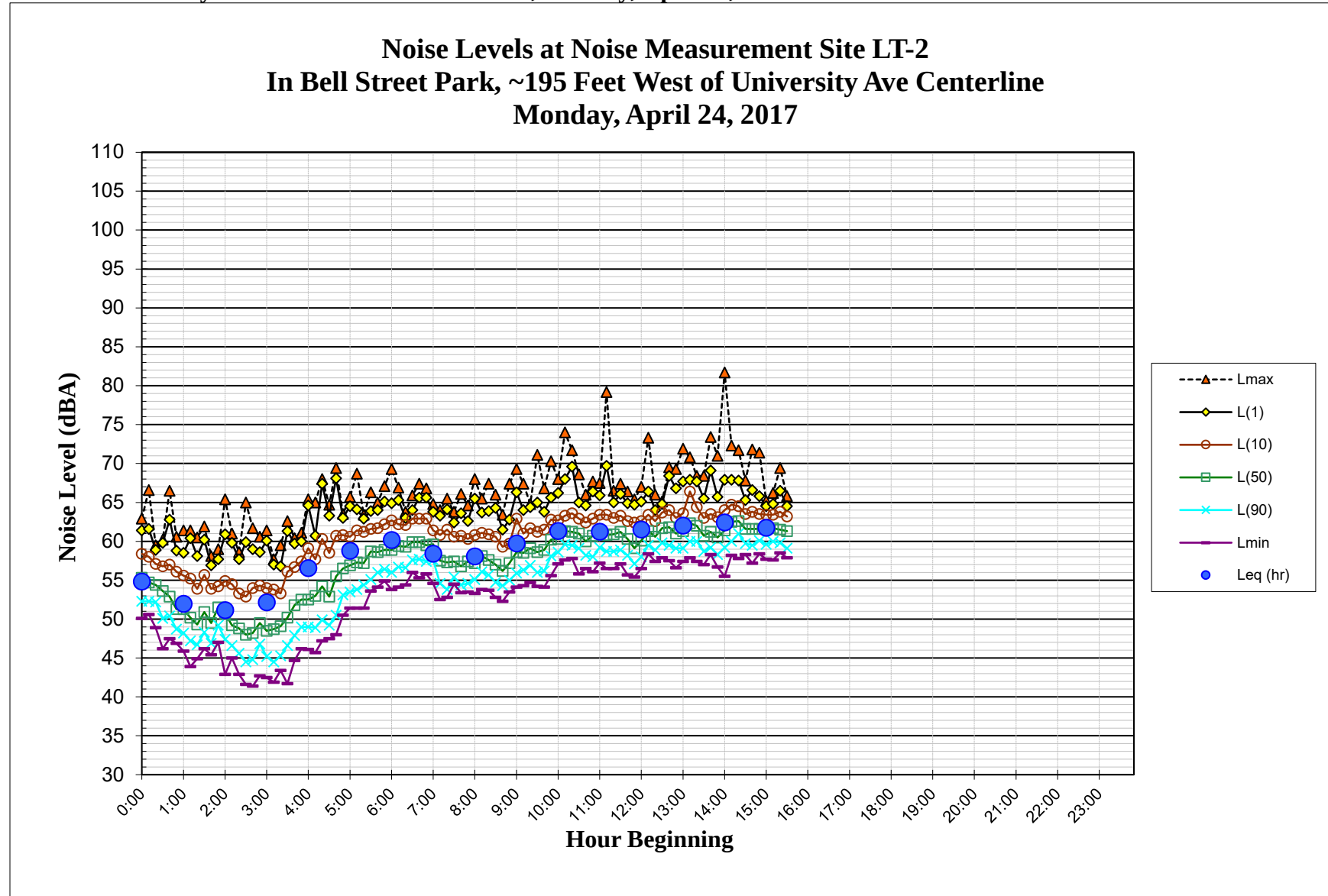


FIGURE 11 Daily Trend in Noise Levels at LT-2, Monday, April 24, 2017



GENERAL PLAN CONSISTENCY ANALYSIS

The impacts of site constraints such as exposure of the proposed project to excessive levels of noise and vibration are not considered under CEQA. This section addresses Noise and Land Use Compatibility for consistency with the policies set forth in the City's General Plan and Cal Green Code.

Noise and Land Use Compatibility

The new convenience store would be the only use proposed by the project that could be considered noise-sensitive. Table 10-1 of the City of East Palo Alto General Plan requires that interior noise levels within retail stores be maintained at or below 55 dBA $L_{eq(12-hr)}$, where the $L_{eq(12-hr)}$ is the A-weighted equivalent sound level averaged over a 12-hour period. Exterior noise thresholds for retail store land uses are not specified and the project does not propose any outdoor use areas. Additionally, the State of California requires any non-residential land use to meet the Cal Green Code standards which specify that interior noise levels do not exceed 50 dBA $L_{eq(1-hr)}$.

Future interior noise levels at the project site will continue to result primarily from vehicular traffic along University Avenue. Based on the results of the University Plaza Phase II project noise monitoring survey, existing exterior noise levels at the proposed new convenience store building would reach 68 to 70 dBA CNEL. These levels correspond with the existing traffic noise contours shown in Figure 10-6 of the City of East Palo Alto General Plan. Hourly average noise levels would range between 63 to 69 dBA L_{eq} during the daytime and between 56 to 66 dBA L_{eq} during the nighttime. The traffic study conducted for the University Plaza Phase II project showed that future increases in traffic volumes in the site vicinity will result in traffic noise increases of 2 dBA to the north and south along University Avenue, and 1 to 2 dBA to the east and west along Bell Street. Therefore, future noise levels at the project site are anticipated to increase by 2 dBA above existing conditions, resulting in community noise equivalent levels of 70 to 72 dBA CNEL, daytime hourly average noise levels of 65 to 71 dBA L_{eq} , and nighttime hourly average noise levels of 58 to 68 dBA L_{eq} .

The future noise environment of the project site would also be affected by the proposed car wash. Noise generated by the car wash was modeled using SoundPLAN 8.2 and calculated at the nearest façade of the convenience store (see operational noise segment of the Noise Impacts and Mitigation Measures section of the report for more detailed information on car wash noise modeling). The center of the exit of the proposed car wash would be located approximately 85 feet northwest of the nearest point of the convenience store building and would be expected to generate a worst-case hourly average noise level of 63 dBA L_{eq} . Combined traffic noise and continuous use of the car wash would result in exterior noise levels at the convenience store building reaching up to 72 dBA L_{eq} . Standard commercial construction with windows in the closed position would provide an exterior to interior noise reduction of about 25 dBA, resulting in an interior hourly average noise level of 47 dBA L_{eq} . Interior noise within the new convenience store would not exceed the General Plan limit of 55 dBA $L_{eq(12-hr)}$ or the Cal Green Code standard of 50 dBA $L_{eq(1-hr)}$. Interior noise within the new convenience store would be compatible with applicable regulations.

NOISE IMPACTS AND MITIGATION MEASURES

This section describes the significance criteria used to evaluate project impacts under CEQA, provides a discussion of each project impact, and presents mitigation measures, where necessary, to provide a compatible project in relation to adjacent noise sources and land uses.

Significance Criteria

The following criteria were used to evaluate the significance of environmental noise resulting from the project:

- **Temporary or Permanent Noise Increases in Excess of Established Standards.** A significant noise impact would be identified if the project would generate a substantial temporary or permanent noise level increase over ambient noise levels at existing noise-sensitive receptors surrounding the project site and that would exceed applicable noise standards presented in the General Plan at existing noise-sensitive receptors surrounding the project site.
 - Temporary Noise Increase. A significant noise impact would be identified if construction-related noise would temporarily increase ambient noise levels at sensitive receptors. Section 15.04.125 of the City's Municipal Code and Policy 7.11 of the City's General Plan introduce limits on hours of construction and provide recommended construction noise abatement measures.
 - Permanent Noise Increase. A significant permanent noise level increase would occur if project-generated traffic would result in: a) a noise level increase of 5 dBA CNEL or greater, with a future noise level of less than 65 dBA CNEL, or b) a noise level increase of 3 dBA CNEL or greater, with a future noise level of 65 dBA CNEL or greater.
 - Operational Noise in Excess of Standards. A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the Municipal Code. Operational noise level limits are shown in Tables 4 and 5 of the Setting section.
- **Generation of Excessive Groundborne Vibration.** A significant impact would be identified if the construction of the project would generate excessive vibration levels surrounding receptors. For sensitive historic structures, including ruins and ancient monuments or buildings that are documented to be structurally weakened, a continuous vibration limit of 0.08 in/sec PPV (peak particle velocity) will be used to minimize the potential for cosmetic damage to a building. A continuous vibration limit of 0.30 in/sec PPV will be used to minimize the potential for cosmetic damage at buildings of normal conventional construction.

- **Excessive Aircraft Noise.** A significant noise impact would be identified if the project would expose people residing or working in the project area to excessive aircraft noise levels.

Impact 1a: Temporary Construction Noise. Existing noise-sensitive land uses in the project vicinity would be exposed to a substantial temporary increase in ambient noise levels due to project construction activities. **This is a potentially significant impact.**

Section 15.04.125 of the City's Municipal Code limits construction activities to between 7:00 a.m. and 6:00 p.m. on weekdays and to between 9:00 a.m. and 5:00 p.m. on Saturdays. Construction activities are prohibited on Sundays and national holidays. During these allowable hours, construction noise would be exempt from the City's exterior and interior noise level standards at single- or multi-family residences, schools, hospitals, churches, and public libraries.

