



CITY OF
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ALTO**

CITY OF PALO ALTO
CITY COUNCIL
Special Meeting
Monday, January 23, 2023
Council Chambers & Hybrid
5:00 PM

AGENDA ITEM COVER PAGE

13. PUBLIC HEARING / QUASI-JUDICIAL. 575 Los Trancos [21PLN-00196]: Adoption of a Record of Land Use Action Approving a Major Site and Design Application for the Construction of a new 7,245 Square Foot Single-Family Residence With a new 895 Square Foot Accessory Dwelling Unit and Associated Site Improvements, on a 5.38-Acre Site. Zoning District: Open Space (OS). Environmental Review: Adoption of a Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program. *Title Updated, Public Comments, Presentation* (8:30 – 9:30 PM)



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CITY COUNCIL STAFF REPORT

From: City Manager

Report Type: ACTION

Lead Department: Planning and Development Services

Meeting Date: January 23, 2023

TITLE

PUBLIC HEARING / QUASI-JUDICIAL. 575 Los Trancos [21PLN-00196]: Major Site and Design Application for the Construction of a new 7,245 Square Foot Single-Family Residence With a new 895 Square Foot Accessory Dwelling Unit and Associated Site Improvements, Including a Swimming Pool, on a 5.38-Acre Site. Zoning District: Open Space (OS). Environmental Assessment: A Draft Mitigated Negative Declaration was Circulated for Public Comment on August 17, 2022 and Ended on September 16, 2022.

RECOMMENDATION

Staff recommends the City Council:

1. Adopt the Final Initial Study and Mitigated Negative Declaration and Mitigation Monitoring and Reporting Program. (Attachments E and F)
2. Approve the Record of Land Use Action for the proposed Site and Design Review application for a Single-Family House and Accessory Dwelling Unit. (Attachment C)

EXECUTIVE SUMMARY

The subject application is a request for Site and Design Review of a new, two-story, 7,245 square foot primary house (including a 734 square foot garage), and an 895 square foot accessory dwelling unit on a vacant, 5.38-acre lot in the Open Space zoning district. Site and Design Review¹ is a discretionary land use planning application that is used for certain development located in environmentally or ecologically sensitive environments, such as the subject project location in the Foothills. These applications are reviewed by the Planning and Transportation Commission (PTC) who forward a recommendation on to Council. The PTC has reviewed the subject project to the Site and Design findings, conformance with local regulations and, with the incorporation of environmental mitigation measures and conditions of approval, recommends project approval.

¹ More information about Site and Design reviews is available online from the City's published zoning code regulations: https://codelibrary.amlegal.com/codes/paloalto/latest/paloalto_ca/0-0-0-79449

Draft findings and conditions are attached to this report in Attachment C. Councilmembers are encouraged to review this document, called the record of land use action, as it serves to memorialize the Council's decision. In particular, a project decision is based on required findings which are provided for in this document. All findings must be made in the affirmative to approve the project.

Prior to making a decision on the project, the Council must consider the environmental analysis, which is provided in Attachment E and F, including special project-related conditions related to mitigation measures identified in the Mitigated Negative Declaration (MND), as required by the California Environmental Quality Act. Public comments on the Draft MND were heard by the Planning & Transportation Commission and a response to public comments has been included as Attachment G. Based on these comments, the project was modified to include shades to exterior lights and windows facing towards Los Trancos Creek. The public comments received did not change the conclusions of the MND.

BACKGROUND

This project was recommended for approval by the Planning and Transportation Commission (PTC) at their August 31, 2022, meeting. The PTC'S motions were as follows:

- Recommendation of the Staff proposal for 575 Los Trancos with direction to Staff that the applicant submit their proposal for light mitigation to address PAMC Section 18.40.140(3)(G) and (4)(A). Motion passed 4-1-2.
- Recommendation that Staff review potential amendments for interior and outdoor lighting in the OS Zone to ensure an appropriate level of lighting restrictions in this animal-intensive nature area. Motion passed 5-0-2.

The staff report,² minutes³, and video⁴ can be found online; see links provided in footnotes.

PROJECT DESCRIPTION

The proposed project consists of a new, two-story, 7,245 square foot main house (including a 734 square foot garage) and an 895 square foot Accessory Dwelling Unit (ADU). The project will create two net new housing units. A portion of the site is sloped and contains a creek; the site is an undeveloped 5.38-acre lot in the Open Space zoning district. The project also includes improving and extending the existing driveway and fire access road, creating a new swimming pool, and landscape improvements. A fence or wall(s) will enclose the ADU, pool area, and rear patio area.

² Link to 8-31-22 staff report: <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/planning-and-transportation-commission/2022/ptc-08.31.2022-575-los-trancos.pdf>

³ Link to 8-31-22 meeting summary minutes: https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/planning-and-transportation-commission/2022/ptc-8.31.2022-summary_bc-bgh-edits.pdf

⁴ Link to 8-31-22 meeting video: <https://midpenmedia.org/planning-transportation-commission-63-8312022/>

Three covered garage spaces are provided, and the auto court provides additional space for tandem parking. Project Plans are located via Attachment D.

The house is a contemporary style with most of the floor area on ground floor and a compact second-floor plan. Materials include both vertical and horizontal wood siding, plaster, and aluminum framed glass windows. The building height is 21 feet and 7 inches overall. The ADU utilizes the same materials and is about 11 feet tall.

The topography of the project area is mostly flat; however, 80 cubic yards of grading is required for the foundation. The building site is low relative to the street with the finished floor of the house about nine feet below the street elevation. The rear of the property includes a creek, which has been discussed in the environmental review document, the Mitigated Negative Declaration. The code required building setback from a creek is 20 feet (PAMC 18.40.140). The building extends to this setback at two corners near the northwestern end of the house but is otherwise located beyond the protection area. However, the City's Comprehensive Plan Policy N3.3 and program N3.3.1 seek a range of setbacks; where a 150-foot setback is cited as appropriate for new development west of Foothill Expressway, the program notes that single-family residential development can be exempt from this larger setback.

The 5.38-acre site contains 82 trees, including 38 protected trees. One protected Coast Live Oak tree is being removed because it is dead. Four other non-protected trees are identified for removal because they are dead or significantly failing; one of the unprotected trees is impeding the planned location for the driveway and will be removed. All remaining trees will be protected. Tree protection fence locations are shown on plan set sheet A1.1. Some trees are located very far from the project area and will not require tree protection fencing during construction.

DISCUSSION

The project's compliance with the Zoning Code and the Comprehensive Plan were analyzed and discussed in the PTC report, and the PTC found the project to be consistent with those documents and the application findings, with additional information needed regarding lighting. Additional questions were also raised related to the overall proximity to the Los Trancos Creek, as it relates not only to lighting, but also to landscape preservation and fire risk. This report is focusing on those key remaining items.

Proximity of Proposed Structures to Los Trancos Creek

A significant portion of the PTC discussion was regarding Comprehensive Plan Policy N3.3 and program N3.3.1, which states that Stream Corridor Protection Ordinance should be updated to explore a 150 ft setback between a natural creek and a building, as well as conditions under which single family property may be exempt from such a setback. The current ordinance requires only a 20 foot setback, which this project complies with. The City has yet to codify Program N3.3.1, to require a larger setback, which would require a zoning code amendment with hearings before the PTC and Council could implement a new requirement.

Zoning Code Section 18.40.140, Stream Corridor Protection, requires a 20-foot distance between the top of the creek bank and structures or a 2:1 setback from the toe of the bank, whichever is greater. Plan set sheet C-2.0 includes a diagram showing that the 20-foot setback is the greater of the two requirements.

Preservation of riparian landscaping is also a priority. Mitigation Measure BIO-3 and the Conditions of Approval require fencing at the 20-foot creek setback, and no construction activity may occur in this zone. No removal of riparian landscaping is proposed or anticipated. Additionally, Sediment and erosion control measures (e.g., sand or gravel bags, hay bales, check dams) are required.

The Public Works Engineering Department also requires a Grading Permit and a Grading and Drainage plan to be prepared and approved prior to starting construction. These documents will analyze in further detail any requirements related to erosion near the creek. Notably:

- Any “land disturbing” activities during the wet season (October 1 through April 15) require special permission from the City Engineer, on the basis of forecasted weather. (PAMC 16.28.280)
- Erosion control inspections are performed by the Watershed Preservation division regularly throughout construction.

Lighting and Shading

In response to the PTC comments, revisions have been made to the lighting conditions:

- Automatic blackout shades will be installed on all upper-story windows facing the creek, to limit nighttime light intrusion on potential local wildlife.
- Recessed lighting has been relocated further away from these windows and the rooms have vacancy sensors.
- Exterior lighting will have motion sensors and be the minimum required by the Building Code.

The Final IS/MND has been updated with an explanation of why the lighting associated with the proposed project does not pose a significant impact, as follows:

Potential sources of glare from the proposed project would consist of windows, parked cars, and the pool. However, these glare sources are similar to those from nearby residences and would not constitute a substantial new source of glare. The proposed residence would also be screened by existing tree cover from the roadway and nearby residences. Compliance with PAMC Section 18.28.070(n) would reduce potential impacts from glare to the night sky and off-site. Therefore, the proposed project would not create a substantial source of glare that would adversely affect day or nighttime views. Impacts related to glare would be less than significant.

Fire Risk and Defensible Space

This project is not located within a Fire Hazard Severity Area as defined by the State of California. However, PAMC 15.04.190 includes any property west of Interstate 280 as part of Palo Alto's "Wildland-Urban Fire Interface Area". Defensible Space is required by PAMC 15.04.200. This requires that no flammable vegetation be located within 30 ft of the structure. Vegetation that is green and healthy is not considered flammable, and therefore the riparian landscaping within 30 feet of the building footprint is expected to remain as-is with maintenance to remove any dead vegetation as needed. The goal of this project is to ensure the viability of the riparian landscaping throughout the construction and occupancy of the house while reducing fire risk. In general, healthy green landscaping is encouraged and protected, while dead and dry landscaping shall be cleared from the vicinity regularly. The following recommendations from the Fire Prevention staff are incorporated into the Conditions of Approval:

- At the time of Building Permit application, the applicant shall prepare a Fire Protection Plan to the satisfaction of the Fire Code Official, and meeting the requirements of California Fire Code 4903.1-4903.4 (corresponds to PAMC 15.04.195).
- Defensible space shall be maintained in compliance with California Fire Code 4907.1-4907.2 (corresponds to PAMC 15.04.200).

NEXT STEPS

The Council's decision is final. If the project is approved, the applicant will move forward in applying for building permits and any other applicable permits.

STAKEHOLDER ENGAGEMENT

The City published the mitigated negative declaration for public comment, conducted public meetings and responded to project-related inquiries. Notice of a public hearing for this project was published in the Daily Post on January 13, 2023. Postcard mailing occurred on January 10, 2023.

ENVIRONMENTAL REVIEW

The subject project has been assessed in accordance with the authority and criteria contained in the California Environmental Quality Act (CEQA), the State CEQA Guidelines, and the environmental regulations of the City. A Draft Mitigated Negative Declaration was prepared. In accordance with CEQA Guideline Section 15073, this document was available online for review during a minimum 30-day circulation period beginning August 17, 2022, and ending September 19, 2022. During the circulation period, two comment letters were received. The Response to Comments is available in Attachment D.

Mitigations were required for Air Quality, Biology, Cultural Resources, and Geology. All mitigations are for the pre-construction or construction phases and will not require ongoing monitoring beyond the completion of the project. In response to the written comments received, as well as PTC feedback, the following changes were incorporated into the Final IS/MND:

- Incorporating discussion of the lighting changes as previously described, with no changes to the determination or mitigation.
- Minor grammar and word choice edits (ie, replacing the word "project" with "development area")

The Final IS/MND is included in this report as Attachment E. The MMRP is included as Attachment F, and the Response to Comments is Attachment G.

ATTACHMENTS

Attachment A: Location Map

Attachment B: Zoning Comparison Table

Attachment C: Draft Record of Land Use Action

Attachment D: Project Plans and Environmental Review

Attachment E: Final IS-MND

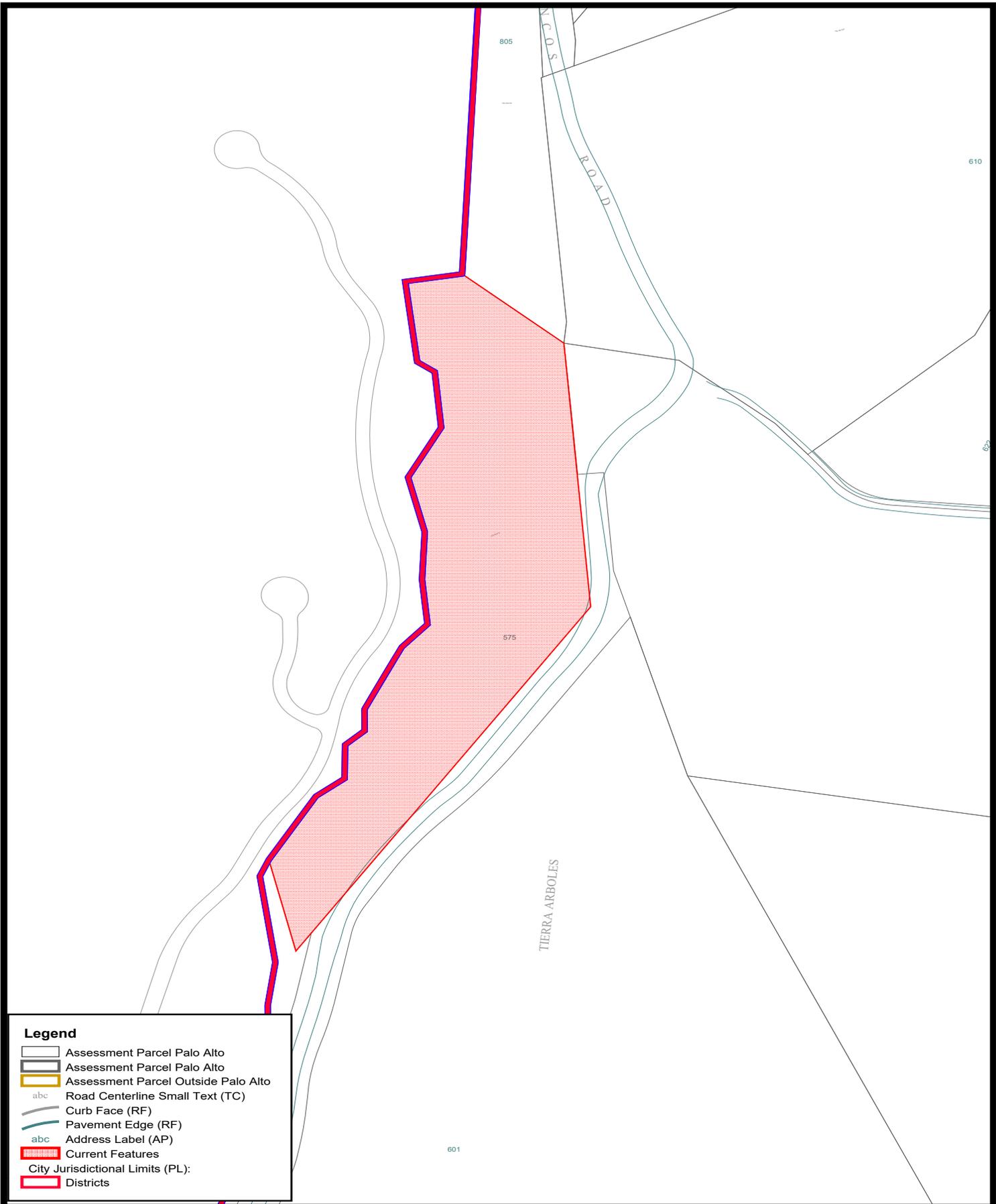
Attachment F: Mitigation Monitoring and Reporting Program