Construction activities generate considerable amounts of noise, especially during earth-moving activities when heavy equipment is used. Construction of the proposed project would involve demolition of existing site improvements, site preparation, grading, excavation, trenching and foundation work, building erection, and paving. The hauling of imported and exported soil and/or materials would generate truck trips on local roadways as well. Pile driving would not be required as a method of construction. The planned duration of construction would be six months and construction would occur between the hours of 8:00 a.m. and 5:00 p.m. As it is assumed that construction will not take place on Sundays or holidays, the construction schedule would be compatible with Municipal Code limits.

During each stage of construction, there would be a different mix of equipment operating, and noise levels would vary by stage and vary within stages based on the amount of equipment in operation and the location at which the equipment is operating. Typical construction noise levels at 50 feet are shown in Tables 6 and 7. Table 6 shows the average noise level ranges by construction phase, and Table 7 shows the average and maximum noise level ranges for different construction equipment. Most construction noise falls with the range of 80 to 90 dBA at 50 feet from the source.

TABLE 6 Typical Ranges of Construction Noise Levels at 50 Feet, L_{eq} (dBA)

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84
I - All pertinent equipment present at site.								
II - Minimum required equipment present at site.								

Source: U.S.E.P.A., Legal Compilation on Noise, Vol. 1, p. 2-104, 1973.

TABLE 7 Construction Equipment 50-foot Noise Emission Levels (dBA)

Equipment Category	L _{eq} ^{1,2,3}	L _{max} ^{1,2}	Equipment Category	L _{eq} ^{1,2,3}	L _{max} ^{1,2}
Air Hose	93	100	Horizontal Bore Drill	87	88
Air-Operated Post Driver	83	85	Impact Pile Driver	99	105
Asphalt Distributor Truck (Asphalt Sprayer)	-	70	Impact Wrench	68	72
Auger Drill	88	101	Jackhammer	91	95
Backhoe	76	84	Jig Saw	92	95
Bar Bender	66	75	Joint Sealer	-	74
Blasting (Abrasive)	100	103	Man Lift	72	73
Blasting (Explosive)	83	93	Movement Alarm	79	80
Chainsaw	79	83	Mud Recycler	73	74
Chip Spreader	-	77	Nail Gun	70	74
Chipping Gun	95	100	Pavement Scarifier (Milling Machine)	-	84
Circular Saw	73	76	Paving – Asphalt (Paver, Dump Truck)	-	82
Compactor (Plate)	-	75	Paving – Asphalt (Paver, MTV, Dump Truck)	-	83
Compactor (Roller)	82	83	Paving – Concrete (Placer, Slipform Paver)	87	91
Compressor	66	67	Paving – Concrete (Texturing/Curing Machine)	73	74
Concrete Batch Plant	87	90	Paving – Concrete (Triple Roller Tube Paver)	85	88
Concrete Grinder	-	97	Power Unit (Power Pack)	81	82
Concrete Mixer Truck	81	82	Pump	73	74
Concrete Pump Truck	84	88	Reciprocating Saw	64	66
Concrete Saw	85	88	Rivet Buster	100	107
Crane	74	76	Rock Drill	92	95
Directional Drill Rig	68	80	Rumble Strip Grinding	-	87
Drum Mixer	66	71	Sander	65	68
Dump Truck (Cyclical)	82	92	Scraper	-	92
Dump Truck (Passby)	-	73	Shot Crete Pump/Spray	78	87
Excavator	76	87	Street Sweeper	-	81
Flatbed Truck	-	74	Telescopic Handler (Forklift)	-	88
Front End Loader (Cyclical)	72	81	Vacuum Excavator (Vac-Truck)	86	87
Front End Loader (Passby)	-	71	Ventilation Fan	62	63
Generator	67	68	Vibratory Concrete Consolidator	78	80
Grader (Passby)	-	79	Vibratory Pile Driver	99	105
Grinder	68	71	Warning Horn (Air Horn)	94	99
Hammer Drill	72	75	Water Spray Truck	-	72
Hoe Ram	92	99	Welding Machine	71	72

Notes: ¹ Measured at 50 feet from the construction equipment, with a “slow” (1 sec.) time constant.

² Noise levels apply to total noise emitted from equipment and associated components operating at full power while engaged in its intended operation.

³ Equipment without average (L_{eq}) noise levels are non-stationary and best represented only by maximum instantaneous noise level (L_{max}).

Source: Project 25-49 Data, National Cooperative Highway Research Program, <https://apps.trb.org/cmsfeed/trbnetprojectdisplay.asp?projectid=3889>, October 2018

Project construction data including a list of equipment to be used was analyzed to determine average noise levels which would be expected throughout each phase of construction. The nearest noise-sensitive residential land uses would be located adjacent to the project site to the east and south, about 60 feet east and 75 feet south of the approximate center of construction. The nearest non-residential noise-sensitive land uses include the Lewis and Joan Platt East Palo Alto Family YMCA located approximately 235 feet to the southwest of the center of construction, the Community Church located approximately 270 feet northwest of the center of construction, and Bell Street Park located approximately 320 feet southwest of the center of construction. Construction-generated noise levels drop off at a rate of about 6 dBA per doubling of the distance between the source and receptor. Shielding by buildings or terrain can provide an additional 5 to 10 dBA noise reduction at distant receptors. Calculated construction noise levels at distances representative of the distance between the approximate center of construction and the nearest noise-sensitive uses are shown below in Table 8.

TABLE 8 Calculated Construction Noise Levels at Nearby Land Uses (dBA L_{eq})

Construction Phase	Residential (60 ft)	Residential (75 ft)	YMCA (235 ft)	Community Church (270 ft)	Bell Street Park (320 ft)
Demolition	76	74	64	63	61
Site Preparation	71	69	59	58	56
Grading/Excavation	71	69	59	58	56
Trenching/Foundation	71	69	59	58	56
Building – Exterior	77	75	65	64	62
Building – Interior	64	62	52	51	49
Paving	85	83	73	72	70

As shown in Table 8, construction noise levels produced by the project would typically range from 62 to 85 dBA L_{eq} at the nearest residences, from 52 to 73 dBA L_{eq} at the YMCA, from 51 to 72 at the Community Church, and from 49 to 70 at Bell Street Park. Project construction would generate noise in excess of ambient daytime levels at the nearest noise-sensitive uses. While construction noise is exempt from standards during allowable hours, to minimize annoyance and disturbance at the nearest residences, the following construction noise best practices outlined in Policy 7.11 of the City’s General Plan are recommended:

- Utilize ‘quiet’ models of air compressors and other stationary noise sources where technology exists;
- Equip all internal combustion engine-driven equipment with mufflers, which are in good condition and appropriate for the equipment;
- Locate all stationary noise-generating equipment, such as air compressors and portable power generators, as far away as possible from adjacent land uses;
- Locate staging areas and construction material areas as far away as possible from adjacent land uses;
- Prohibit all unnecessary idling of internal combustion engines;

- If impact pile driving is proposed, multiple-pile drivers shall be considered to expedite construction. Although noise levels generated by multiple pile drivers would be higher than the noise generated by a single pile driver, the total duration of pile driving activities would be reduced;
- If impact pile driving is proposed, temporary noise control blanket barriers shall shroud pile drivers or be erected in a manner to shield the adjacent land uses. Such noise control blanket barriers can be rented and quickly erected;
- If impact pile driving is proposed, foundation pile holes shall be pre-drilled to minimize the number of impacts required to seat the pile. Pre-drilling foundation pile holes is a standard construction noise control technique. Pre-drilling reduces the number of blows required to seat the pile. Notify all adjacent land uses of the construction schedule in writing;
- Designate a "disturbance coordinator" who would be responsible for responding to any local complaints about construction noise. The disturbance coordinator will determine the cause of the noise complaint (e.g., starting too early, bad muffler, etc.) and will require that reasonable measures warranted to correct the problem be implemented; and
- Conspicuously post a telephone number for the disturbance coordinator at the construction site and include it in the notice sent to neighbors regarding the construction.

Additionally, it is recommended that proposed concrete masonry walls located along project property lines to the east and south are constructed as early as possible so that they may provide noise reduction at the adjacent residences.

With implementation of the above best practices and understanding that the ambient noise increase resulting from construction would occur during a temporary period, project construction would result in a **less-than-significant** temporary noise impact.

Mitigation Measure 1a: None required.

Impact 1b: Permanent Noise Level Increase. The proposed project would not result in a permanent noise level increase at existing noise-sensitive land uses in the project vicinity due to project-generated traffic. **This is a less-than-significant impact.**

A significant impact would result if traffic generated by the project would substantially increase noise levels at sensitive receptors in the vicinity. A substantial increase would occur if: a) the noise level increase is 5 dBA CNEL or greater, with a future noise level of less than 65 dBA CNEL, or b) the noise level increase is 3 dBA CNEL or greater, with a future noise level of 65 dBA CNEL or greater. The existing noise environment in the surrounding area currently exceeds 65 dBA CNEL; therefore, a significant impact would occur if project-generated traffic would permanently increase noise levels by 3 dBA CNEL. For reference, a 3 dBA CNEL noise increase would be expected if the project would double existing traffic volumes along a roadway.

A detailed report describing project-generated traffic volumes was not available as of this writing. Based on the traffic study conducted for the University Plaza Phase II project, future peak hour traffic volumes along University Avenue near the site will range from 2,700 to 3,200 vehicles. Future peak hour traffic volumes along Bell Street will range from 370 to 660 vehicles. For the project to generate enough traffic to increase ambient noise levels by 3 dBA CNEL at sensitive receptors along these roads, it would have to double these existing volumes. As the project site is currently in use as a gas station, the project improvements including the car wash and convenience store would have to generate this doubling of traffic. Based on the Institute of Transportation Engineers (ITE) Trip Generation Rates (9th Edition), a gas station with six fueling stations has a daily trip generation rate of 1,011 while a service station with six fueling stations, convenience store and car wash would generate 917 daily trips. Therefore, the project is not expected to result in a substantial permanent increase in traffic noise. This is a **less-than-significant impact**.

Mitigation Measure 1b: None required.

Impact 1c: Noise Levels in Excess of Standards. The proposed project could generate noise in excess of standards established in the City's General Plan and Municipal Code at the nearby sensitive receptors. Implementation of mitigation measures to reduce car wash, delivery truck, and mechanical equipment noise would result in a **less-than-significant** noise impact.

As seen in Table 4, Section 8.52 of the City's Municipal Code establishes exterior noise level standards at receiving residential, school, hospital, church, and public library uses, and interior noise level standards at receiving residential uses. These standards would apply at the residences bordering the site to the east and south. There are no hospitals, schools, or public libraries in the site vicinity. Community Church is located approximately 270 feet northwest of the site. At this distance, operational noise associated with the project is not anticipated to result in noise levels above the ambient during any hour. The Municipal Code standard establishes a limit of 55 dBA not to be exceeded for greater than 30 minutes during any one hour period at any residences. This is equivalent to an hourly L₅₀, a metric which represents the noise level exceeded 30 minutes per hour. This application of this standard would be most appropriate when evaluating the noise impact of the project, as noise generated by the project is anticipated to be relatively steady over periods greater than 30 minutes under a worst case scenario. The Municipal Code also establishes an interior noise level standard of 45 dBA not to be exceeded for more than 5 minutes during any one hour period. Additionally, in the event the existing background noise exceeds the Municipal Code limit, these standards shall be adjusted in 5 dBA increments until it encompasses the background noise level.

Ambient L₅₀ measurements were taken during the noise measurement survey described in the setting section. Based on measurement data, noise levels at the front yard of 2178 University Avenue, the residence located south of the site and with the greatest exposure to project-generated noise, currently reach about 63 to 69 dBA L₅₀ during daytime hours. To encompass the existing background noise level during the quietest daytime hour, the Municipal Code standard shall be adjusted to 65 dBA L₅₀. Background noise levels in the backyard of the 2178 University Avenue residence are not anticipated to currently exceed 55 dBA L₅₀.

Car Wash

The project proposes to construct a drive-through car wash tunnel along the eastern property line nearest University Avenue. Vehicles would enter the car wash through a door along the northern façade of the car wash building and exit through a door to the south. The proposed hours of operation for the car wash were not available as of this writing, however it is reasonably assumed that car wash operations will occur only during daytime hours between 7:00 a.m. and 10:00 p.m.

The primary noise source at the site would be the dryer system used in the drive-through car wash. Car wash dryer systems are capable of generating high levels of noise near the entrance and exit doors. Noise data for the car wash dryer system proposed for this project indicates that the dryer, when equipped with a silencer, would generate noise levels of 74 dBA when measured at a distance of 20 feet directly in front of the center of the tunnel exit. Additional noise data including noise levels measured at different distances and at various angles were used to calibrate the car wash noise source in a SoundPLAN 8.2 noise model used to evaluate operational noise generated by the project. SoundPLAN is a 3-dimensional noise modeling software which considers characteristics of noise sources and project geometry. Also added into the model as a noise source was the vacuum station which would be located northeast of the tunnel entrance. Noise data for the vacuum station was not currently available, however, manufacturer data used for vacuum stations in other studies indicate that an individual vacuum station when in use generates a noise level of about 66 dBA at a distance of 3 feet. Minimal noise is generated when vacuum hoses are hooked.

Two scenarios were considered for the purposes of noise modeling. The first scenario evaluates noise generated by the car wash based on the most recently available site plan and the second scenario increases the height of the longer segment of the wall along the southern property line from 6 feet to 8 feet and introduces an 8 foot wall along the eastern exit path leaving the car wash. Both scenarios assume continuous use of the vacuum station and implementation of the car wash silencer, which would be necessary to reduce project-generated noise at the nearest sensitive uses. Depending on the operations of the car wash system, the dryer may be in use for only part of the cycle, and there may be extended periods of time where the car wash is not in use. However, to analyze a worst case scenario, and given the information available on the car wash, both modeling scenarios assume continuous operation of the dryer throughout all daytime hours. Locations of the proposed walls and recommended changes to the walls are shown in Figure 12. A noise exposure map based on the first scenario and under existing plans is shown in Figure 13, and a noise exposure map based on the second scenario with the modified walls is shown in Figure 14. Table 9 lists the noise levels generated by the car wash at the nearest noise-sensitive uses in the site vicinity under the proposed plans, with recommended modifications to noise walls, and the noise reduction the modifications would bring.

TABLE 9 Predicted Car Wash Noise Levels at Nearby Receivers

Receiving Location	Calculated Noise Level (dBA)		
	Existing Plans	Modified Walls	Noise Reduction
2178 University Avenue Front Yard	65 to 66	65 to 66	0
2178 University Avenue Northern Façade	62	58	-4
2178 University Avenue Backyard	57 to 62	49 to 54	-8
Bell Street Park	47 to 52	49 to 54	+2 ¹
Community Church Courtyard	31	31	0
612 Bell Street Western Property Line	45 to 51	44 to 48	-1 to -3
YMCA Outdoor Patio	52	54	+2 ¹

¹ Noise levels at Bell Street Park and the YMCA Outdoor Patio would increase slightly due to car wash noise being reflected off the exit path wall.

FIGURE 12 Location of Noise Walls

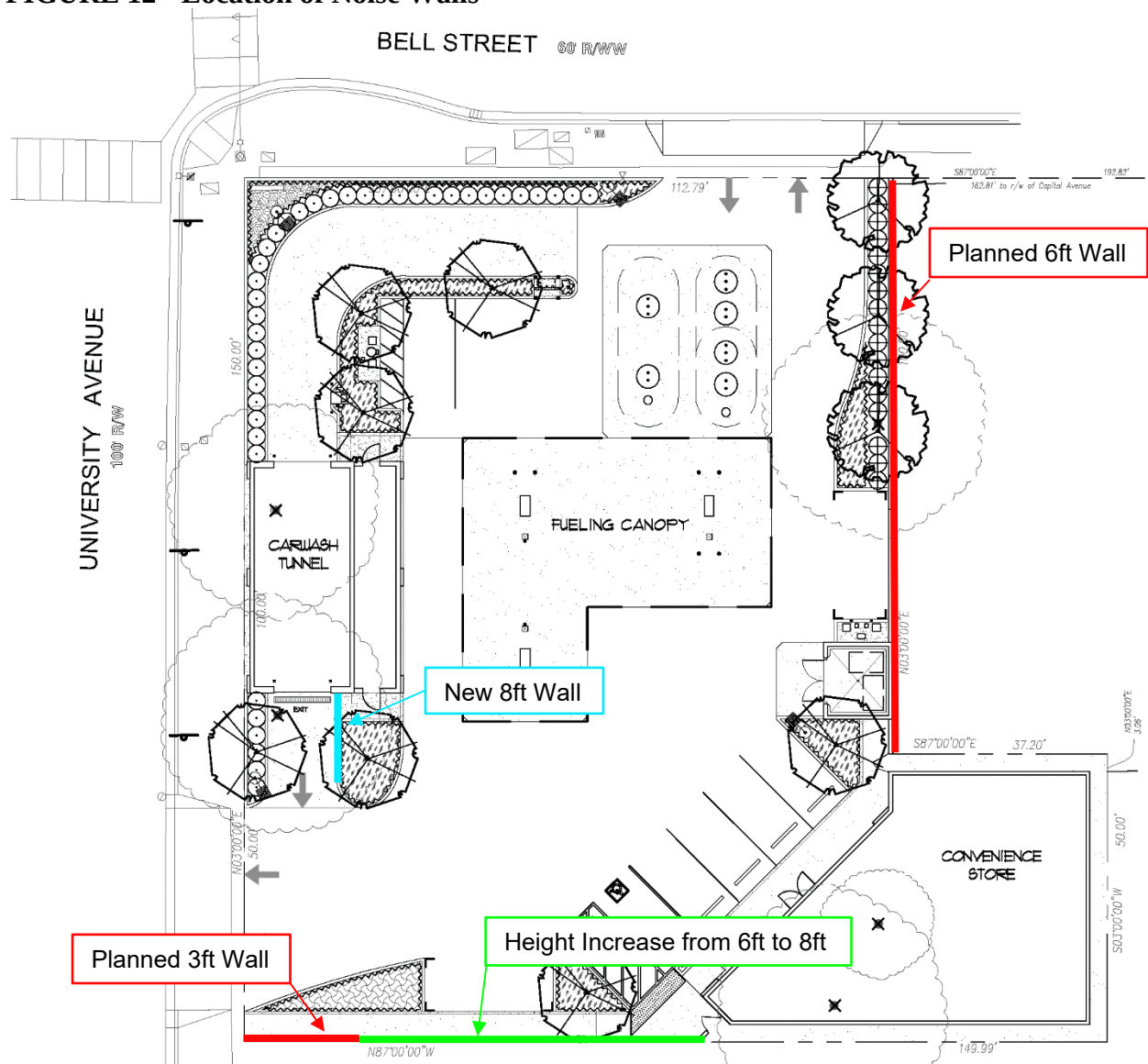


FIGURE 13 Noise Exposure Resulting from Car Wash Operations When Equipped with Silencer