Attachment G: Response to Comments on the Draft IS-MND

APPROVED BY:

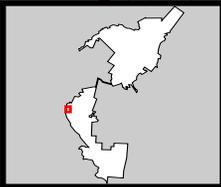
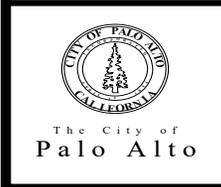
Jonathan Lait, Planning and Development Services Director

Report #: 2212-0460



Legend

-  Assessment Parcel Palo Alto
-  Assessment Parcel Palo Alto
-  Assessment Parcel Outside Palo Alto
-  abc Road Centerline Small Text (TC)
-  Curb Face (RF)
-  Pavement Edge (RF)
-  abc Address Label (AP)
-  Current Features
- City Jurisdictional Limits (PL):**
-  Districts



Attachment A
Location Map
575 Los Trancos Road

This map is a product of the
City of Palo Alto GIS





ATTACHMENT B
ZONING COMPARISON TABLE
575 Los Trancos Road 21PLN-00196

Table 1a: COMPARISON WITH CHAPTER 18.28 (OS DISTRICT)
OS Residential Development Standards

Regulation	Required	Existing	Proposed
Minimum Site Area, Width and Depth	Area: 10 acres Width: No standard Depth: No standard	Area: 5.38 acres Width: more than 1300 feet Depth: varies, 40-250 feet	No change
Front Yard	30 feet	N/A	88 feet 8 inches minimum
Street Side Yard	30 feet	N/A	N/A
Rear Yard	30 feet, and 20 feet from creek top of bank	N/A	38 feet from property line, 20 feet from top of bank, minimum
Interior Side Yard	30 feet	N/A	Right: approx. 250 ft Left: approx. 154 ft
Max. Building Height	25 feet	N/A	21 feet 7 inches
Maximum Impervious Coverage	4% (9,374 sf)	N/A	8,140 sf, including ADU
Max. Total Floor Area Ratio	4% (9,374 sf)	N/A	9,192 sf (6,925 sf buildings, 2,267 hardscape)

Table 1b: CONFORMANCE WITH CHAPTER 18.52 (Off-Street Parking and Loading)
Single Family Residential Uses (Tandem Parking Allowed)

Type	Required	Existing	Proposed
Vehicle Parking	4 spaces, of which one must be covered	N/A	3 covered spaces, 1 uncovered space

Attachment C

APPROVAL NO. XX-XXXX

RECORD OF THE COUNCIL OF THE CITY OF PALO ALTO LAND USE ACTION
FOR 575 LOS TRANCOS ROAD: SITE & DESIGN
[FILE NO. 21PLN-00196]

On [DATE], the City Council approved certification of the Mitigated Negative Declaration (IS/MND) and Approval of the Site and Design to Allow a new 7,245 sf single-family residence with a new 734 sf Accessory Dwelling Unit and associated site improvements, including a swimming pool, on a 5.38-acre site located at 575 Los Trancos Road, making the following findings, determination and declarations:

SECTION 1. BACKGROUND. The City Council of the City of Palo Alto (“City Council”) finds, determines, and declares as follows:

- A. On July 13, 2021, Leonard Ng (LNAI Architecture) on behalf of Innovative Homes, LLC applied for a Site and Design application to allow a new 7,245 sf single-family residence with a new 895 sf Accessory Dwelling Unit and associated site improvements, including a swimming pool.
- B. Staff has determined that the proposed project is in compliance with the applicable OS development standards.
- C. The City prepared an Initial Study and Mitigated Negative Declaration (ISMND), see Section 2. Environmental Review
- D. Following staff review, the Planning and Transportation Commission (Commission) reviewed the project design and the IS/MND on August 31, 2022, and recommended approval.
- F. On [DATE], the City Council reviewed the project design and the IS/MND. After hearing public testimony, the Council voted to approve the project subject to the conditions set forth in Section 4 of this Record of Land Use Action.

SECTION 2. ENVIRONMENTAL REVIEW. In conformance with the California Environmental Quality Act (CEQA), an Initial Study and Mitigated Negative Declaration was certified by the City Council on [date]. The document (State Clearinghouse No. XXX) concluded that the proposed project(s) would not have a significant effect on the environment with mitigation as proposed. The ISMND is available for review on the City’s website: <http://www.cityofpaloalto.org/news/displaynews.asp?NewsID=2642&TargetID=319>. All mitigation measures as stated in the approved Mitigation Monitoring and Reporting Program (MMRP) have been incorporated into the conditions of approval.

SECTION 3. SITE AND DESIGN OBJECTIVES. The design and architecture of the proposed improvements, as conditioned, complies with the Site and Design Objectives as required in Chapter 18.30.060(G) of the PAMC.

A. Objective (a): To ensure construction and operation of the use in a manner that will be orderly, harmonious, and compatible with existing or potential uses of adjoining or nearby sites.

The proposed use is a single-family house and accessory dwelling unit (ADU) in the Open Space (OS) zoning district, on a property adjacent to other single-family uses. The proposed construction will meet all city requirements for noise, parking, etc. The proposed use is compatible with nearby existing uses.

B. Objective (b): To ensure the desirability of investment, or the conduct of business, research, or educational activities, or other authorized occupations, in the same or adjacent areas.

The proposed uses, a single family residence and ADU, are permitted uses in the OS zoning district, and will not affect the desirability of adjacent areas.

C. Objective (c): To ensure that sound principles of environmental design and ecological balance shall be observed.

The OS zoning district includes regulations to ensure that sound principles of environmental design and ecological balance shall be observed. The proposed design will meet these regulations including:

- *Landscaping.* Maintaining existing vegetation and land formations to the maximum extent possible. The arborist report surveyed 82 trees in the project vicinity. 5 trees (including 1 protected Coast Live Oak) were identified as dead and will be removed. 10 replacement trees will be planted on site. All other trees in the project vicinity will have tree protection fencing during construction.
- *Building location.* The proposed development is in a relatively flat area away from adjacent hills or slopes. The house is not expected to be visible from public roadways and is shielded by many mature trees.
- *Privacy.* The proposed house and ADU will not have views to other residences which would create a privacy impact.
- *Architectural materials.* Proposed materials fit in the natural landscape, through earth-toned colors and wood and plaster siding.

D. Objective (d): To ensure that the use will be in accord with the Palo Alto Comprehensive Plan.

This property is located in the Streamside Open Space designation. The intention of this designation, in this location is to protect Los Trancos Creek. As stated in the Mitigated Negative Declaration, no direct impacts to the creek would occur as a result of this project. Indirect impacts including runoff and erosion will be addressed through mitigation measures (see Mitigation Measure BIO-3). While this designation does not explicitly allow housing, single-family houses and accessory dwelling units have regularly been built there.

SECTION 4. Open Space Review Criteria.

The following criteria shall be considered in the Site and Design review of all development of land

in the OS district, as outlined in the Conservation Element of the Comprehensive Plan:

- 1. The development should not be visually intrusive from public roadways and public parklands. As much as possible, development should be sited so it is hidden from view.*

The proposed structures are located in a naturally low, flat portion of the property. The development will be hidden from view of the street by both elevation and mature trees.

- 2. Development should be located away from hilltops and designed to not extend above the nearest ridgeline.*

The new home and Accessory Dwelling Unit are not located near a hilltop and will not extend above the nearest ridgeline.

- 3. Site and structure design should take into consideration impacts on privacy and views of neighboring properties.*

The proposed structure will not impact privacy, as it is located as a lower elevation than neighboring properties. Any potential views from the second story are also shielded by the existing trees, and the large distances customary to the Open Space district.

- 4. Development should be clustered, or closely grouped, in relation to the area surrounding it to make it less conspicuous, minimize access roads, and reduce fragmentation of natural habitats.*

The proposed development is proposed for a small section of the overall 5.38 acre site. One driveway/access road will provide access to the two dwelling units.

- 5. Built forms and landscape forms should mimic the natural topography. Building lines should follow the lines of the terrain, and trees and bushes should appear natural from a distance.*

The building and related patios and landscaping are isolated to the flat portion of the site. The project proposes to maintain all of the existing protected trees, preserving the natural appearance of the site.

- 6. Existing trees with a circumference of 37.5 inches, measured 4.5 feet above the ground level, should be preserved and integrated into the site design. Existing vegetation should be retained as much as possible.*

All existing trees are proposed to remain, three dead trees have already been removed for safety reasons.

- 7. Cut is encouraged when it is necessary for geotechnical stability and to enable the development to blend into the natural topography. Fill is generally discouraged and should never be distributed within the driplines of existing trees. Locate development to minimize the need for grading.*

This project has minimized grading, the majority of the grading is associated with installing a swimming pool.

- 8. To reduce the need for cut and fill and to reduce potential runoff, large, flat expanses of*

impervious surfaces should be avoided.

The design of the home and site landscaping have been designed to minimize the need for cut and fill. The entire driveway is designed to be DG and permeable, with impervious areas limited primarily to the building and patios off the building.

9. Buildings should use natural materials and earth tone or subdued colors.

The proposed materials include: horizontal wood siding and slat screens with warm, earth-gray smooth-finished cement plaster, a solid dark gray flat roof, and dark wood toned windows and doors.

10. Landscaping should be native species that require little or no irrigation. Immediately adjacent to structures, fire retardant plants should be used as a fire prevention technique.

The majority of the on site landscaping is existing. Additional planting in the patio areas will use plant materials will be selected for water conservation and low-maintenance characteristics and for fire-resistive properties where adjacent to the home.

11. Exterior lighting should be low-intensity and shielded from view so it is not directly visible from off-site.

Exterior lighting shall be low-intensity and will be shielded from view as to not be directly visible from the street and surrounding properties.

12. Access roads should be of a rural rather than urban character. (Standard curb, gutter, and concrete sidewalk are usually inconsistent with the foothills environment).

The proposed access road is in the existing location, which follows the natural topography, and the proposed decomposed granite material is consistent with a rural character.

13. For development in unincorporated areas, ground coverage should be in general conformance with Palo Alto's Open Space District regulations.

N/A, the project is within Palo Alto city limits.

SECTION 5. Conditions of Approval.

PLANNING DIVISION

1. CONFORMANCE WITH PLANS. Construction and development shall conform to the approved plans entitled, "575 Los Trancos Road, Palo Alto, California, 94304, Private Residence" uploaded to the Palo Alto Online Permitting Services Citizen Portal on November 14, 2022, as modified by these conditions of approval.
2. BUILDING PERMIT. Apply for a building permit and meet any and all conditions of the Planning, Fire, Public Works, and Building Departments. Project plans submitted for Building permits shall incorporate the following changes:
 - a. Prior to issuance of any site preparation, grading or building permit, the applicant shall demonstrate to the satisfaction of the Planning and Development Services Director (Director), the means and methods to be used to ensure there is no encroachment, including excavation or grading in preparation for building foundations or site or building other work, into the required 20 foot creek setback. Minor adjustments to the proposed

building siting and foundation placement may be required by the Director to ensure compliance with this condition.