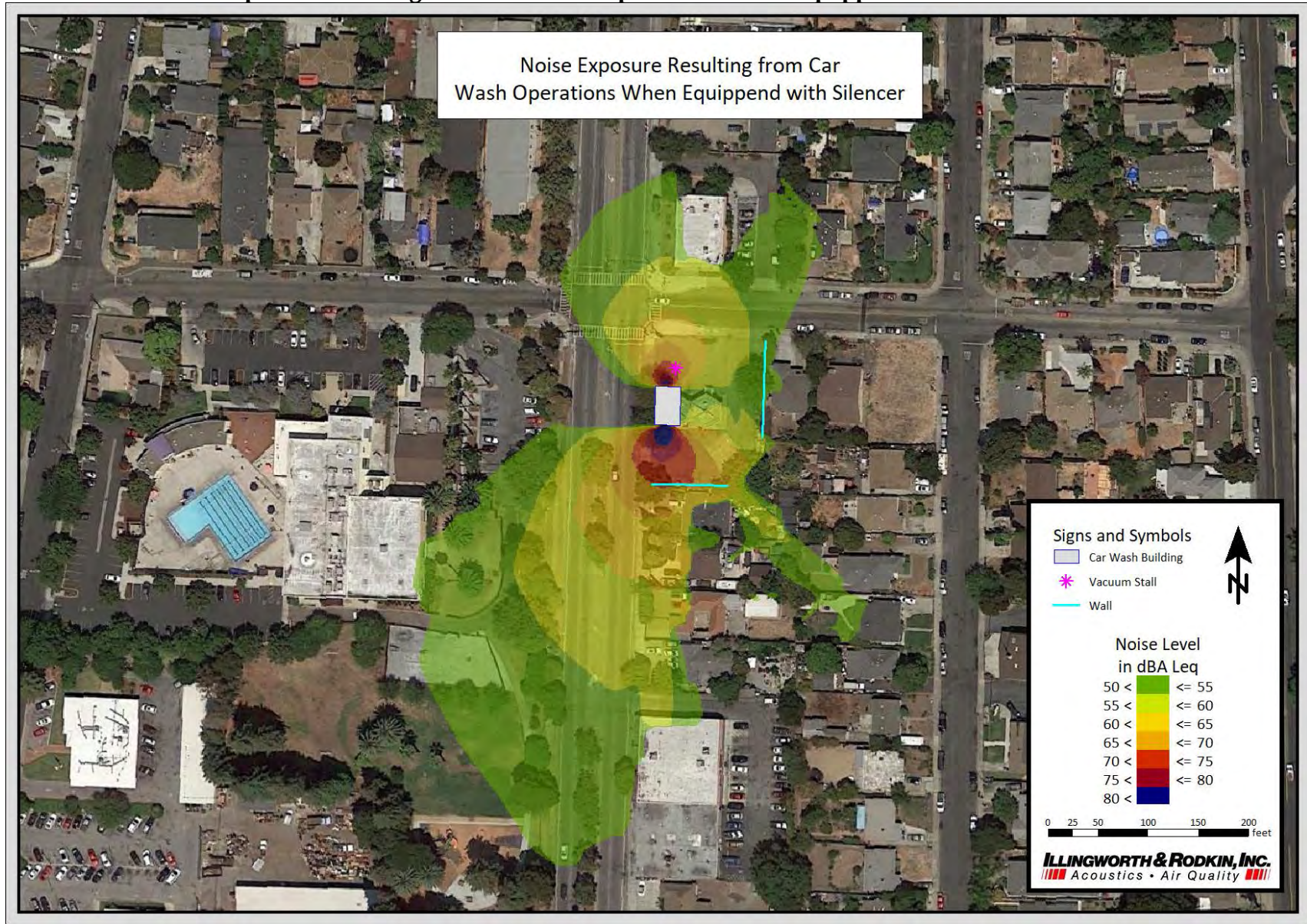
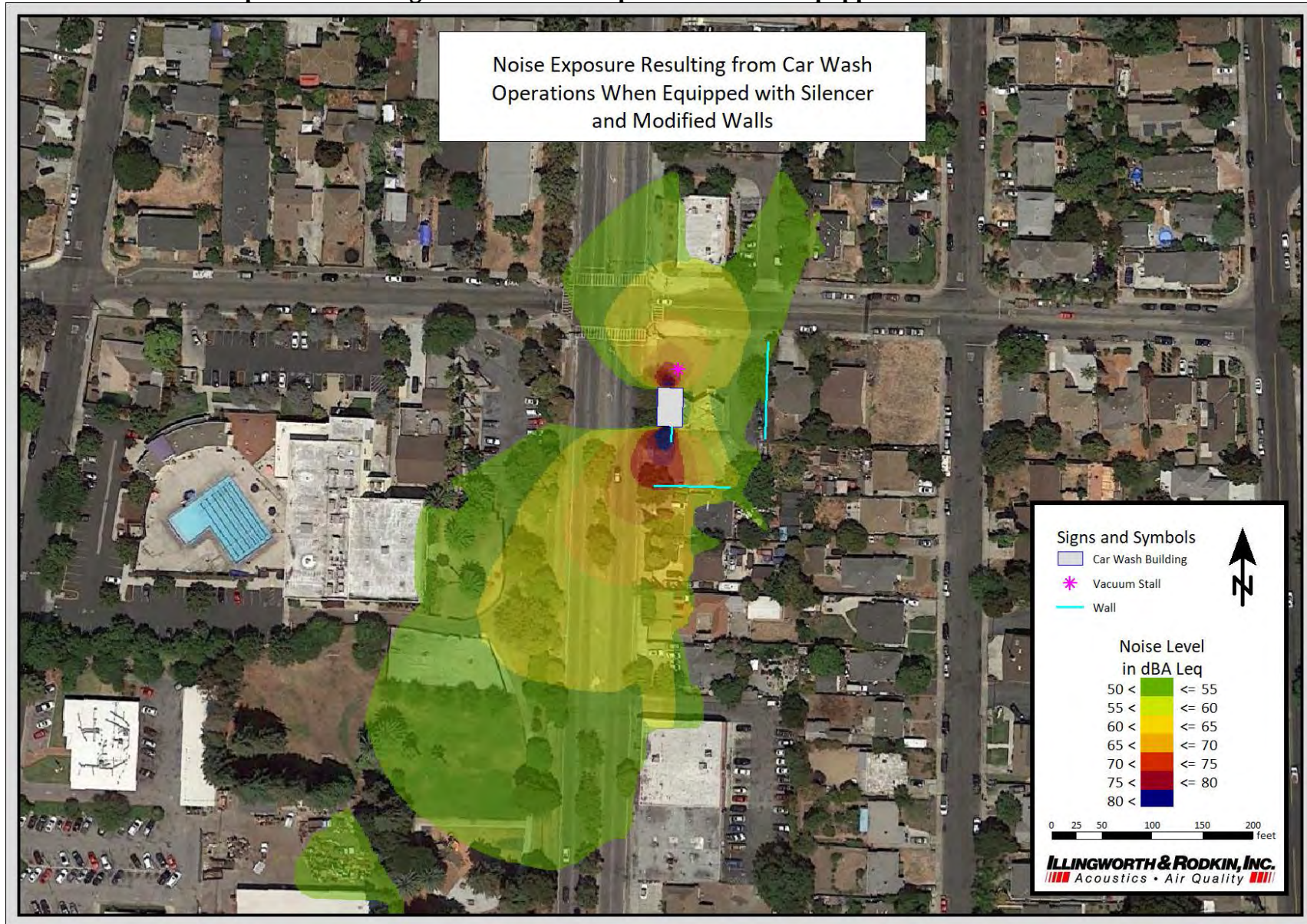


FIGURE 14 Noise Exposure Resulting from Car Wash Operations When Equipped with Silencer and Modified Walls



As seen in Table 9 and Figure 13, under current plans, noise generated by car wash operations with inclusion of the silencer would have the potential to exceed Municipal Code exterior noise level standards at the nearest residence to the south. Project-generated noise levels would reach 65 to 66 dBA in the front yard and 57 to 62 dBA in the backyard of the residence at 2178 University Avenue. Municipal Code limits would not be exceeded at any other nearby noise-sensitive uses. As seen in Table 9 and Figure 14, increasing the height of the taller segment of wall along the southern property line from 6 feet to 8 feet and constructing a new, 8-foot wall along the eastern side of the car wash exit lane would reduce noise levels in the backyard of the residence by about 8 dBA, resulting in worst-case hourly noise levels of 54 dBA. Project-generated noise in the front yard of the residence would still have the potential to exceed the adjusted 65 dBA L_{50} standard by up to 1 dBA during periods of heavy car wash use. However, as seen in Figure 14, this noise level would only be exceeded along a very small segment of the front yard. Additionally, based on the measurement survey described in the setting section, existing noise levels in the front yard of the residence already exceed 65 dBA L_{50} during daytime hours, with daytime hourly noise levels reaching 63 to 69 dBA L_{50} . With future noise levels along University Avenue in the site vicinity expected to increase by 2 dBA resulting from increased traffic volume, the future daytime hourly noise level at the front yard of the 2178 University Avenue is expected to reach 65 to 71 dBA L_{50} .

Under current plans, exterior noise levels resulting from car wash operations would reach up to 62 dBA at the northern façade of the residence located at 2178 University Avenue. Typical residential construction with windows in the closed position provides a minimum noise reduction of about 15 dBA. Therefore, under current plans and with the silencer equipped, car wash operations would result in interior noise levels at the nearest residence reaching up to 47 dBA and would exceed the Municipal Code standard of 45 dBA, as seen in Table 5. This is a **potentially significant impact**

Mechanical Equipment

While during most daytime hours, noise originating from the project site would be dominated by car wash activities, there would be periods of low car wash use and nighttime hours when other sources such as heating, ventilation, and air conditioning (HVAC) equipment may become the predominant noise source. HVAC units would be expected to be located at the rooftop of the proposed convenience store; however, the number of units, specifications, and exact location of these units are not available at this time. Typical HVAC equipment for a commercial use such as those proposed for the project generates noise levels in the range of 58 to 68 dBA at a distance of 3 feet from the equipment.

The proposed convenience store would operate 24 hours a day and therefore it is expected that HVAC equipment may generate noise throughout all hours. While HVAC equipment may periodically turn on and off, there may be periods during nighttime hours when HVAC equipment will be continuously operating for the entire hour. As noise from HVAC sources is typically very stable, the L_{50} metric used in Category 1 of Table 4 would apply, and noise from HVAC equipment would be limited to 50 dBA L_{50} during nighttime hours at all surrounding noise-sensitive receptors. The convenience store building would be located as close as 5 feet from adjacent residential property lines. At this distance, noise from HVAC equipment could reach 54 to 64 dBA L_{50} , exceeding daytime and nighttime limits. This is a **potentially significant impact**.

To ensure HVAC-generated noise does not exceed Municipal Code limits, HVAC equipment would have to be located greater than 20 feet from the nearest residential property line. Alternatively, HVAC equipment may be enclosed or shielded from the surrounding residential uses by screening walls. Typical screening provided by a barrier such as a rooftop parapet wall could reduce noise by at least 10 dBA. A full enclosure such as an equipment room would be expected to provide greater noise reduction.

Parking Lot and Gas Station Noise

A parking lot with seven spaces would be provided at the site. Three gasoline pumps totaling six fueling positions would operate 24 hours a day at the proposed gas station. Gasoline pumps would include similar noise sources as parking spaces, which would include vehicular circulation, louder engines, car alarms, door slams, and human voices. These sources typically generate noise levels ranging from 53 to 63 dBA $L_{\max}$ at a distance of 50 feet.

These are isolated, maximum instantaneous noise sources, which are compared to the Municipal Code limit of 60 dBA not to be exceeded for more than 5 minutes during any one hour period during nighttime hours. The approximate center of parking lot and gas station activities is located about 50 feet from the nearest property line to the east. Both property lines to the east and south would be separated from the site via walls reaching a minimum of 6 feet in height at most locations. At a distance of 50 feet and with the proposed 6 foot wall in place, Noise from parking lot activities would reach about 43 to 53 dBA $L_{\max}$ at the nearest residential property line. Noise from parking lot and gas station activities would not exceed Municipal Code limits.

Truck Deliveries

Gas stations require heavy truck deliveries for fuel deposits. The project description indicates that there will be fuel deliveries every day and convenience store supply deliveries once a week. Convenience store supply truck deliveries would be expected to arrive on smaller trucks than fuel deliveries and would not generate the same amount of noise. It is assumed that fuel delivery trucks would park at the northern portion of the site near the location of the underground tanks. Depositing the fuel into the tanks would not generate measurable noise levels. Noise due to low speed truck maneuvering results from a combination of engine, exhaust, and tire noise, as well as the intermittent sounds of back-up alarms and releases of compressed air associated with truck/trailer air brakes. For the heavy fuel trucks, maximum instantaneous noise levels would typically range from 70 to 75 dBA $L_{\max}$ at a distance of 50 feet. Smaller vender trucks typically generate maximum noise levels of 60 to 65 dBA $L_{\max}$ at the same distance. While the length of time to dispense the fuel in the tanks or unload supplies could take as long as one hour or so, typically, delivery trucks are stationary during this time with the engine off. The total time when these maximum noise levels would occur would typically be for less than 3 minutes in any one hour.

As deliveries would potentially occur during nighttime hours, the Municipal Code limit of 60 dBA not to be exceeded for more than 5 minutes during any one hour period during nighttime hours is applied to noise generated by truck deliveries. The approximate center of the site through which delivery trucks would maneuver and generate noise is located approximately 50 feet from the nearest residential property line to the west, which would be separated from the site by a 6-foot

wall. At this distance and with the proposed wall in place, fuel truck deliveries would be anticipated to result in noise levels of 60 to 65 dBA L_{max} at the nearest residential property line. Smaller vender trucks making deliveries to the convenience store would generate noise levels of 50 to 55 dBA L_{max} at the nearest residential property line. The daytime limit of 65 dBA not to be exceeded for 5 minutes during any hour would not be exceeded by any deliveries. Fuel truck deliveries would have the potential to exceed Municipal Code limits for noise generated during nighttime hours. This is a **potentially significant impact**.

Mitigation Measure 1c:

- To reduce noise at the nearest residences resulting from car wash operations to levels not exceeding Municipal Code limits, the following measures shall be required:
 - The height of the proposed 6-foot wall along the southern property line of the project site shall be increased to a minimum height of 8 feet.
 - A new wall reaching a minimum 8 feet in height shall be constructed along the eastern side of the exit lane of the car wash, extending a minimum of 15 feet from the southern façade of the car wash building.
 - The car wash must be equipped with the silencer described in the application materials.
- All HVAC equipment shall be located a minimum distance of 20 feet from the adjacent residential property lines to the south and east. Alternatively, the equipment shall be located a minimum distance of 10 feet from adjacent residential property lines with enclosures or barriers designed such that the line of sight between the equipment and the nearest residential property line is broken.
- Fuel truck deliveries shall be limited to daytime hours between 7:00 a.m. and 10:00 p.m. Limiting fuel truck deliveries to these hours would ensure noise from delivery truck maneuvering and refueling activities would not exceed Municipal Code standards at the nearest residences.

Increasing the southern property line wall height, constructing the new exit lane wall, and equipping the car wash with the specified silencer would reduce car wash-generated noise at the nearest sensitive uses to levels not exceeding limits set in the City's Municipal Code. Implementing the above measures would limit project-generated operational noise to levels not exceeding standards established in Chapter 8.52 of the City's Municipal Code and would result in a **less-than-significant impact**.

Impact 2: Exposure to Excessive Groundborne Vibration due to Construction. Construction-related vibration levels could exceed 0.3 in/sec PPV at the nearest buildings of conventional construction. **This is a potentially significant impact.**

According to Policy 6.4 of the East Palo Alto General Plan, a vibration limit of 0.08 in/sec PPV shall be used to minimize the potential for cosmetic damage to sensitive historic structures, and a vibration limit of 0.30 in/sec PPV shall be used to minimize the potential for cosmetic damage at buildings of normal conventional construction. Cosmetic damage (also known as threshold damage) is defined as hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects. Minor damage is defined as hairline cracking in masonry or the loosening of plaster. Major structural damage is defined as wide cracking or the shifting of foundation or bearing walls.

Construction activities associated with the project would include demolition, site preparation, foundation work, and new building framing and finishing. Foundation construction techniques involving impact or vibratory pile driving, which can cause excessive vibration, are not anticipated as part of the project. Heavy vibration-generating construction equipment, such as vibratory rollers or the dropping of heavy equipment (e.g., clam shovel drops), would have the potential to produce vibration levels of 0.30 in/sec PPV or more at structures within 18 feet of the project site. Table 10 presents typical vibration levels that could be expected from construction equipment at a distance of 25 feet and summarizes the vibration levels at the nearest adjacent buildings surrounding the site. Project construction activities, such as drilling, the use of jackhammers, rock drills and other high-power or vibratory tools, and rolling stock equipment (tracked vehicles, compactors, etc.), may generate substantial vibration in the immediate vicinity. Jackhammers typically generate vibration levels of 0.035 in/sec PPV and drilling typically generates vibration levels of 0.09 in/sec PPV at a distance of 25 feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used.

Construction vibration received at off-site buildings would be dependent on the distance between individual pieces of equipment on the project site and the off-site building. For example, a vibratory roller operating near the project site boundary would generate the worst-case vibration levels for the building sharing that property line. Construction vibration impacts are assessed based on the potential for damage to buildings on receiving land uses, not at receptors at the nearest property lines. Therefore, the distances used to propagate construction vibration levels (as shown in Table 7) were estimated under the assumption that each piece of equipment could operate along the nearest boundary of the project site, representing the worst-case scenario.