- b. The applicant shall provide sturdy, protective construction fencing, outside of the 20 foot creek setback to ensure no equipment storage, staging or preparation work occurs within the required creek setback.
3. BUILDING PERMIT PLAN SET. A copy of this cover letter and conditions of approval shall be printed on the second page of the plans submitted for building permit.
4. MITIGATION MONITORING AND REPORTING PROGRAM. The Mitigation Monitoring and Reporting Program (MMRP) associated with the project and attached here as Exhibit A is incorporated by reference and all mitigation measures shall be implemented as described in said document. Prior to requesting issuance of any related demolition and/or construction permits, the applicant shall meet with the Project Planner to review and ensure compliance with the MMRP, subject to the satisfaction of the Director of Planning and Development Services.
5. PROJECT MODIFICATIONS: All modifications to the approved project shall be submitted for review and approval prior to construction. If during the Building Permit review and construction phase, the project is modified by the applicant, it is the responsibility of the applicant to contact the Planning Division/project planner directly to obtain approval of the project modification. It is the applicant's responsibility to highlight any proposed changes to the project and to bring it to the project planner's attention.
6. UTILITY LOCATIONS: In no case shall utilities be placed in a location that requires equipment and/or bollards to encroach into a required parking space. In no case shall a pipeline be placed within 10 feet of a proposed tree and/or tree designated to remain.
7. NOISE PRODUCING EQUIPMENT: All noise producing equipment shall be located outside of required setbacks, except they may project 6 feet into the required street side setbacks. In accordance with Section 9.10.030, No person shall produce, suffer or allow to be produced by any machine, animal or device, or any combination of same, on residential property, a noise level more than six dB above the local ambient at any point outside of the property plane.
8. LIGHT AND GLARE. Exterior lighting shall be low-intensity and shielded from view so it is not directly visible from off-site. The light emitted from skylights shall be minimal during the night hours. Utilizing treatments such as translucent glass, shading systems, and interior light placement can reduce the night glare. Skylights shall not use white glass.
9. PROJECT ARBORIST. The property owner shall hire a certified arborist to ensure the project conforms to all Planning and Urban Forestry conditions related to landscaping/trees.
10. LANDSCAPE PLAN. Plantings shall be installed in accordance with the approved plan set and shall be permanently maintained and replaced as necessary.
11. ARBORIST FOLLOW UP. A follow-up arborist and/or landscape report shall be required five years after the final sign-off of the project completion. This report shall evaluate the health of trees and

significant landscape that were required for screen planting or and/or were designated as protected plantings on the approved plans for the project. Any subsequent owner(s) shall also be obligated to replace any trees that die with trees of the same size and species stated on the approved planning and building permit plans.

12. TREE PROTECTION FENCING. Tree protection fencing shall be required for all trees and shrubs proposed to be maintained as identified in the Arborist Report.
13. FENCES. Fences and walls shall comply with the applicable provisions of Chapter 16.24, Fences, of the Palo Alto Municipal Code (PAMC). Heights of all new and existing fencing must be shown on the Building Permit plans.
 - a. Where the existing fence is located off the subject property and/or where the existing fence is failing, a new Code compliant fence shall be constructed.
14. ESTIMATED IMPACT FEE: Development Impact Fees, currently estimated in the amount of \$81,826.00 plus the applicable public art fee, per PAMC 16.61.040, shall be paid prior to the issuance of the related building permit.
15. IMPACT FEE 90-DAY PROTEST PERIOD. California Government Code Section 66020 provides that a project applicant who desires to protest the fees, dedications, reservations, or other exactions imposed on a development project must initiate the protest at the time the development project is approved or conditionally approved or within ninety (90) days after the date that fees, dedications, reservations or exactions are imposed on the Project. Additionally, procedural requirements for protesting these development fees, dedications, reservations and exactions are set forth in Government Code Section 66020. IF YOU FAIL TO INITIATE A PROTEST WITHIN THE 90-DAY PERIOD OR FOLLOW THE PROTEST PROCEDURES DESCRIBED IN GOVERNMENT CODE SECTION 66020, YOU WILL BE BARRED FROM CHALLENGING THE VALIDITY OR REASONABLENESS OF THE FEES, DEDICATIONS, RESERVATIONS, AND EXACTIONS. If these requirements constitute fees, taxes, assessments, dedications, reservations, or other exactions as specified in Government Code Sections 66020(a) or 66021, this is to provide notification that, as of the date of this notice, the 90-day period has begun in which you may protest these requirements. This matter is subject to the California Code of Civil Procedures (CCP) Section 1094.5; the time by which judicial review must be sought is governed by CCP Section 1094.6.
16. PLANNING FINAL INSPECTION. A Planning Division Final inspection will be required to determine substantial compliance with the approved plans prior to the scheduling of a Building Division final. Any revisions during the building process must be approved by Planning, including but not limited to; materials, fenestration and hard surface locations. Contact your Project Planner at the number below to schedule this inspection.
17. PERMIT EXPIRATION. The project approval shall be valid for a period of **two years** from the original date of approval. Application for a one year extension of this entitlement may be made prior to expiration, by emailing the Current Planning Support Staff (Alicia Spotwood - Alicia.Spotwood@CityofPaloAlto.org). If a timely extension is not received, or the project has already received an extension and the applicant still wishes to pursue this project, they must first file for a new Planning application and pay the associated fees. This new application will be reviewed for conformance with the regulations in place at that time.

18. INDEMNITY: To the extent permitted by law, the Applicant shall indemnify and hold harmless the City, its City Council, its officers, employees and agents (the “indemnified parties”) from and against any claim, action, or proceeding brought by a third party against the indemnified parties and the applicant to attack, set aside or void, any permit or approval authorized hereby for the Project, including (without limitation) reimbursing the City for its actual attorneys’ fees and costs incurred in defense of the litigation. The City may, in its sole discretion, elect to defend any such action with attorneys of its own choice.

BUILDING DIVISION

19. This project is located West of 280 and shall comply with Wildland Urban Interface requirements per 2019 CA Residential Code.

20. This project is subjected to all electrification per PAMC.

21. Please contact the Building Department for building permit submittal requirements.

FIRE PREVENTION DIVISION

22. At the time of Building Permit application, the applicant shall prepare a Fire Protection Plan to the satisfaction of the Fire Code Official, meeting the requirements of California Fire Code 4903.1-4903.4 (corresponds to PAMC 15.04.195).

23. Defensible space shall be maintained for the life of the project in compliance with California Fire Code 4907.1-4907.2 (corresponds to PAMC 15.04.200).

PUBLIC WORKS ENGINEERING DIVISION

24. GRADING PERMIT: Separate Excavation and Grading Permit will be required for grading activities on private property that fill, excavate, store or dispose of 100 cubic yards or more based on PAMC Section 16.28.060. Applicant shall prepare and submit an excavation and grading permit to Public Works separately from the building permit set. The permit application and instructions are available on our website: Application: <https://www.cityofpaloalto.org/files/assets/public/public-works/engineering-services/webpages/forms-and-permits/grading-permit-application.pdf>

25. GRADING & DRAINAGE PLAN: The plan set must include a grading & drainage plan prepared by a licensed professional See the Grading & Drainage Plan Guidelines for New Single Family Residences on the City’s website. <https://www.cityofpaloalto.org/files/assets/public/public-works/engineering-services/webpages/forms-and-permits/grading-drainage-residential-guidelines.pdf>

26. IMPERVIOUS SURFACE AREA: The Impervious Area Worksheet for Land Developments form shall be completed and submitted with the building permit submittal. The worksheet and instructions are available on our website: <https://www.cityofpaloalto.org/files/assets/public/public-works/engineering-services/webpages/forms-and-permits/impervious-area-worksheet-for-land-developments-2021.pdf>

27. PUBLIC WORKS STANDARDS CONDITIONS: The City's full-sized "Standard Conditions" sheet must be included in the plan set. Copies are available from Public Works on our website: <https://www.cityofpaloalto.org/files/assets/public/public-works/engineering-services/webpages/forms-and-permits/pw-conditions-sheet-alternative-update-8.7.18.pdf>

28. STORM WATER POLLUTION PREVENTION: The City's full-sized "Pollution Prevention - It's Part of the Plan" sheet must be included in the plan set. Copies are available from Public Works on our website: https://www.cityofpaloalto.org/files/assets/public/public-works/engineering-services/webpages/forms-and-permits/rwq_stormwater_plansheet_final_bw.pdf

This project triggers the California Regional Water Quality Control Board's revised provision C.3 for storm water regulations (incorporated into the Palo Alto Municipal Code, Section 16.11) that apply to residential land development projects that create or replace between 2,500 and 10,000 square feet of impervious surface area. The applicant must implement one or more of the following site design measures on the grading and drainage plan:

- Direct roof runoff into cisterns or rain barrels for reuse.
- Direct roof runoff onto vegetated areas.
- Direct runoff from sidewalks, walkways, and/or patios onto vegetated areas.
- Direct runoff from driveways and/or uncovered parking lots onto vegetated areas.
- Construct sidewalks, walkways, and/or patios with permeable surfaces.
- Construct driveways, and/or uncovered parking lots with permeable surfaces

29. SIDEWALK, CURB & GUTTER: As part of this project, the applicant shall replace portions of the existing sidewalk, curbs, gutters or driveway approaches in the public right-of-way along the frontage(s) of the property as required. Contact the Public Works Inspector at 650-496-6929 to arrange a site visit so that the inspector can discuss the extent of replacement work in the public right-of-way. The site plan submitted with the building permit plan set must show the extent of the replacement work. Include a scan copy of the Site Inspection Directive obtained from the Public Works Inspector in the building plan set.

WATERSHED PROTECTION DIVISION

30. Do not use chemicals fertilizers, pesticides, herbicides or commercial soil amendment. Use Organic Materials Review Institute (OMRI) materials and compost. Refer to the Bay-Friendly Landscape Guidelines: <http://www.stopwaste.org/resource/brochures/bay-friendly-landscape-guidelines-sustainable-practices-landscape-professional> for guidance. Add this bullet as a note to the building plans.

31. Avoid compacting soil in areas that will be unpaved. Add this bullet as a note to the building plans.

SECTION 6. Term of Approval.

Site and Design Approval. The project approval shall be valid for a period of two years from the original date of approval. In the event a building permit(s), if applicable, is not secured for the project within the time limit specified above, the approval shall expire and be of no further force or effect. Application for extension of this entitlement may be made prior to the one year expiration.

PASSED:

AYES:

NOES:

ABSENT:

ABSTENTIONS:

ATTEST:

City Clerk

Mayor

APPROVED AS TO FORM:

APPROVED:

Senior Assistant City Attorney

Director of Planning and
Development Services

Exhibit A: Mitigation Monitoring and Reporting Program (MMRP)

Attachment D

Project Plans

In order to reduce paper consumption, a limited number of hard copy project plans are provided to Board members for their review. The same plans are available to the public, at all hours of the day, via the following online resources.

Environmental Document

An Initial Study / Mitigated Negative Declaration has been prepared for this project. In accordance with CEQA Guideline Section 15073, the draft document was available for a 30-day circulation period beginning August 17, 2022 and ending on September 16, 2022. The Final IS-MND and Response to Comments have been prepared and are also available use the link below.

Directions to review Project plans and environmental documents online:

1. Go to: bit.ly/PAPendingprojects
2. Scroll down to find "575 Los Trancos" and click the address link
3. On this project-specific webpage you will find a link to the project plans and other important information

Direct Link to Project Webpage:

<https://www.cityofpaloalto.org/Events-Directory/Planning-and-Development-Services/575-Los-Trancos>



CITY OF
**PALO
ALTO**

FINAL INITIAL STUDY ♦ MITIGATED NEGATIVE DECLARATION



575 Los Trancos Road Residential Project

PREPARED BY

City of Palo Alto
250 Hamilton Avenue
Palo Alto, California 94301
Contact: Emily Foley, AICP, Associate Planner

**PREPARED WITH
THE ASSISTANCE OF**

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

REPORT DATE

January 2023

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Appendix A	Biological Resources Technical Report
Appendix B	Arborist Report
Appendix C	Geotechnical Engineering Study
Appendix D	Roadway Construction Noise Model and Vibration Noise Calculations
Appendix E	California Water Service and West Bay Sanitary District Will Serve Letter

INITIAL STUDY

1. PROJECT TITLE

575 Los Trancos Road Residential Project

2. LEAD AGENCY NAME AND ADDRESS

City of Palo Alto
250 Hamilton Avenue
Palo Alto, California 94301

3. CONTACT PERSON AND PHONE NUMBER

Emily Foley, AICP, Associate Planner
(650) 617-3125

4. PROJECT SPONSOR'S NAME AND ADDRESS

Innovative Homes LLC
c/o John Suppes
412 Olive Avenue
Palo Alto, California 94306

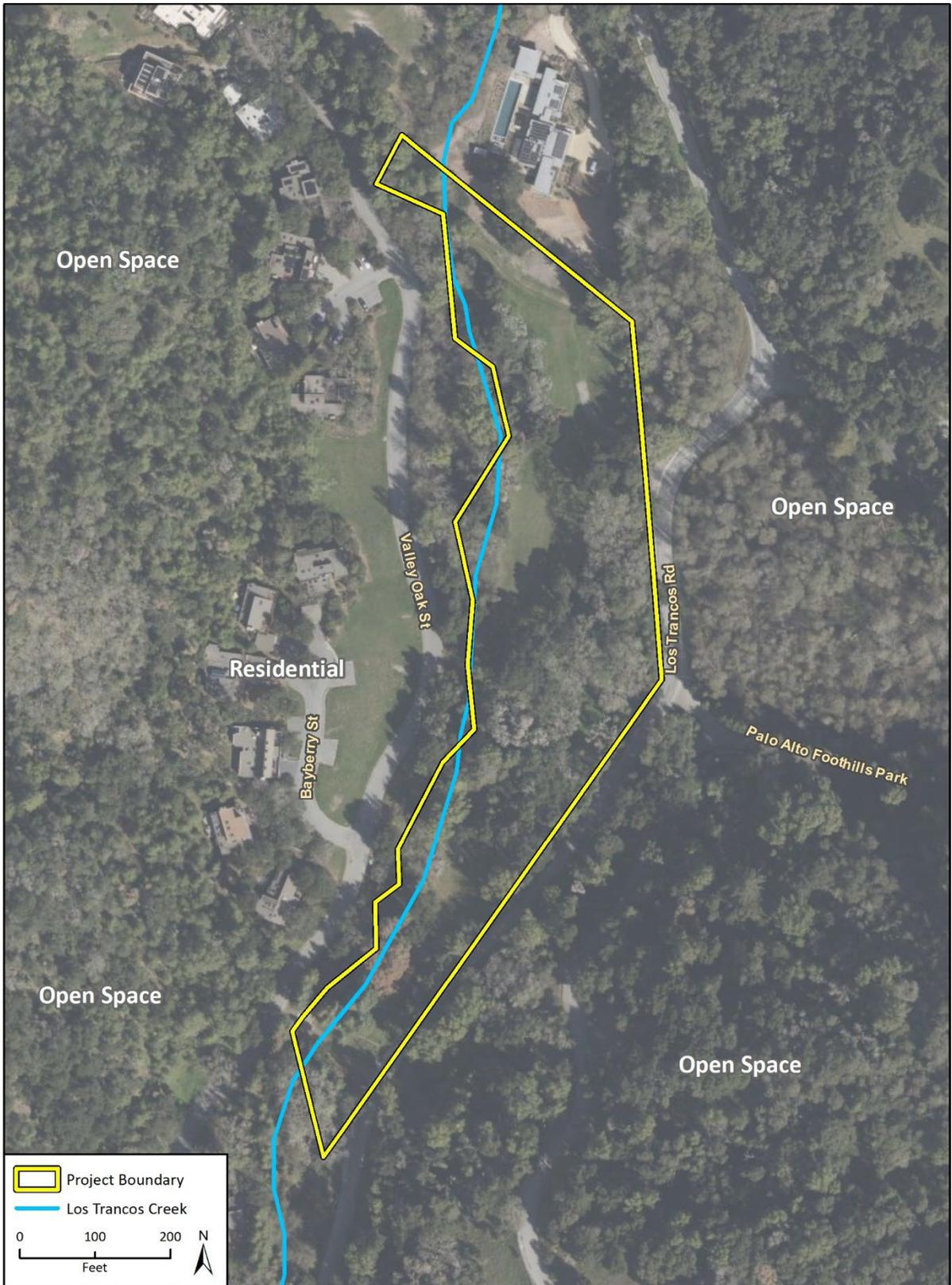
5. PROJECT LOCATION

The project site is located at 575 Los Trancos Road in the City of Palo Alto and consists of a single 5.38-acre (234,352 square-foot) parcel. The assessor's parcel number is 182-46-012. The project site is located on the western side of Los Trancos Road approximately 0.8 miles south of its intersection with Alpine Road. Regional access to the site is available via Interstate 280 (I-280) and State Route (SR) 84. Figure 1 shows the site location in a regional context. Figure 2 shows the location of the site relative to the surrounding area.