A review of the City of East Palo Alto Historic Resource Inventory³ indicates that the nearest property of historical significance in the site vicinity would be the Martinelli House, which is located at 2126 University Avenue approximately 475 feet south of the project site. All other structures surrounding the site are assumed to be of normal conventional construction. Table 10 presents vibration levels from construction equipment at the nearest buildings surrounding the site. Calculations were made to estimate vibration levels at distances of 5 feet to represent the nearest residential buildings to the south, as well as distances of 8 and 12 feet from the site to represent other nearby buildings, and at 475 feet to represent the distance to the Martinelli House. Vibration levels are highest close to the source, and then attenuate with increasing distance at the rate of $(D_{ref}/D)^{1.1}$, where D is the distance from the source in feet, and D_{ref} is the reference distance

³ https://www.cityofepa.org/sites/default/files/fileattachments/community_amp_economic_development/page/2961/inventory_list.pdf

of 25 feet. Vibration levels would vary depending on soil conditions, construction methods, and equipment used.

TABLE 10 Construction Vibration Levels at Nearby Buildings (PPV in/sec)

Equipment		Source Level (25 ft)	South Residential (5 ft)	West Residential (8 ft)	South Residential (12 ft)	Martinelli House (475 ft)
Clam shovel drop		0.202	1.186	0.707	0.453	0.008
Hydromill (slurry wall)	in soil	0.008	0.047	0.028	0.018	0.000
	in rock	0.017	0.100	0.060	0.038	0.001
Vibratory Roller		0.210	1.233	0.735	0.471	0.008
Hoe Ram		0.089	0.523	0.312	0.200	0.003
Large bulldozer		0.089	0.523	0.312	0.200	0.003
Caisson drilling		0.089	0.523	0.312	0.200	0.003
Loaded trucks		0.076	0.446	0.266	0.170	0.003
Jackhammer		0.035	0.206	0.123	0.078	0.001
Small bulldozer		0.003	0.018	0.011	0.007	0.000

Source: Transit Noise and Vibration Impact Assessment Manual, Federal Transit Administration, Office of Planning and Environment, U.S. Department of Transportation, FTA Report No. 0123, September 2018, as modified by Illingworth & Rodkin, Inc., December 2020.

The US Bureau of Mines has analyzed the effects of blast-induced vibration on buildings in USBM RI 8507,⁴ and these findings have been applied to vibrations emanating from construction equipment on buildings.⁵ As shown on Figure 15, these studies indicate an approximate 20% probability of “threshold damage” (referred to as cosmetic damage elsewhere in this report) at vibration levels of 1.2 in/sec PPV or less and no observations of “minor damage” or “major damage” at vibration levels of 1.2 in/sec PPV or less. Figure 15 presents the damage probability, as reported in USBM RI 8507 and reproduced by Dowding assuming a maximum vibration level of 1.2 in/sec PPV. Based on these data, cosmetic or threshold damage would be manifested in the form of hairline cracking in plaster, the opening of old cracks, the loosening of paint or the dislodging of loose objects. However, minor damage (e.g., hairline cracking in masonry or the loosening of plaster) or major structural damage (e.g., wide cracking or shifting of foundation or bearing walls) would not occur at the adjacent residential buildings, assuming a maximum vibration level of 1.2 in/sec PPV. Other buildings of normal conventional construction are located approximately 8 feet from the project site. At this distance, vibration levels would be up to 0.7 in/sec PPV. As shown on Figure 15, studies indicate an approximate 10% probability of “threshold damage” at vibration levels of 0.7 in/sec PPV or less and no observations of “minor damage” or “major damage”.

Project-generated vibration levels would exceed the 0.3 in/sec PPV limit established in General Plan Policy 6.4 and would be capable of cosmetically damaging the adjacent residential buildings to south and west. This is a **potentially significant impact**.

⁴ Siskind, D.E., M.S. Stagg, J.W. Kopp, and C.H. Dowding, Structure Response and Damage Produced by Ground Vibration from Surface Mine Blasting, RI 8507, Bureau of Mines Report of Investigations, U.S. Department of the Interior Bureau of Mines, Washington, D.C., 1980.

⁵ Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996.

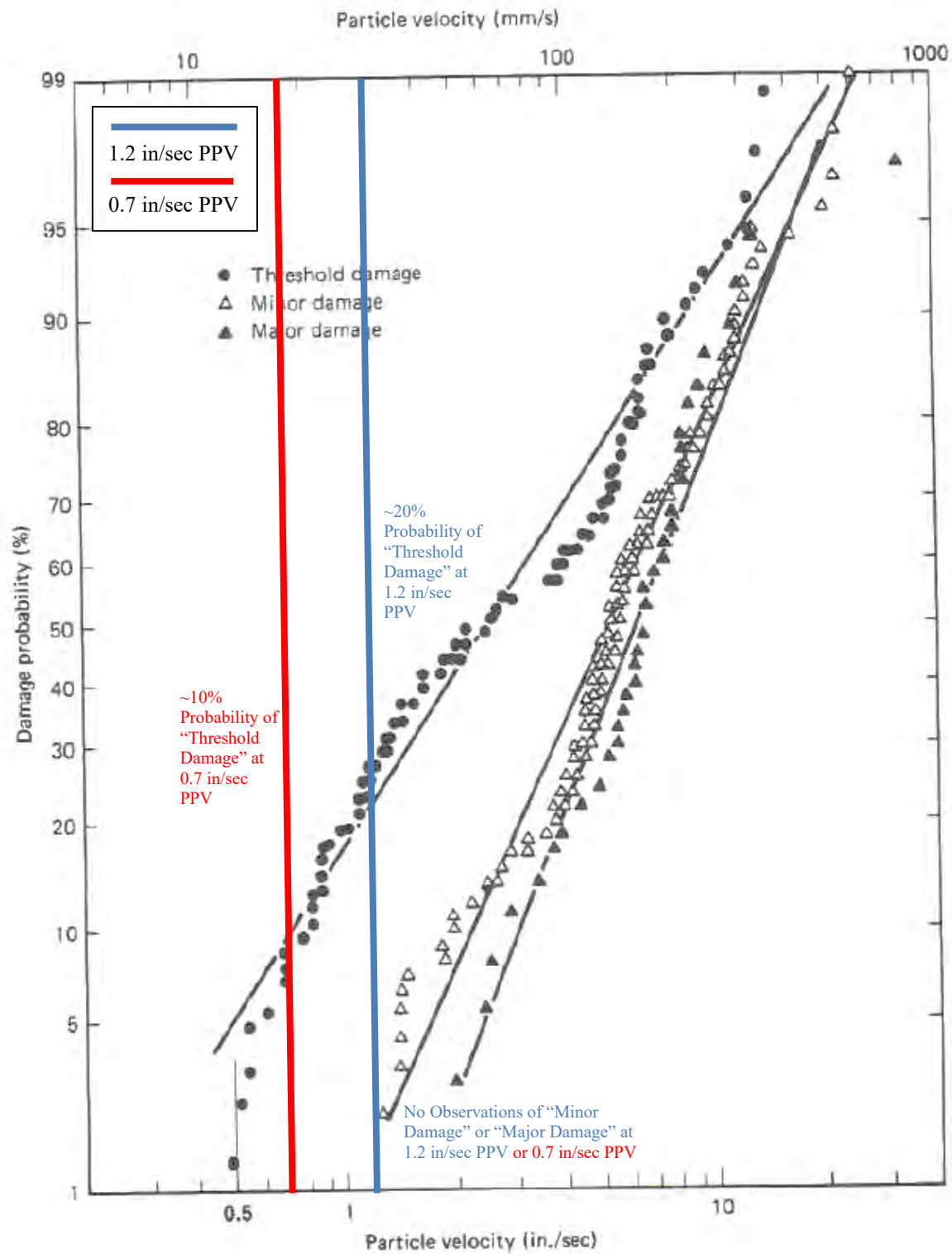
Mitigation Measure 2: The following measures are recommended to reduce vibration impacts from construction activities to a less-than-significant impact:

- Limit the use of vibratory rollers, hoe rams, large bulldozers, and caisson drilling, and avoid clam shovel drops within 15 feet of the property lines shared with residences and commercial structures adjacent to the site.
- Place operating equipment on the construction site as far as possible from vibration-sensitive receptors.
- Use smaller equipment to minimize vibration levels below the limits.
- Select demolition methods not involving impact tools.
- Avoid dropping heavy objects or materials near vibration sensitive locations.
- A list of all heavy construction equipment to be used for this project known to produce high vibration levels (tracked vehicles, vibratory compaction, jackhammers, hoe rams, etc.) shall be submitted to the City by the contractor. This list shall be used to identify equipment and activities that would potentially generate substantial vibration and to define the level of effort required for continuous vibration monitoring.
- A construction vibration-monitoring plan shall be implemented to document conditions at the residences and commercial structures adjacent to the site prior to, during, and after vibration generating construction activities. All plan tasks shall be undertaken under the direction of a licensed Professional Structural Engineer in the State of California and be in accordance with industry accepted standard methods. The construction vibration monitoring plan should be implemented to include the following tasks:
 - Identification of sensitivity to ground-borne vibration of the residences and commercial structures adjacent to the site. A vibration survey (generally described below) would need to be performed.
 - Performance of a photo survey, elevation survey, and crack monitoring survey for the residences and commercial structures adjacent to the site. Surveys shall be performed prior to and after completion of vibration generating construction activities located within 25 feet of the structure. The surveys shall include internal and external crack monitoring in the structure, settlement, and distress, and shall document the condition of the foundation, walls and other structural elements in the interior and exterior of the structure.
 - Conduct a post-survey on the structure where either monitoring has indicated high levels or complaints of damage. Make appropriate repairs where damage has occurred as a result of construction activities.