6. GENERAL PLAN DESIGNATION

The site is designated as Open Space/Controlled Development. The City's Comprehensive Plan Land Use and Community Design Element (2017) defines this category as "land having all the characteristics of open space but where some development may be allowed on private properties. Open space amenities must be retained in these areas. Residential densities range from 0.1 to 1 dwelling unit per acre but may rise to a maximum of 2 units per acre where second units are allowed, and population densities range from 1 to 4 persons per acre."

Figure 2 Project Location



Imagery provided by Microsoft Bing and its licensors © 2022.
Additional data provided by National Hydrography Dataset, 2022.

Fig 2 Project Site location

7. ZONING

The site is zoned Open Space (OS). Palo Alto Municipal Code (PAMC) Section 18.28.010(b) defines the OS district as “intended to protect the public health, safety and welfare, protect and preserve open space land as a limited and valuable resource, and to permit the reasonable use of open space land, while at the same time preserving and protecting its inherent open space characteristics to assure its continued availability for the following: as agricultural land, scenic land, recreation land, conservation or natural resource land; for the containment of urban sprawl and the structuring of urban development; and for the retention of land in its natural or near-natural state, and to protect life and property in the community from the hazards of fire, flood, and seismic activity; and coordinate with and carry out federal, state, regional, county, and city open space plans.”

8. LOCATION AND EXISTING SETTING

The project site is located in the southern extension of the City of Palo Alto where the predominant land use designations and land uses are Open Space/Controlled Development and Public Conservation Land. The site is surrounded by undeveloped areas and low-density residential. To the north of the site is a residence, Los Trancos Creek is located along the western boundary of the site, and undeveloped lands are located to the south and east of the site and further east beyond Los Trancos Road. Los Trancos Road abuts the project site to the east. The project site is an undeveloped and vacant lot, dominated by oak woodland, riparian woodland, and non-native grasses. Figure 3 and Figure 4 show photographs of the project site.

PROJECT DESCRIPTION

The proposed project would involve the construction of a 7,245 square-foot single-family residence and 734 square-foot attached garage, an 895 square-foot accessory dwelling unit (ADU), and associated amenities including a 4.5-foot-deep swimming pool in the flat, western portion of the site. The main residence would have a maximum height of 25 feet and would consist of two stories, a 6,030 square-foot first floor and 1,215 square foot second floor. The proposed lot coverage would be 9,374 square feet of the total lot area of 234,352 square feet (5.38 acres) which would result in a total lot coverage of four percent of the total site.

The project would include 30-foot setbacks on the front, sides, and rear of the property. Design materials would include natural dark-stained vertical grain wood/wood-clad sliding and slats, smooth-finish cement plaster in an earth-tone gray color, a smooth dark painted finish along trim, and large windows. Exterior lighting would be limited by shielding on exterior safety lighting and shades on windows facing the creek. Figure 5 shows the proposed site plan.

Figure 3 Project Site Photographs 1 and 2



Photograph 1. View from near the center of the project site looking north



Photograph 2. View from near the center of the project site looking south

Figure 4 Project Site Photographs 3 and 4

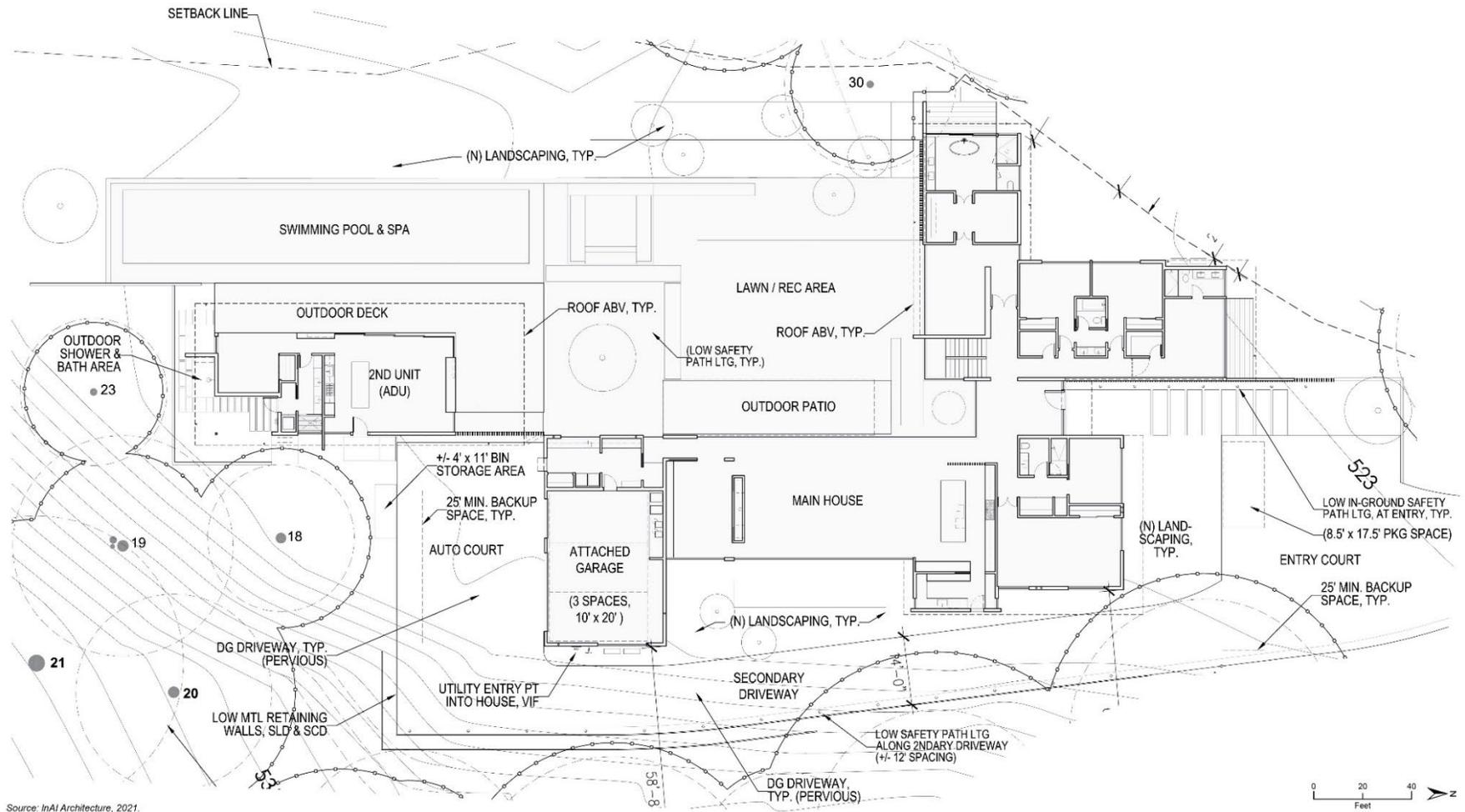


Photograph 3. View of the project site from southeast Los Trancos Road



Photograph 4. View of the project site from eastern Los Trancos Road

Figure 5 Proposed Site Plan



Source: InAI Architecture, 2021.

Access to the project site would be via a new curved driveway that would extend from Los Trancos Road toward the northern portion of the site and curve back toward the residence and attached three-car garage. The driveway would have a 14-foot width to accommodate fire trucks and at its termination at the residence would allow for fire truck turnaround. The project would include a 20 feet creek setback pursuant to Palo Alto's Stream Corridor Ordinance (Section 18.40.140 of the PAMC).

LANDSCAPING AND OPEN SPACE

Landscaping on the project site would be limited to the immediate perimeter of the proposed development area. Along the perimeter of the residence, landscaping would consist of California native grasses and trees including but not limited to Bigleaf maple (*Acer macrophyllum*), Coast live oak (*Quercus agrifolia*), California bay (*Umbellularia californica*), Chokecherry (*Prunus virginiana*), Interior live oak (*Quercus wislizeni*), Blue elderberry (*Sambucus Mexicana*), Arroyo Willow (*Salix lasiolepis*), Concha California lilac (*Ceanothus Concha*), California Coffeeberry (*Frangula californica*), Toyon (*Heteromeles arbutifolia*), White pitcher sage (*Lepechinia calycina*), California honeysuckle (*Lonicera hispidula*), Pacific wax myrtle (*Myrica californica*), Golden currant (*Ribes aureum* var. *Gracillimum*), California Wild Rose (*Rosa Californica*), Common Yarrow (*Achillea millefolium*), Mugwort (*Artemisia douglasiana*), Crevice alumroot (*Heuchera micrantha*), Bee's bliss purple sage (*Salvia leucophylla* 'Bee's Bliss'), Yerba Buena (*Clinopodium douglassii*), Woodland strawberry (*Fragaria vesca*). Landscaping would be used primarily for screening and creek side planting.

CONSTRUCTION

Construction of the project would include site preparation, grading, building construction, paving, and architectural coating phases. Construction would occur over an estimated 14 months. The project would require approximately 280 cubic yards of excavation (80 cubic yards for the house and 200 cubic yards for the pool), which would be dispersed evenly throughout the site and would not be exported. Construction activities would occur Monday through Friday between the hours of 8:00 a.m. and 6:00 p.m. and Saturday between the hours of 9:00 a.m. and 6:00 p.m.

PALO ALTO GREEN BUILDING CHECKLIST

In addition to California Building Code (CBC) requirements, the City of Palo Alto has adopted more stringent green building regulations. The Palo Alto Green Building Ordinance (Ord. 5393, 2020) requires applicants to incorporate sustainable design, construction, and operational requirements into most single-family residential, multi-family residential, and non-residential projects. For residential development, the City has adopted California Green Building Standards Code (CALGreen) Tier 1 for additions and renovations over 1,000 square feet and CALGreen for Tier 2 for new construction pursuant to Palo Alto Municipal Code (PAMC) Section 16.14. To achieve Tier 2 status, a project must comply with the requirements identified in CALGreen Appendix A4, Division A4.601.5 and be 10 percent more energy efficient than the base CALGreen code

requirements. In accordance with the City's Green Building Ordinance, the proposed project would satisfy requirements for CALGreen Tier 2. The project would be all electric and would utilize a 10-kilowatt renewable energy system. Additionally, heat pump technology would be used for water heating, including for the proposed pool, and space heating.

9. OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED

The City of Palo Alto is the lead agency with jurisdiction over adoption of the proposed project and certification of the CEQA document. No other public agency's discretionary approval is required.

10. HAVE CALIFORNIA NATIVE AMERICAN TRIBES TRADITIONALLY AND CULTURALLY AFFILIATED WITH THE PROJECT AREA REQUESTED CONSULTATION PURSUANT TO PUBLIC RESOURCES CODE SECTION 21080.3.1? IF SO, IS THERE A PLAN FOR CONSULTATION THAT INCLUDES, FOR EXAMPLE, THE DETERMINATION OF SIGNIFICANCE OF IMPACTS TO TRIBAL CULTURAL RESOURCES, PROCEDURES REGARDING CONFIDENTIALITY, ETC?

No California Native American Tribes have requested consultation pursuant to Public Resources Code Section 21080.3.1.

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ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

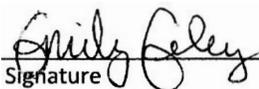
This project would potentially affect the environmental factors checked below, involving at least one impact that is “Potentially Significant” or “Less than Significant with Mitigation Incorporated” as indicated by the checklist on the following pages.

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

DETERMINATION

Based on 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 to 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 potential significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) 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.


Signature

Emily Foley
Printed Name

1/10/2023

Date

Planner
Title

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ENVIRONMENTAL CHECKLIST

1 Aesthetics

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
--	--------------------------------	--	------------------------------	-----------

Except as provided in Public Resources Code Section 21099, would the project:

a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. 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 a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SETTING

The project site is located within an area that consists primarily of open space, but limited development is allowed on private properties. North of the site is a single-family residence, to the west are single-family residences, to the east is open space, and to the northeast is a single-family residence. Residences are surrounded by dense tree cover and are set back from roadways. From the project site, there are views of nearby hillsides.

Skyline Boulevard, identified in the City’s Comprehensive Plan as a scenic route, is located approximately 2.5 miles west of the project site.

IMPACT ANALYSIS

a. Would the project have a substantial adverse effect on a scenic vista?