- The results of any vibration monitoring shall be summarized and submitted in a report shortly after substantial completion of each phase identified in the project schedule. The report will include a description of measurement methods, equipment used, calibration certificates, and graphics as required to clearly identify vibration-monitoring locations. An explanation of all events that exceeded vibration limits will be included together with proper documentation supporting any such claims.
- Designate a person responsible for registering and investigating claims of excessive vibration. The contact information of such person shall be clearly posted on the construction site.

Implementation of these measures would reduce the impact to a **less-than-significant** level.

FIGURE 15 Probability of Cracking and Fatigue from Repetitive Loading



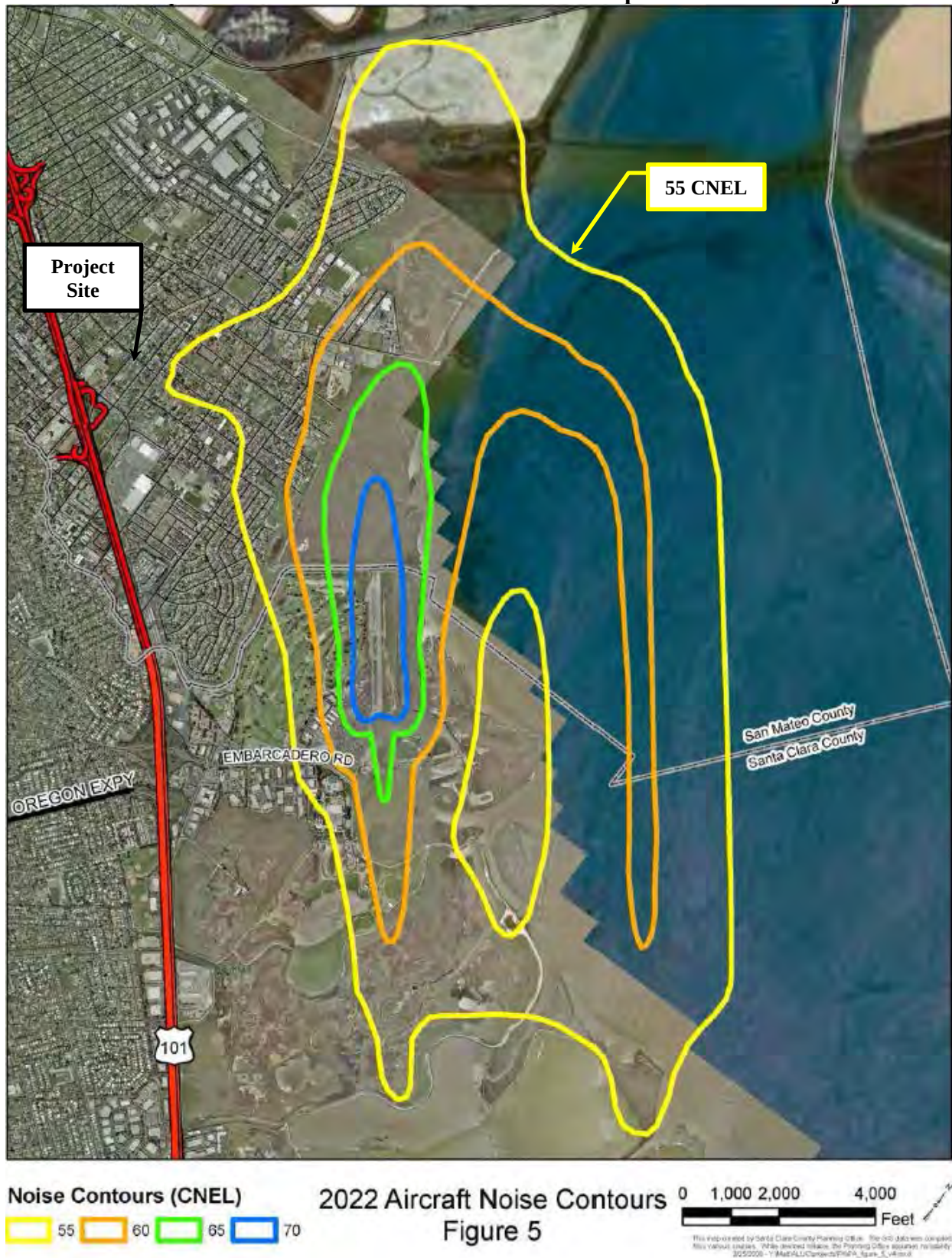
Source: Dowding, C.H., Construction Vibrations, Prentice Hall, Upper Saddle River, 1996 as modified by Illingworth & Rodkin, Inc., December 2020.

Impact 3: Excessive Aircraft Noise. The project site is located approximately 1.25 miles from the nearest airport, and the proposed project would not expose people residing or working at the site to excessive aircraft noise. **This is a less-than-significant impact.**

Palo Alto airport is located approximately 1.25 miles east of the project site. Figure 16 shows that the project site lies outside the 2022 55 dBA CNEL noise contour of the airport, according to Figure 5 of the Palo Alto Airport Comprehensive Land Use Plan. This means that future exterior noise levels due to aircraft would not exceed 55 dBA CNEL. Aircraft noise levels at the site would not be considered excessive. This is a less-than-significant impact.

Mitigation Measure 3: None required.

FIGURE 16 2022 CNEL Noise Contours for Palo Alto Airport Relative to Project Site



ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

429 E. Cotati Ave
Cotati, California 94931

Tel: 707-794-0400
www.illingworthrodkin.com

Fax: 707-794-0405
illro@illingworthrodkin.com

M E M O

Date: August 3, 2022

To: **Stuart Poulter, AICP, MCRP**
Sally Rideout, EMPA
EMC Planning Group
Monterey, CA

From: **Steve J. Deines**
Michael S. Thill
Illingworth & Rodkin, Inc.
Cotati, CA

SUBJECT: Follow-Up Noise Assessment of Noise Mitigation for 2194 University Avenue Gas Station Improvements Project

The December 2020 Noise and Vibration Assessment of the 2194 University Avenue Gas Station Improvements Project assessed operational noise originating from use of the proposed car wash. Without mitigation, noise from the blower dryer system was predicted to exceed East Palo Alto Municipal Code standards at nearby residential uses. Mitigation in the form of additional noise barriers and increased property line wall heights was found to reduce noise exposure from the car wash to levels not exceeding the adjusted standards of Table 4 of Chapter 8.52 of the East Palo Alto Municipal Code (reproduced below as Table 1). Following review from the City, revisions to the mitigation developed in the December 2020 Assessment were needed to reduce barrier heights to within City limits, and to keep the height of barriers within 20 feet of University Avenue and Bell Street to a maximum of 3 feet to preserve line of sight.

With these additional limitations in place, alternative methods of noise reduction of the car wash were considered in the forms of different alignments of walls located along the exit path of the car wash and that of a car wash exit door. Walls located along the exit path of the car wash were found to provide insufficient noise reduction at the nearest sensitive receptor, the residence at 2178 University Avenue. In a past analysis conducted by Illingworth & Rodkin, Inc., introduction of an exit door was found to provide a minimum 9 dBA reduction in car wash noise emanating from the exit. Revisions were made to the SoundPLAN 8.2 noise model to account for this reduction and calculations were run which account for the exit door. These additional calculations also revert the previously recommended increased property line wall heights back to those of the plans assessed

in the initial study, with a wall reaching a height of 3 feet extending for a length of 20 feet from both University Avenue and Bell Street then increasing to a height of 6 feet for the remainder of the wall. Calculated noise levels for the car wash with and without the exit door are shown below in Figures 1 (Figure 13 from the December 2020 Assessment) and Figure 2, and in Table 2.

TABLE 1 Exterior Noise Level Standards for Single- or Multi-Family Residences, Schools, Hospitals, Churches, and Public Libraries

Category	Cumulative Number of Minutes in Any 1-Hour Time Period	Noise Level Standards, dBA	
		Daytime (7:00 am – 10:00 pm)	Nighttime (10:00 pm – 7:00 am)
1	30	55	50
2	15	50	55
3	5	65	60
4	1	70	60
5	0	75	70

Source: City of East Palo Alto Municipal Code, 2020.

Notes:

- A. In the event the measured background noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted in 5 dBA increments so as to encompass the background noise level.
- B. Each of the noise level standards specified above shall be reduced by 5 dBA for simple tone noises, consisting primarily of speech or music, or for recurring or intermittent impulsive noises.
- C. If the intruding noise source is continuous and cannot reasonably be stopped for a period of time whereby the background noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards in this table.