Views from and through the project site from public viewpoints such as the surrounding streets of Los Trancos Road and Valley Oak and from the Sweet Springs Trail are of trees,

open space, and glimpses of surrounding single-family development through vegetation. There are no vistas classified as significant or scenic in the vicinity of the project site (City of Palo Alto 2017a). Views from public viewpoints through the site would not substantially change, as trees and topography would generally screen the proposed buildings from view. The proposed project would not have a substantial adverse effect on a scenic vista. This impact would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- b. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

State Scenic Highways designated by the California Department of Transportation (Caltrans) near the project site include State Route (SR) 35 to the west and SR 280 to the east (Caltrans 2019). The project site is not visible from either SR 35 or SR 280. The project site is not located near listed scenic routes in the City's comprehensive plan including Sand Hill Road, University Avenue between Middlefield Road and San Francisquito Creek, Embarcadero Road, Page Mill Road, Oregon Expressway, Interstate 280, Arastradero Road (west of Foothill Expressway), Junipero Serra Boulevard/Foothill Expressway and Skyline Boulevard (City of Palo Alto 2017a). Therefore, the proposed project would have no impact on scenic resources within a state scenic highway or within a scenic corridor identified in the comprehensive plan.

NO IMPACT

- c. Would the project 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 a publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*

Although the City of Palo Alto as a whole is an urbanized area, for the purposes of this analysis, the site is considered to be in a non-urbanized area due to its semi-rural character and open-space surroundings. Construction activities would temporarily alter the visual quality of the site. Construction of the project would require hauling of building materials and construction of below-grade foundations, the building itself, and landscaping. Construction activities would include the storage of equipment and materials onsite for several months. Due to the temporary nature of construction, these activities would not permanently degrade or modify the existing aesthetic image of the neighborhood, nor generate substantial long-term contrast with the visual character of the surrounding area. Therefore, visual quality impacts associated with construction would be less than significant.

The project site is undeveloped, and the introduction of a single-family residence would change the visual character of the project site from existing conditions. However, the proposed project would introduce a structure that would be generally consistent with the height and massing of the other nearby single-family residences. Consistent with the City of Palo Alto Comprehensive Plan controlled development designation, the project would result in one dwelling unit and an attached accessory dwelling unit. Proposed external materials for the new buildings would adequately reflect and be compatible with the natural

environment surrounding the project site. The project would also be required to comply with the single-family individual review guidelines for which a checklist is provided (City of Palo Alto 2005; 2022a). The purpose of the checklist is to ensure a project's compliance with the City of Palo Alto's Single-Family Individual Review Guidelines. Although grading would be required to prepare the site, the new development would generally be on the flatter portions of the site and no major grading or recontouring that would substantially alter the topography is proposed.

The project would include the removal of five trees for which there would be three replacement trees introduced to the site, consistent with the City of Palo Alto's Tree Technical Manual pursuant to Palo Alto Municipal Code (PAMC) Section 8.10.30. The majority of trees on the project site would remain and would be required to be preserved pursuant to PAMC Chapter 8.10 which provides standards for removal, maintenance, and planting of trees to, ultimately, preserve trees on the site. Because the majority of existing trees would remain on the project site, the proposed residence would be screened from travelers on nearby roadways and views through the project site of the new residence would be brief.

The proposed project would not significantly degrade the existing visual character of quality of the site and its surroundings. The proposed project's height, massing, and design would be consistent with nearby single-family development. Therefore, impacts related to visual character and quality would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?

Implementation of the proposed project would introduce new sources of light and glare to a site where there are currently no existing sources of light and glare. Potential new sources of lighting from the proposed project would include light visible through windows, car headlights, outdoor lighting, and exterior security lighting. The surrounding area consists of generally low levels of existing lighting. Primary sources of light adjacent to the project site are lighting associated with existing residences nearby. Lighting on the project site would be generally similar to existing lighting at residences nearby. Compliance with Single-Family individual Review Guidelines and PAMC Section 18.28.070(n) require that exterior lighting should be low-intensity and shielded from view and require utilization of treatments such as translucent glass, shading systems, and interior light placement. Adherence to these requirements would reduce night glare potential impacts from lighting. Impacts related to lighting would be less than significant.

Potential sources of glare from the proposed project would consist of windows, parked cars, and the pool. However, these sources of glare would be similar to nearby residences and would not result in a substantial new source of glare. The proposed residence would also be screened from the roadway and nearby residences by existing tree cover. Compliance with PAMC Section 18.28.070(n) would reduce potential impacts from glare to the night sky and off-site. Therefore, the proposed project would not create a substantial source of glare that

575 LOS TRANCOS ROAD RESIDENTIAL PROJECT

would adversely affect day or nighttime views. Impacts related to glare would be less than significant.

LESS THAN SIGNIFICANT IMPACT

2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
--	--------------------------------	--	------------------------------	-----------

Would the project have any of the following impacts:

a. Convert Prime Farmland, Unique Farmland, Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

- Would the project convert Prime Farmland, Unique Farmland, 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 non-agricultural use?
- Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

- c. *Would the project 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))?*
- d. *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*
- e. *Would the project involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?*

The project is located on Other Land, pursuant to the Department of Conservation's (DOC) Important Farmland Finder (DOC 2014). The project site is not identified as prime farmland, farmland of statewide importance, unique farmland, farmland of local importance, or grazing land. The project site is not enrolled in a Williamson Act contract, nor does it support forest land or resources; the site does not meet the definition of forest land, timberland, or timberland zoned Timberland Production in Public Resources Code (PRC) 12220(g), 4526, and 51104(g). The project site is not located on or adjacent to agricultural land or forest land and the proposed project would not involve development that could result in the conversion of farmland to non-agricultural uses. Therefore, the project would have no impact with respect to conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use; conflict with existing agricultural zoning or Williamson Act contracts; result in the loss of forest land or conversion of forest land to non-forest use; or other conversion of farmland to non-agricultural use.

NO IMPACT

3 Air Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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Would the project have any of the following impacts:

a. Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

AIR QUALITY STANDARDS AND ATTAINMENT

The project site is located within the San Francisco Bay Area Air Basin (the Basin), which is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). As the local air quality management agency, the BAAQMD is required to monitor air pollutant levels to ensure that state and federal air quality standards are met and, if they are not met, to develop strategies to meet the standards.

Depending on whether the standards are met or exceeded, the Basin is classified as being in “attainment” or “nonattainment.” Under state law, air districts are required to prepare a plan for air quality improvement for pollutants for which the district is in non-compliance. The BAAQMD is in non-attainment for the state and federal ozone standards, the state and federal PM2.5 (particulate matter up to 2.5 microns in size) standards and the state PM10 (particulate matter up to 10 microns in size) standards and is required to prepare a plan for improvement (BAAQMD2017a)

The health effects associated with criteria pollutants for which the Basin is in non-attainment are described in Table 1.

Table 1 Health Effects Associated with Non-Attainment Criteria Pollutants

Pollutant	Adverse Effects
Ozone	(1) Short-term exposures: (a) pulmonary function decrements and localized lung edema in humans and animals and (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (2) long-term exposures: risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (3) vegetation damage; and (4) property damage.
Suspended particulate matter (PM ₁₀)	(1) Excess deaths from short-term and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease (including asthma). ^a
Suspended particulate matter (PM _{2.5})	(1) Excess deaths from short- and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes, including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children, such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease, including asthma. ^a

^a More detailed discussions on the health effects associated with exposure to suspended particulate matter can be found in the following documents: United States Environmental Protection Agency (USEPA), Air Quality Criteria for Particulate Matter, 2004. Source: USEPA 2018

AIR QUALITY MANAGEMENT

The Bay Area 2017 Clean Air Plan provides a plan to improve Bay Area air quality and protect public health as well as the climate. The legal impetus for the Plan is to update the most recent ozone plan, the 2010 Clean Air Plan, to comply with state air quality planning requirements as codified in the California Health & Safety Code. Although steady progress has been made toward reducing ozone levels in the Bay Area, the region continues to be designated as non-attainment for both the one-hour and eight-hour state ozone standards as noted previously. In addition, emissions of ozone precursors in the Bay Area contribute to air quality problems in neighboring air basins. Under these circumstances, state law requires the Clean Air Plan to include all feasible measures to reduce emissions of ozone precursors and reduce transport of ozone precursors to neighboring air basins (BAAQMD 2017b).

In 2006, the United States Environmental Protection Agency (USEPA) tightened the national 24-hour PM_{2.5} standard regarding short-term exposure to fine particulate matter from 65 µg/m³ (micro-grams per cubic meter) to 35 µg/m³. Based on air quality monitoring data for years 2006-2008 showing that the region was slightly above the standard, the USEPA designated the Bay Area as non-attainment for the 24-hour national standard in December 2008. This triggered the requirement for the Bay Area to prepare a State Implementation Plan (SIP) submittal to demonstrate how the region would attain the standard. However, data for both the 2008-2010 and the 2009-2011 cycles showed that Bay Area PM_{2.5} levels currently meet the standard. On October 29, 2012, the USEPA issued a proposed rule to determine that the Bay Area has attained the 24-hour PM_{2.5} national standard. Based on this, the Bay Area is required to prepare an abbreviated SIP submittal that includes an emission inventory for primary (directly emitted) PM_{2.5}, as well as precursor pollutants that

contribute to formation of secondary PM in the atmosphere and amendments to the BAAQMD New Source Review to address PM_{2.5} (adopted December 2012).¹ However, key SIP requirements to demonstrate how a region will achieve the standard (i.e., the requirement to develop a plan to attain the standard) will be suspended as long as monitoring data continues to show that the Bay Area attains the standard.

In addition to preparing the “abbreviated” SIP submittal, the BAAQMD has prepared a report entitled Understanding Particulate Matter: Protecting Public Health in the San Francisco Bay Area (BAAQMD 2012). The report will help guide the BAAQMD’s ongoing efforts to analyze and reduce PM in the Bay Area to protect public health better. The Bay Area will continue to be designated as “non-attainment” for the national 24-hour PM_{2.5} standard until the district elects to submit a “redesignation request” and a “maintenance plan” to the USEPA, and the agency approves the proposed redesignation.

AIR EMISSION THRESHOLDS

This analysis uses the BAAQMD’s May 2017 CEQA Air Quality Guidelines to evaluate air quality. The May 2017 Guidelines include revisions made to the 2010 Guidelines, addressing the California Supreme Court’s 2015 opinion in the *Cal. Bldg. Indus. Ass’n vs. Bay Area Air Quality Mgmt. Dist.*, 62 Cal. 4th 369 (BAAQMD 2017c). Therefore, the numeric thresholds in the May 2017 BAAQMD CEQA Air Quality Thresholds were used for this analysis to determine whether the impacts of the project exceed the thresholds identified in Appendix G of the CEQA Guidelines.

The BAAQMD has developed screening criteria to provide lead agencies and project applicants with a conservative indication of whether a project could result in potentially significant air quality impacts. If all the screening criteria are met by a project, the lead agency or applicant would not need to perform a detailed air quality assessment of their project’s air pollutant emissions and air quality impacts would be considered less than significant. These screening levels are generally representative of new development on greenfield sites without any form of mitigation measures taken into consideration. For infill projects, such as this one, emissions would be less than the greenfield-type project on which the screening criteria are based (BAAQMD 2017c). The BAAQMD’s screening level sizes for single-family land uses is 325 dwelling units for operational criteria pollutant emissions and 114 dwelling units for construction-related emissions (BAAQMD 2017c).

For construction-related emissions to be considered less than significant, projects must meet the following criteria in addition to being below the applicable screening level:

1. All *Basic Construction Mitigation Measures* would be included in the project design and implemented during construction; and

¹ PM is made up of particles emitted directly, such as soot and fugitive dust, as well as secondary particles formed in the atmosphere from chemical reactions involving precursor pollutants such as oxides of nitrogen (NO_x), sulfur oxides (SO_x), volatile organic compounds (VOC), and ammonia (NH₃).

2. Construction-related activities would not include any of the following:
 - a. Demolition
 - b. Simultaneous occurrence of more than two construction phases (e.g., paving and building construction would not occur simultaneously)
 - c. Simultaneous construction of more than one land use type (e.g., project would develop residential and commercial uses on the same site) (not applicable to high density infill development)
 - d. Extensive site preparation (i.e., greater than default assumptions used by the Urban Land Use Emissions Model [URBEMIS] for grading, cut/fill, or earth movement)
 - e. Extensive material transport (e.g., greater than 10,000 cubic yards of soil import/export) requiring a considerable amount of haul truck activity

IMPACT ANALYSIS

- a. *Would the project conflict with or obstruct implementation of the applicable air quality plan?*

The California Clean Air Act requires that air districts create a Clean Air Plan that describes how the jurisdiction will meet air quality standards. The most recently adopted air quality plan is the BAAQMD 2017 Plan. The 2017 Plan updates the most recent Bay Area plan, the 2010 Clean Air Plan, pursuant to air quality planning requirements defined in the California Health and Safety Code. To fulfill state ozone planning requirements, the 2017 control strategy includes all feasible measures to reduce emissions of ozone precursors—ROG and NO_x—and reduce transport of ozone and its precursors to neighboring air basins. The CAP builds upon and enhances the BAAQMD's efforts to reduce emissions of fine particulate matter and TACs. The 2017 Plan does not include control measures that apply directly to individual development projects. Instead, the control strategy includes control measures related to stationary sources, transportation, energy, buildings, agriculture, natural and working lands, waste management, water, and super-GHG pollutants.

The 2017 CAP focuses on two paramount goals:

- Protect air quality and health at the regional and local scale by attaining all national and state air quality standards and eliminating disparities among Bay Area communities in cancer health risk from TACs
- Protect the climate by reducing Bay Area GHG emissions to 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050

Under BAAQMD's methodology, a determination of consistency with the 2017 Plan should demonstrate that a project:

- Supports the primary goals of the air quality plan
- Includes applicable control measures from the air quality plan
- Does not disrupt or hinder implementation of any air quality plan control measures

A project that would not support the 2017 Plan's goals would not be considered consistent with the 2017 Plan. On an individual project basis, consistency with BAAQMD quantitative

thresholds is interpreted as demonstrating support for the clean air plan's goals. As discussed under criterion (b) below, the project would not exceed BAAQMD significance thresholds related to air quality emissions), the project would not result in exceedances of BAAQMD thresholds for criteria air pollutants and thus would not conflict with the 2017 Plan's goal to attain air quality standards. The 2017 Clean Air Plan includes goals and measures to increase the use of electric vehicles, promote the use of on-site renewable energy, and encourage energy efficiency. The project would include features that are consistent with these goals and measures, including meeting California Green Building Standards for residences and inclusion of efficient household fixtures, as well as being an all-electric development. Therefore, the project would not conflict with or obstruct the implementation of an applicable air quality plan and the project would have a less than significant impact.