TABLE 2 Predicted Car Wash Noise Levels at Nearby Receivers

Receiving Location	Calculated Noise Level (dBA L ₅₀)		
	Existing Plans	Car Wash Exit Door Closed	Noise Reduction
2178 University Avenue Front Yard	65 to 66	56 to 57	-9
2178 University Avenue Northern Façade	62	53	-9
2178 University Avenue Backyard	57 to 62	47 to 53	-9 to -10
Bell Street Park	47 to 52	38 to 43	-9
Community Church Courtyard	31	32 ¹	+1 ¹
612 Bell Street Western Property Line	45 to 51	44 to 47	-1 to -4
YMCA Outdoor Patio	52	43	-9

¹ Noise at the Community Church Courtyard is expected to increase slightly with the introduction of a car wash exit door, as additional sound would be reflected off of the door inside the car wash and out through the open entrance.

FIGURE 1 Noise Exposure Resulting from Car Wash Operations When Equipped with Silencer

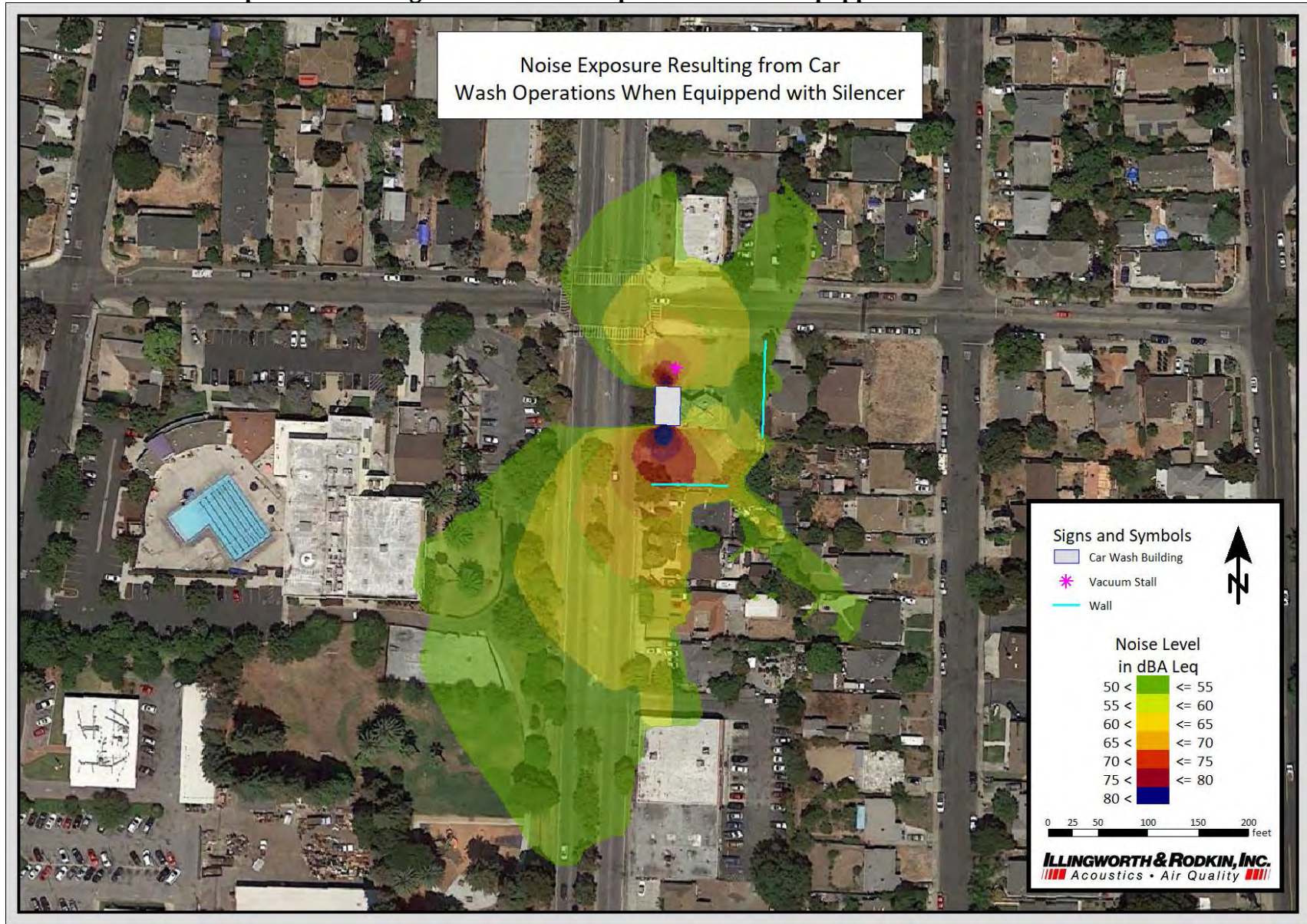
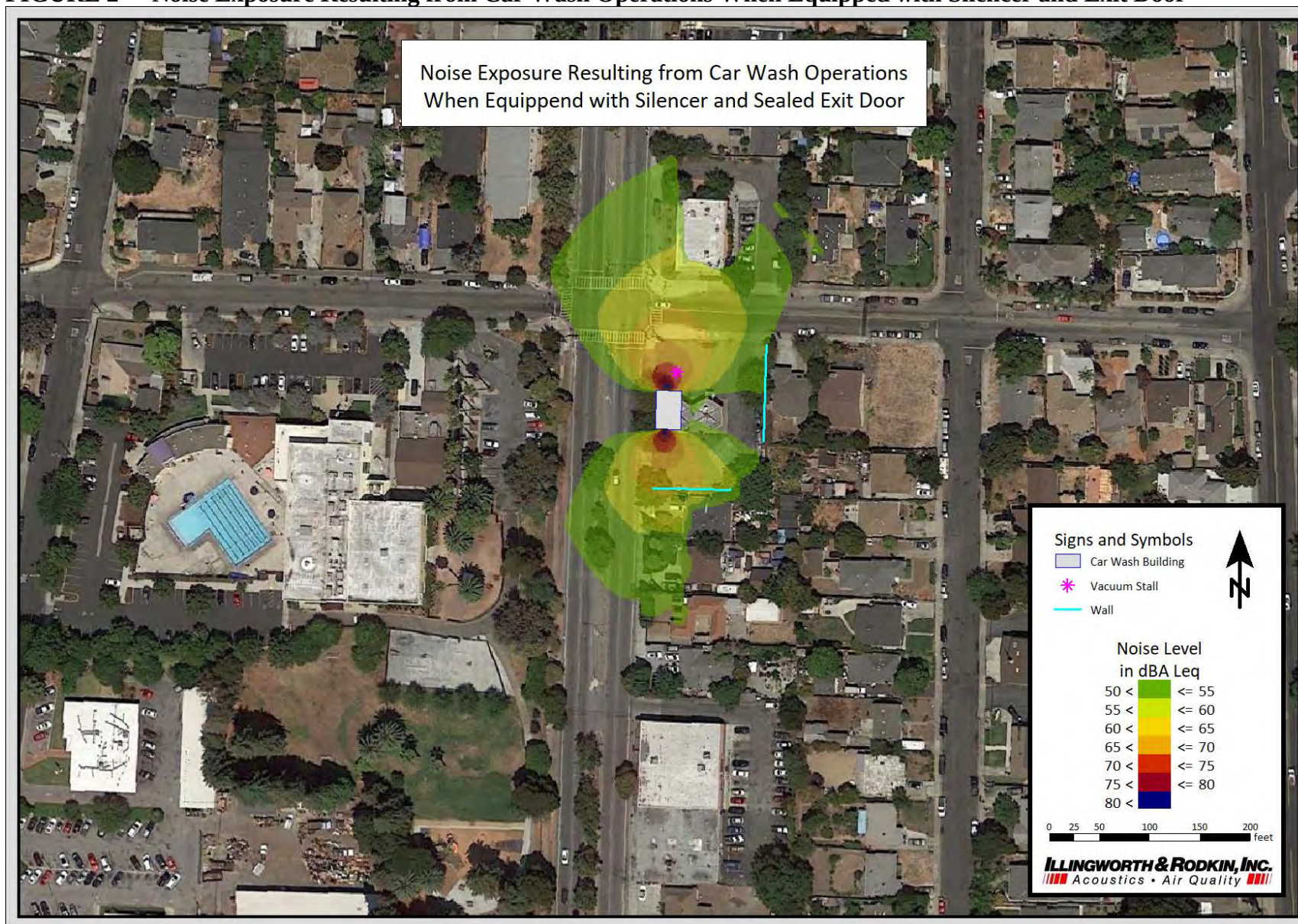


FIGURE 2 Noise Exposure Resulting from Car Wash Operations When Equipped with Silencer and Exit Door



As seen above in Table 2 and Figures 1 and 2, a closed exit door would substantially mitigate noise at the nearest sensitive receptors. Noise at the most-affected receptor, the residence at 2178 University Avenue, would be reduced by about 9 dBA L_{50} . Noise resulting from car wash operations would be kept to levels below the City's 55 dBA L_{50} standard at the northern façade of the residence and in the backyard. As discussed in the original assessment, existing noise levels at this residence's front yard, resulting primarily from traffic noise, currently exceed 55 dBA L_{50} and were adjusted up in 5 dBA increments to 65 dBA L_{50} to account for the most quiet daytime hour of 63 dBA L_{50} . Noise resulting from car wash operations would not exceed this adjusted limit in the front yard of 2178 University Avenue. Introduction of a car wash exit door which would remain closed during operation of the blower dryer system would substantially reduce noise at the nearest sensitive receptors and would result in a **less-than-significant** operational noise impact.