LESS THAN SIGNIFICANT IMPACT

- b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?*

CONSTRUCTION

The proposed project would involve construction of one single-family residence and an associated accessory structure. The proposed project would not involve simultaneous construction phases, simultaneous construction of more than one land use type, extensive site preparation, or extensive material transport. Therefore, the project would meet all of the screening criteria for construction emissions.

FUGITIVE DUST

Site preparation and grading may cause wind-blown dust that could contribute particulate matter into the local atmosphere. The BAAQMD has not established a quantitative threshold for fugitive dust emissions but rather states that projects that incorporate BMPs for fugitive dust control during construction, such as watering exposed surfaces and limiting vehicle speeds to 15 miles per hour, would have a less than significant impact related to fugitive dust emissions. The project does not expressly include implementation of these BMPs; therefore, construction-related fugitive dust emissions would be potentially significant and Mitigation Measure AQ-1 would be required.

OPERATION

For single-family residential uses such as the proposed project, BAAQMD's operational screening size is 325 dwelling units. Therefore, the project would meet the screening criteria for operational emissions. Operational emissions impacts would be less than significant.

MITIGATION MEASURE

AQ-1 BAAQMD Basic Construction Mitigation. The property owner or their designee shall implement the following measures during project construction to reduce dust fall-out emissions:

- All exposed surfaces (e.g., parking areas, staging areas, soil piles, and graded areas) shall be watered two times per day.
- All haul trucks transporting soil, sand, or other loose material off-site shall be covered or maintain at least 2 feet of freeboard.
- 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.
- Enclose, cover, water daily or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.)
- 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.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways.
- 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 CCR Title 13, Section 2485). Clear signage shall be provided for construction workers at all access points.
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator.
- Post a publicly visible sign with the telephone number and person to contact at the City of Palo Alto or construction contractor 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.

SIGNIFICANCE AFTER MITIGATION

Mitigation Measure AQ-1 would ensure that the project comply with all BAAQMD basic mitigation, reducing construction emission impacts to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Sensitive receivers nearest to the project site include single-family residences to the west and the single-family residence to the north. The California Air Resources Board (CARB) has identified diesel particulate matter (PM_{2.5}) as the primary airborne carcinogen in the state (CARB 2021). In addition, Toxic Air Contaminants (TAC) comprise a defined set of air pollutants that may pose a present or potential hazard to human health. Common sources of TACs and PM_{2.5} include gasoline stations, dry cleaners, diesel backup generators, truck distribution centers, freeways, and other major roadways (BAAQMD 2017c). The proposed project does not include construction of new gas stations, dry cleaners, highways, roadways, or other sources that could be considered a new permitted or non-permitted source of TAC or PM_{2.5} in proximity to receivers. In addition, the proposed project would not introduce a stationary source of emissions, nor would it result in particulate matter emissions greater than the BAAQMD threshold. Therefore, this impact would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Table 3-3 in the BAAQMD's 2017 CEQA Guidelines provides odor screening distances for land uses that have the potential to generate substantial odor complaints. The odor-generating uses in the table include wastewater treatment plants, landfills or transfer stations, refineries, composting facilities, confined animal facilities, food manufacturing, smelting plants, and chemical plants (BAAQMD 2017c). The proposed project involves residential uses and does not include any of the uses identified by the BAAQMD as odor-generating uses. Therefore, the proposed project would not generate objectionable odors affecting a substantial number of people. This impact would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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4 Biological Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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Would the project have any of the following impacts:

- | | | | | |
|--|--------------------------|-------------------------------------|-------------------------------------|--------------------------|
| 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, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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 U.S. Fish and Wildlife Service? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or as defined by the City of Palo Alto's Tree Preservation Ordinance (Municipal Code Section 8.10)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

EXISTING SETTING

Rincon Consultants prepared a Biological Resources Constraints Analysis (BRCA) in November 2021 (Rincon Consultants 2021; Appendix A). The analysis in this Initial Study is based on the 2021 BRCA. As part of the report, Rincon conducted a field reconnaissance survey on October 5, 2021. During that field survey, three terrestrial vegetation communities or other land cover types were observed within the project site: Coast live oak woodland, non-native annual grassland, and riparian. Coast live oak woodland (*Quercus agrifolia* Forest and Woodland Alliance) is typically found on canyon bottoms, slopes, and flats with deep sandy or loamy soils throughout the inner and outer Coast Ranges, Transverse Ranges, and southern coast, usually below 1,200 meters. Coast live oak woodlands are widely distributed throughout the state from northern Mendocino County to San Diego County. This community is dominated by coast live oak (*Q. agrifolia*), often including California bay (*Umbellularia californica*) and Pacific madrone (*Arbutus menziesii*). Stands vary from open or continuous to savanna-like. Dense conditions support sparse understory vegetation including California blackberry (*Rubus ursinus*), poison oak, and snowberry (*Symphoricarpos spp.*), while more open stands have a grassy understory. Coast live oak woodland is found throughout the project site. Canopy cover is continuous to scattered, with a moderately dense understory of herbs and shrubs. Other observed tree species commonly associated with coast live oak woodland include California bay and California buckeye (*Aesculus californica*). The shrub layer of the coast live oak woodland is typically poorly developed and the herbaceous layer is mostly continuous with adjacent grasslands. Shrubs in the project site include poison oak, coyote brush, and California blackberry.

On the project site, non-native annual grassland primarily occurs in the interior of the site and is surrounded by coast live oak woodland. The majority of the non-native annual grassland within the project site has been previously mowed. Characteristic non-native annual grasses observed include wild oat (*Avena fatua*), Italian rye (*Festuca perennis*), and foxtail barley (*Hordeum murinum*). Many ruderal herbs were also present, including plantain (*Plantago spp.*).

Riparian habitat is found along Los Trancos Creek within the project site. This habitat type is similar to coast live oak woodland described above, with the distinction that it occurs along the banks of the creek and is considered riparian habitat.

IMPACT ANALYSIS

- a. *Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as candidate, sensitive, or special status in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?*

Based on a review of agency databases and literature review, as well as the results of the reconnaissance survey of the project site, Rincon evaluated 85 special-status species (40 special-status plant species and 45 special-status animal species) documented within the *Mindego Hill, California* USGS 7.5-minute topographic quadrangle and the surrounding eight quadrangles (*Woodside, Palo Alto, Mountain View, La Honda, Cupertino, Franklin Point, Big*

Basin, and *Castle Rock Ridge*). Each of these 85 species was evaluated for its potential to occur at the project site. The majority of special-status species are not expected to occur based on the absence of suitable habitat and/or the project site being outside of the geographic range of the species. However, Mitigation Measure BIO-1 would require implementation of a Worker Environmental Awareness Program (WEAP) in order to aid workers in recognizing special-status species, which would reduce impacts to a less than significant level.

Of the 40 special-status plant species, one has a moderate potential to occur on the project site. Woodland woollythreads (*Monolopia gracilens*), CRPR 1B.2, can be found in a variety of habitat types, including some that occur on the project site, such as woodlands and grassy sites in openings. Blooming period for this species is March through July. Multiple occurrences of woodland woollythreads have been recorded within five miles of the project area, including the most recent occurrence from 2018 approximately one mile southwest of the project site. Therefore, the project has the potential to impact woodland woollythreads through removal of habitat and this impact is potentially significant. Mitigation Measure BIO-2 would be required to reduce impacts on woodland woollythreads and other special-status plant species to a less than significant level.

Of the 45 special-status animal species, nine have moderate to high potential to occur in habitat on the site: steelhead - central California coast (CCC) distinct population segment (steelhead) (*Oncorhynchus mykiss irideus*), Santa Cruz black salamander (*Aneides niger*), California giant salamander (*Dicamptodon ensatus*), California red-legged frog (*Rana draytonii*), western pond turtle (*Emys marmorata*), San Francisco gartersnake (*Thamnophis sirtalis tetrataenia*) pallid bat (*Antrozous pallidus*), Townsend's big-eared bat (*Corynorhinus townsendii*), and San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*). Additionally, there is suitable nesting habitat throughout the project site for nesting birds, which are protected under the Migratory Bird Treaty Act and CDFW Fish and Game Code. Mitigation measures BIO-3 through BIO-7 would be required to reduce impacts on the above-mentioned special-status animal species to a less than significant level.

The project would include a 20-foot creek setback (see Figure 6) pursuant to Palo Alto's Stream Corridor Ordinance (Section 18.40.140 of the PAMC) and no direct impacts to aquatic habitat would occur. However, construction of the project would result in removal of vegetation and loss of terrestrial habitat on limited portions of the site, and runoff and erosion from the project site could indirectly impact aquatic species habitat. Critical habitat for steelhead is present in Los Trancos Creek, both within and immediately adjacent to the project site. Designated critical habitat is also located in several of the rivers surrounding the project site within five miles for coho Salmon, though the project site does not overlap with these rivers and no drainages onsite are connected to the other rivers where critical habitat is designated. The project would include a 20-foot creek setback pursuant to Palo Alto's Stream Corridor Ordinance and no direct impacts to steelhead critical habitat would occur. However, indirect impacts from runoff or erosion could impact water quality; therefore, the project has the potential to impact steelhead designated critical habitat and the impact is potentially significant. Mitigation Measure BIO-3 would be required to address potential erosion and provided BMPs for protection of steelhead and aquatic habitats.

New lighting introduced on the project site could have an adverse effect on animal species in the creek corridor if not properly limited and controlled. PAMC Section 18.40.140(B)(3) requires that “Nighttime lighting shall be directed away from the riparian corridor of a stream” and that “The distance between nighttime lighting and the riparian corridor of a stream should be maximized.” A lighting plan submitted by the applicant shows shielding on exterior safety lighting and shades to limit interior lighting spillover toward the creek. The City would require adherence to PAMC Section 18.40.140(B)(3) during final review of project lighting prior to issuance of building permits. Implementation of these requirements would limit light intrusion into the creek corridor and associated impacts would be avoided.

Additionally, although designated critical habitat for California red-legged frog and Bay checkerspot butterfly is located within five miles of the project area, the project does not overlap with either of these designated critical habitats.

MITIGATION MEASURES

The following mitigation measures are required:

- BIO-1 Worker Environmental Awareness Program (WEAP).** Prior to initiation of construction activities (including staging and mobilization) all personnel associated with project construction shall attend a Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in recognizing special-status resources that may occur in the construction area. The specifics of this program shall include identification of the sensitive species and habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and measures required to reduce impacts to biological resources within the work area. A qualified biologist shall prepare a fact sheet conveying this information for distribution to all contractors, their employers, and other personnel involved with construction. All employees shall sign a form provided by the trainer indicating they have attended the WEAP and understand the information presented to them. The forms from all trainings shall be available to the City upon request to document compliance.
- BIO-2 Special-Status Plant Species Botanical Surveys.** A qualified biologist shall conduct a protocol level botanical survey, including a site visit during the blooming period of the target species in March through July. If the CRPR 1 rank plant is found, the plants shall be avoided by installing protective fencing and warning construction personnel of their presence through the WEAP training. If special-status plants species cannot be avoided, impacts shall be mitigated at a minimum ratio of 1:1 (number of acres or individuals restored to number of acres or individuals impacted). A restoration plan shall be prepared and submitted to the City for review and approval and to CDFW for review. The restoration plan shall include, at a minimum, the type and area of habitat to be established, restored, enhanced, and/or preserved; goals and objectives of the mitigation project; a monitoring plan including performance standards and success criteria; and maintenance activities to occur during

monitoring. The applicant shall implement the measures prior to commencement of ground disturbance, tree removal or construction.

BIO-3 Best Management Practices for Protection of Steelhead and Aquatic Habitat. No vegetation removal, ground disturbance or construction shall occur within the creek or the 20-foot creek setback zone, which shall be demarcated with high visibility orange construction fencing to ensure avoidance of impacts to the aquatic habitat. Best management practices (BMPs) shall be developed and implemented during all grading and construction activities to prevent erosion and sedimentation into the creek and to prevent the spill of contaminants in or around the creek. The following BMPs shall be included and implemented on-site during construction to prevent any indirect impacts to aquatic habitat, as well as jurisdictional waters and wetlands:

- Vehicles and equipment shall be checked at least daily for leaks and maintained in good working order. Spill kits shall be available on-site at all times and a spill response plan shall be developed and implemented.
- Sediment and erosion control measures (e.g., sand or gravel bags, hay bales, check dams) shall be implemented and maintained throughout the project site to prevent the entry of sediment and/or pollutants into any waterways or jurisdictional areas. No monofilament plastic may be used for erosion control materials.

BIO-4 Preconstruction Surveys for California Giant Salamander, Santa Cruz Black Salamander, Western Pond Turtle, California Red-Legged Frog, and San Francisco Garter Snake. A qualified biologist shall conduct a pre-construction survey within 24 hours of the initiation of project activities. If California Giant Salamander, Santa Cruz Black Salamander, and/or Western Pond Turtle are observed the animal shall be allowed to leave the site on its own. If California Red-Legged Frog, and/or San Francisco garter snake is found, USFWS shall be notified immediately to determine the correct course of action and the proposed project shall not begin until approved by USFWS.

Prior to ground disturbance, a temporary wildlife exclusion barrier shall be installed along the limits of disturbance. A qualified biologist shall inspect the area prior to barrier installation. The barrier shall be designed to prevent the target species from entering the project area and will remain in place until all development activities have been completed. This barrier shall be inspected daily by a qualified biologist and maintained and repaired as necessary to ensure that it is functional and is not a hazard to the target species on the outer side of the barrier.

A qualified biologist shall be present during all grading and initial ground disturbing activities. Vegetation disturbance shall be the minimum necessary to achieve the goals of the project. Immediately prior to initial ground disturbance and vegetation removal, a qualified biologist shall conduct a visual clearance survey. Vegetation shall be cut to 6 inches in height using hand tools (including string trimmers or chainsaw for brush). Once the ground is visible, a second visual survey for target species shall be conducted by the biologist prior to additional ground disturbance.

Should California Giant Salamander, Santa Cruz Black Salamander, or Western Pond Turtle be observed within the project site, construction shall be halted in the vicinity until either the animal exits the site on its own or until a qualified biologist relocates the animal to suitable habitat in the immediate vicinity. Should California Red-Legged Frog, and/or San Francisco garter snake be observed within the project site, the USFWS shall be notified immediately and construction shall be halted until either the animal exits the site on its own or until a qualified biologist with the appropriate USFWS Recovery Permit relocates the animal.

No work shall occur during a rain event over 0.25." If a rain event occurs, a qualified biologist shall inspect the site again prior to resuming work. All holes and trenches shall be covered at the end of the day or ramped to avoid entrapment.

BIO-5 Focused Surveys for Special-Status Bat Species and Roosting Bat Protection Plan.

Prior to tree removal, a qualified biologist shall conduct a focused survey of all trees to be removed or impacted by construction activities to determine whether active roosts of special-status bats are present on site. If tree removal is planned for the fall, it is recommended the survey be conducted in September to ensure tree removal would have adequate time to occur during seasonal periods of bat activity, as described below. If tree removal is planned for the spring, it is recommended the survey be conducted during the earliest possible time in March, to allow for suitable conditions for both the detection of bats and subsequent tree removal. Trees containing suitable potential bat roost habitat features shall be clearly marked or identified.

If day roosts are found to be potentially present, the biologist shall prepare a site-specific roosting bat protection plan to be implemented by the contractor following the City of Palo Alto's approval. The plan shall incorporate the following guidance as appropriate:

- To the extent possible, trees identified as suitable roosting habitat shall be removed during seasonal periods of bat activity, including the following, but not during maternity season:
 - Between September 1 and about October 15, or before evening temperatures fall below 45 degrees Fahrenheit and/or more than 0.5 inch of rainfall within 24 hours occurs.
 - Between March 1 and April 15, or after evening temperatures rise above 45 degrees Fahrenheit and/or no more than 0.5 inch of rainfall within 24 hours occurs.
- If a tree must be removed during the maternity/breeding season and is identified as potentially containing a colonial maternity roost, then a qualified biologist shall conduct acoustic emergence surveys or implement other appropriate methods to further evaluate if the roost is an active maternity roost. Under the biologist's guidance, the contractor shall implement measures similar to or better than the following:

- If it is determined that the roost is not an active maternity roost, then the roost may be removed in accordance with the other requirements of this recommendation.
- If it is found that an active maternity roost of a colonial roosting species is present, the roost shall not be disturbed during the breeding season (April 15 to August 31).
- Potential colonial hibernation roosts may only be removed during seasonal periods of bat activity. Potential non-colonial roosts that cannot be avoided shall be removed on warm days in late morning to afternoon when any bats present are likely to be warm and able to fly. Appropriate methods shall be used to minimize the potential harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on day one. The noise and vibration disturbance, together with the visible alteration of the tree, is very effective in causing bats that emerge nightly to feed to not return to the roost that night. The remainder of the tree is removed on day two.

BIO-6 Preconstruction Surveys for San Francisco Dusky-Footed Woodrat. A qualified biologist shall conduct a pre-construction survey for woodrats no more than 14 days prior to construction. Nests within 50 feet of project activity that would not be directly impacted by project activity shall be demarcated with a 10-foot avoidance buffer and left intact. If a nest(s) that cannot be avoided are found during the pre-construction survey, an approved biologist shall dismantle the nest and relocate it to suitable habitat outside the work area no more than 50 feet away with the goal of ensuring the individuals are allowed to leave the work area(s) unharmed before on site activities begin. Nest relocation shall occur within 48 hours of construction activities to ensure that nests are not reestablished.

BIO-7 Preconstruction Surveys for Nesting Birds. A general pre-construction nesting bird survey shall be conducted by a qualified biologist within 14 days prior to the initiation of construction activities. If construction is stopped for more than 14 days during the nesting season, a pre-construction survey shall be conducted prior to the re-start of construction activities. Surveys shall include the disturbance area plus a 50-foot buffer for passerine species, and a 500-foot buffer for raptors.

If active nests are located, an appropriate avoidance buffer shall be established within which no work activity would be allowed that would impact these nests. The avoidance buffer shall be established by the qualified biologist on a case-by-case basis based on the species and site conditions. Larger buffers may be required depending upon the status of the nest and the construction activities occurring in the vicinity of the nest. The buffer area(s) shall be closed to all construction personnel and equipment until juveniles have fledged and/or the nest is inactive. A qualified biologist shall confirm that breeding/nesting is complete, and the nest is no longer active prior to removal of the buffer. If work within a buffer area cannot be

avoided, then a qualified biologist shall be present to monitor all project activities that occur within the buffer. The biological monitor shall evaluate the nesting avian species for signs of disturbance and shall have the ability to stop work.

SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measure BIO-1 would require all personnel associated with project construction to attend a WEAP, which would aid them in recognizing special-status resources and reduce impacts to a less than significant level. Implementation of Mitigation BIO-2 would reduce impacts on special-status plant species to a less than significant level through conduction of botanical surveys and avoidance of CRPR 1 rank plant.

Implementation of Mitigation BIO-3 would require implementation of BMPs for the protection of steelhead and aquatic habitats, as well as measures for sediment and erosion control which would reduce impacts on aquatic habitats and jurisdictional waters and wetlands to a less than significant level. Implementation of Mitigation Measures BIO-4 through BIO-7 would require surveys for and avoidance if possible for special-status animal species such as the California Giant Salamander, Santa Cruz Black Salamander, Western Pond Turtle, California Red-Legged Frog, San Francisco garter snake, special-status bat species, San Francisco Dusky-Footed Woodrat, and nesting birds, which would reduce impacts on those species to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

- b. Would the project 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 U.S. Fish and Wildlife Service?*
- c. Would the project have a substantial adverse effect on state or federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*
- d. Would the project 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?*

Three sensitive natural communities (Northern Coastal Salt Marsh, Serpentine Bunch Grass, and Valley Oak Woodland) are known to occur within the nine-quadrangle search radius; however, none are present within the project site. Los Trancos Creek is an intermittent stream that crosses the western border of the site, as shown in Figure 2. It is a tributary to San Francisquito Creek, which flows into San Francisco Bay, a Traditional Navigable Water, and therefore is potentially under the jurisdiction of the U.S. Army Corps of Engineers (USACE), CDFW, and/or Regional Water Quality Control Board (RWQCB). The proposed project would not alter the course of this creek or other stream or river and would implement a 20 foot creek setback pursuant to Palo Alto's Stream Corridor Ordinance as noted in Section 18.40.140 of the PAMC. Riparian habitat (coast live oak woodland) occurs adjacent to the creek. Coast live oak woodland is not a CDFW sensitive natural community,

but riparian habitat is considered to be jurisdictional by CDFW. Project plans avoid direct impacts to Los Trancos Creek by precluding work or disturbance within 20 feet of the top of bank; however, the proposed project may result in indirect impacts to the creek and riparian habitat from erosion or runoff from the project site. Mitigation Measure BIO-3 requires development of BMPs to protect water quality and aquatic habitat and would also serve to protect wetlands and waters of the U.S. and State. Mitigation Measure BIO-3 would be required to reduce potential water quality impacts to a less than significant level.

Project activities within the dripline of the riparian canopy and removal of riparian canopy shall be avoided to the extent possible. Mitigation Measure BIO-3 requires high visibility orange construction fencing established for the creek setback zone. Where the riparian canopy extends beyond the 20-foot setback, the fencing must be extended to encompass the dripline of the riparian canopy. If project activities requiring pruning or soil disturbance, or that have the potential to impact soils within the dripline of the riparian canopy cannot be avoided, a CDFW Section 1600 Lake and Streambed Alteration Agreement is required. Mitigation at a minimum ratio of 1:1 shall be required. A compensatory mitigation plan for impacts to riparian habitat must be prepared and submitted to CDFW for approval. The mitigation plan must include, at a minimum, the type and area of habitat to be established, restored, enhanced, and/or preserved; goals and objectives of the mitigation project; a monitoring plan including performance standards and success criteria; and maintenance activities to occur during monitoring. The applicant must implement the measures prior to commencement of ground disturbance, tree removal or construction.

The project site is mapped within CDFW's California Essential Habitat Connectivity areas as somewhat permeable to wildlife passage. However, the project site is outside of mapped Landscape Blocks for the California Bay Area Linkage Network, indicating that it is not identified as highly permeable or high-quality habitat. Within the larger landscape, the project site is surrounded by highly permeable landscape providing terrestrial species more attractive alternatives for movement around the project site. Many large terrestrial wildlife species such as the candidate threatened mountain lion (*Puma concolor*) and most small species such as rodents and herpetofauna avoid openings and use the cover provided by the riparian corridor. The project is designed to avoid impacts to the riparian corridor, and Mitigation Measure BIO-3 requires fencing of the creek setback zone. The proposed placement of the structure is within an existing clearing on the property. The City would require adherence to PAMC Section 18.40.140(B)(3) requiring shielding of the creek from lighting. Implementation of these requirements would limit intrusion into the riparian corridor and impacts to the movement of both terrestrial and aquatic wildlife, established corridors, or nursery sites would be less than significant.

MITIGATION MEASURE AND SIGNIFICANCE AFTER MITIGATION

Mitigation Measure BIO-3 would require implementation of BMPs to reduce impacts on Los Trancos Creek and riparian habitat. With mitigation, impacts would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

- e. *Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or as defined by the City of Palo Alto's Tree Preservation Ordinance (Municipal Code Section 8.10)?*

The purpose of the City of Palo Alto Tree Preservation Ordinance is to promote the health, safety, welfare, and quality property within the city, and the establishment of standards for removal, maintenance, and planting of trees. In establishing these procedures and standards, it is the City's intent to encourage the preservation of trees. Chapter 8.10, Tree Preservation and Management Regulations, establishes regulations for the preservation of protected trees, defined as:

- Coast live oak, 11.5 inches in diameter or greater when measured 4.5 ft above natural grade
- Valley oak, 11.5 inches in diameter or greater when measured 4.5 ft above natural grade
- Coast redwood, 18 inches in diameter or greater when measured 4.5 ft above natural grade
- A heritage tree designated by the City Council

Under the tree protection ordinance, discretionary development approvals for property containing protected trees will include appropriate conditions providing for the protection of such trees during construction and for maintenance of the trees thereafter.

According to the arborist report prepared by Kielty Arborist Services on June 7, 2021 and revised on August 24, 2021 (Kielty Arborist Services 2021; Appendix B), there are currently 82 trees within or adjacent to the area of development. Four non-protected trees (one red willow tree, two olive trees, and one black walnut tree) would be removed as part of the project since they either pose a fire hazard or are located within the proposed driveway area. Coast live oak trees and valley oak trees with a diameter at breast height of greater than 11.5 inches occur within project site. Pursuant to PAMC Section 8.10, these on-site oak trees would qualify as protected trees. There are currently 55 protected trees on site. Except for one coast live oak tree, the rest of the protected trees are located away from the proposed work on site. However, Mitigation Measure BIO-8 would be required in order to reduce impacts on trees to be retained on site. The one Coast live oak tree that is located on the northwestern portion of the site and is dead would need to be removed. The City's tree protection ordinance requires compliance with the Tree Technical Manual, which outlines the requirements for removal and replacement of protected trees consistent with the tree canopy requirements. A written Tree Removal Permit is required prior to removal of any street tree and would further ensure that the requirements of the Ordinance are met. The project would be required to comply with the tree ordinance and apply for the required permit as needed; therefore, there is no conflict with local policies or ordinances.

MITIGATION MEASURE

- BIO-8 Protection of Retained Trees.** The project applicant shall adhere to recommendations as described in the arborist report prepared by Kielty Arborist Services (Kielty Arborist Services 2021) regarding protection of retained trees.

Recommendations include landscape buffers, tree pruning, root cutting, trenching and excavation, irrigation, grading, and inspections.

SIGNIFICANCE AFTER MITIGATION

Mitigation Measure BIO-8 would require protection measures for retained trees on site, which would reduce impacts to the trees to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project site is not within an approved Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.

LESS THAN SIGNIFICANT IMPACT

5 Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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Would the project have any of the following impacts:

<i>a. Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 or recognized by City Council resolution?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<i>b. Cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>c. Disturb any human remains, including those interred out of formal cemeteries?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a. Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5 or recognized by City Council resolution?

Rincon Consultants prepared a Cultural Resources Assessment Report for the project in February 2022 (Foster and Blind 2022). This assessment included a cultural resources records search of the California Historical Resources Information System (CHRIS), a Sacred Lands File (SLF) search, historic-period aerial and topographic map review, a pedestrian survey of the project site on January 14, 2022. The CHRIS records search was conducted to identify previous cultural resources studies and previously recorded cultural resources within 0.5 mile of the project site. Rincon also reviewed the NRHP, the CRHR, the California Historical Landmarks list, and the Built Environment Resources Directory (BERD), as well as its predecessor the California State Historic Property Data (HPD) File. Additionally, Rincon reviewed the Archaeological Determination of Eligibility (ADOE) list. No structures or previously recorded historic structures were identified on the project site. The field survey and background research did not identify any built-environment historical resources on or adjacent to the project site. Therefore, no impacts would occur.

NO IMPACT

b. Would the project cause a substantial adverse change in the significance of an archaeological resource as defined in §15064.5?

Rincon identified two archaeological resources within the vicinity of the project site. Rincon evaluated one historical archaeological resource within the project site for listing in the CRHR and recommended it ineligible as its data potential was exhausted at initial recording. One Native American resource is located outside of the project site and will not be affected by project activities. This resource was not evaluated for listing in the CRHR. While the SLF results were negative, the project site still maintains moderate sensitivity to containing

historic-period or Native American archaeological resources due to the proximity of the project to previously recorded archaeological resources. Therefore, impacts are potentially significant.

MITIGATION MEASURES

- CR-1 Worker's Environmental Awareness Program (WEAP).** Prior to project ground disturbance, all construction personnel and contractors responsible for overseeing and operating ground-disturbing activities shall be required to receive cultural awareness and sensitivity training. The purpose of this training is to educate construction personnel regarding the legal obligations of the project, the types of archaeological deposits that may be encountered during construction, and the appropriate procedures required in the event of a discovery of archaeological resources, paleontological resources, or human remains. The WEAP shall also provide cultural sensitivity training to ensure respectful and appropriate behaviors in the vicinity of archaeological deposits and human remains. The WEAP shall be implemented by a qualified archaeologist that meets or exceeds the Secretary of the Interior's Professional Qualifications Standards in archaeology.
- CR-2 Archaeological and Native American Monitoring.** A qualified archaeologist shall conduct archaeological monitoring for all project-related ground disturbing activities. Archaeological monitoring shall be performed under the direction of an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983). Locally affiliated Native American tribes shall be given the opportunity to conduct Native American monitoring. In the event that Native American monitoring occurs, a locally affiliated tribal member shall monitor all project-related ground disturbing activities. The monitor(s) will have the authority to halt and redirect work should any archaeological resources be identified during monitoring. If archaeological resources are encountered during ground-disturbing activities, work in the immediate area must halt and the find evaluated for listing in the CRHR. Archaeological monitoring may be reduced to spot-checking or eliminated at the discretion of the monitors, in consultation with the lead agency, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, or negative findings during the first 60 percent of rough grading. If monitoring is reduced to spot-checking, spot-checking shall occur when ground-disturbance moves to a new location within the project area and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).
- CR-3 Unanticipated Discovery of Cultural or Tribal Cultural Resources.** In the event that archaeological resources are unexpectedly encountered during ground-disturbing activities, work in the immediate area shall be halted and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archeology (National Park Service 1983) shall be contacted immediately to evaluate the find. If the find is Native American in origin, then a Native American representative shall also be contacted to participate in the evaluation of the find. The qualified archaeologist, and, if applicable, the Native American representative, shall examine

the find and make appropriate recommendations regarding additional work necessary to evaluate the significance of the find and the appropriate treatment of the resource. All cultural resources identified shall be evaluated for CRHR eligibility and local listing. Additional work may be necessary to evaluate the resource for inclusion in the CRHR or local listing. Recommendations could include, but are not limited to, invasive or non-invasive testing, sampling, laboratory analysis, preservation in place, or data recovery. A report of findings documenting any data recovered during monitoring shall be prepared by a qualified archaeologist and submitted to the Director of Planning. If the discovery is determined to be Native American in nature, the on-site Native American monitor, if applicable, shall be consulted to determine the appropriate treatment of the resource. In the event that no Native American monitor is contracted, locally affiliated Native American tribes shall be invited to consult regarding the appropriate treatment of any Native American resources identified during project construction.

SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measures CR-1, CR-2, and CR-3 would ensure that cultural resources are properly identified and preserved in the event they are uncovered during construction and would reduce impacts regarding disrupting intact archaeological resources to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project disturb any human remains, including those interred out of formal cemeteries?

No human remains are known to be present within the project site. However, the discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be of Native American origin, the Coroner will notify the Native American Heritage Commission, which will determine and notify the Most Likely Descendent (MLD). The MLD has 48 hours from being granted site access to make recommendations for the disposition of the remains. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from subsequent disturbance. With adherence to existing regulations, impacts to human remains would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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6 Energy

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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Would the project:

a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

- a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?
- b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The proposed project would involve the use of energy during construction and operation. Energy use during the construction phase would be primarily in the form of fuel consumption. Long-term operation of the proposed project would require permanent grid connections for electricity to power internal and exterior building lighting and heating and cooling systems. In addition, the increase in vehicle trips associated with the project would increase fuel consumption within Palo Alto. However, the proposed project would be subject to the energy conservation requirements of the California Energy Code (Title 24 of the California Code of Regulations, Part 6) and the California Green Building Standards Code (24 CCR part 11) as well as the City’s green building ordinance (PAMC Section 16.14.). Additionally, the proposed project would be fully electric and would utilize renewable energy in the form of solar roof panels with a system of more than 10 kilowatts (kW). Heat pump technology would be used for water heating and space heating. The project would also utilize energy-efficient appliances and lighting, as well as water-efficient appliances and fixtures, which would be consistent with the following policies within the City of Palo Alto 2030 Comprehensive Plan:

- **Policy T-4.7** Require new residential development projects to implement best practices for street design, stormwater management and green infrastructure.
- **Policy N-7.4** Maximize the conservation and efficient use of energy in new and existing residences and other buildings in Palo Alto.

- **Policy N-7.5** Encourage energy efficient lighting that protects dark skies and promotes energy conservation by minimizing light and glare from development while ensuring public health and safety.

Moreover, since the proposed project would involve the construction of one single-family residence and associated accessory structure, the increase in vehicle trips would be minimal and would not substantially increase fuel consumption within the City. Therefore, impacts related to the wasteful, inefficient, or unnecessary consumption of energy resources would be less than significant.

LESS THAN SIGNIFICANT IMPACT

7 Geology and Soils

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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Would the project have any of the following impacts:

a. *Directly or indirectly cause potential Expose 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.*

2. *Strong seismic ground shaking?*

3. *Seismic-related ground failure, including liquefaction?*

4. *Landslides?*

b. *Result in substantial soil erosion or loss of topsoil?*

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?*

d. *Be located on expansive soil, as defined in Table 1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?*

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?*

f. *Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

SETTING

FAULT ZONES

Similar to much of California, Palo Alto is located in a seismically active region. The USGS defines Holocene-active faults as those that are likely to have moved one or more times (surface displacement) in the last 10,000 years (USGS, n.d.), while inactive faults have not had surface displacement within that period. The major fault zones located near Palo Alto include the San Andreas Fault (5.5 miles southwest from the City), the Hayward Fault (13 miles northeast from the City), and the Calaveras Fault (23 miles northeast from the City).

In addition to primary hazards like surface fault ruptures, earthquakes also result in secondary hazards and impacts such as ground shaking, landslides, and liquefaction, which could cause widespread damage. The project site is not located within an identified earthquake fault zone as delineated on the Alquist-Priolo Earthquake Fault Zoning Map (DOC 2021a).

GROUND SHAKING

Seismically induced ground shaking covers a wide area and is greatly influenced by the distance of the site to the seismic source, soil conditions, and depth to groundwater. The most intense ground-shaking scenario mapped by the USGS and Associated Bay Area Governments (ABAG) in the vicinity assumes a 7.0 magnitude earthquake on the Hayward Fault system (northern and southern segments). The predicted ground-shaking level from such an earthquake would be “strong shaking” to “very strong shaking” throughout the City (ABAG 2019).

LIQUEFACTION AND SEISMICALLY INDUCED SETTLEMENT

Liquefaction is defined as the sudden loss of soil strength due to a rapid increase in soil pore water pressure resulting from seismic ground shaking. Liquefaction potential is dependent on such factors as soil type, depth to ground water, degree of seismic shaking, and the relative density of the soil. When liquefaction of the soil occurs, buildings and other objects on the ground surface may tilt or sink, and lightweight buried structures (such as pipelines) may float toward the ground surface. Liquefied soil may be unable to support its own weight or that of structures, which could result in loss of foundation bearing or differential settlement. Liquefaction may also result in cracks in the ground surface followed by the emergence of a sand-water mixture. According to the DOC, the project site is located in a liquefaction zone (DOC 2021a).

Seismically induced settlement occurs in loose to medium dense unconsolidated soil above groundwater. These soils compress (settle) when subject to seismic shaking. The settlement can be exacerbated by increased loading, such as from the construction of buildings. Settlement can also result solely from human activities including improperly placed artificial fill, and structures built on soils or bedrock materials with differential settlement rates.

LANDSLIDES

Landslides result when the driving forces that act on a slope (i.e., the weight of the slope material, and the weight of objects placed on it) are greater than the slope's natural resisting forces (i.e., the shear strength of the slope material). Slope instability may result from natural processes, such as the erosion of the toe of a slope by a stream, or by ground shaking caused by an earthquake. Slopes can also be modified artificially by grading, or by the addition of water or structures to a slope. Development that occurs on a slope can substantially increase the frequency and extent of potential slope stability hazards. The project site is not located in a landslide hazard zone or an earthquake fault zone (DOC 2021a).

EXPANSIVE SOILS

Expansive soils can change dramatically in volume depending on moisture content. When wet, these soils can expand; conversely, when dry, they can contract or shrink. Sources of moistures that can trigger this shrink-swell phenomenon include seasonal rainfall, landscape irrigation, utility leakage, and/or perched groundwater. Expansive soil can develop wide cracks in the dry season, and changes in soil volume have the potential to damage concrete slabs, foundations, and pavement. Special building/structure design or soil treatment are often needed in areas with expansive soils. Expansive soils are typically very fine-grained with a high to very high percentage of clay. The clay minerals present typically include montmorillonite, smectite, and/or bentonite. Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent.

EROSION

Erosion is the wearing away of the soil mantle by running water, wind or geologic forces. Excessive erosion can contribute to landslides, siltation of streams, undermining of foundations, and ultimately the loss of structures. Removal of vegetation tends to heighten erosion hazards. The City enforces grading and erosion control ordinances to reduce these hazards and the 2030 Comprehensive Plan also contains policies to prevent erosion-related issues.

PALEONTOLOGICAL SETTING

Paleontological sensitivity refers to the potential for a geologic unit to produce scientifically significant fossils. Direct impacts to paleontological resources occur when earthwork activities, such as grading or trenching, cut into the geologic deposits within which fossils are buried and physically destroy the fossils. Since fossils are the remains of prehistoric animal and plant life, they are considered to be nonrenewable. Such impacts have the potential to be significant and, under the *CEQA Guidelines*, may require mitigation. Sensitivity is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is

derived from the known fossil data collected from the entire geologic unit, not just from a specific survey.

The discovery of a vertebrate fossil locality is of greater significance than that of an invertebrate fossil locality, especially if it contains a microvertebrate assemblage. The recognition of new vertebrate fossil locations could provide important information on the geographical range of the taxa, their radiometric age, evolutionary characteristics, depositional environment, and other important scientific research questions. Vertebrate fossils are almost always significant because they occur more rarely than invertebrates or plants. Thus, geological units having the potential to contain vertebrate fossils are considered the most sensitive.

IMPACT ANALYSIS

a1. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving 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?

The project site is not located within an identified earthquake fault zone as delineated on the Alquist-Priolo Earthquake Fault Zoning Map (DOC 2021a). No known fault lines are located on the site. The closest active fault is the San Andreas Fault which is located approximately 0.4 miles southwest of the site. According to the Geotechnical Engineering Study completed by Earth Systems on April 9, 2021 (Earth Systems 2021; Appendix C), the danger from rupture of a known earthquake fault on the site is low. Therefore, no impact would occur.

NO IMPACT

a2. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

As with any site in the Bay Area region, the project site is susceptible to strong seismic ground shaking in the event of a major earthquake. Nearby faults include the San Andreas Fault, the Hayward Fault and the Calaveras Fault. These faults are capable of producing strong seismic ground shaking at the site. According to the project's Geotechnical Engineering Study, strong shaking of the site is likely to occur, but the project would be feasible from a geotechnical standpoint if the recommendations in the report are implemented. This impact is potentially significant.

MITIGATION MEASURE

GEO-1 Geotechnical Design Considerations. The project plans submitted for building permit approval shall incorporate the design recommendations outlined in the Geotechnical Study prepared by Earth Systems on April 9, 2021, or any other design feature or measure shown to equivalently reduce impacts associated with geology and soils to the satisfaction of the Director of Public Works. These include recommendations under the categories of:

- General site preparation
- Compaction
- Fill
- Mat slab foundations
- Post-tensioned slab foundations
- Interior slab-on-grade construction
- Exterior flatwork
- Swimming pool
- Utility trench backfills
- Management of site drainage and finish improvements
- Geotechnical observation and testing

Refer to the Geotechnical Study for full detail recommendations for each of the abovementioned categories.

SIGNIFICANCE AFTER MITIGATION

With implementation of Mitigation Measure GEO-1, the potentially significant impact associated with ground shaking would be reduced to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

a3. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

c. Would the project 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?

As mentioned above under *Liquefaction*, the project site is located in a liquefaction zone (DOC 2021a). The Geotechnical Engineering Study found that potentially liquefiable soils across the site are discontinuous, and therefore the potential for lateral displacement is considered low. However, there are concerns regarding loose soils in the upper 5 feet of the project site and the potential for settlement due to seismic shaking. Implementation of Mitigation Measure GEO-1 would reduce impacts on liquefaction to a less than significant level. Additionally, with modern construction and required adherence to the geology and soil provisions of the CBC, which sets forth seismic design standards (Chapters 16, 18) and geohazard study requirements (Chapter 18), impacts would be less than significant.

MITIGATION MEASURE AND SIGNIFICANCE AFTER MITIGATION

With implementation of Mitigation Measure GEO-1, the potentially significant impact associated with liquefaction would be reduced to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

- a4. *Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?*

Earthquakes can trigger landslides that may cause injuries and damage to people and structures. Landslides are typically hazards on or near slopes or hillside areas, rather than generally level areas like the project site and vicinity. According to the DOC, the project site is not located in a landslide zone, and therefore there would be no impact.

NO IMPACT

- b. *Would the project result in substantial soil erosion or the loss of topsoil?*

Ground disturbing activities that would occur during the grading and excavation phase of construction would have the highest potential for erosion, and as a result temporary erosion could occur. However, the project would be required to comply with PAMC Chapters 16.28.070 and 16.28.120, which require measures to minimize surface runoff, erosion, and sedimentation. In addition, the project would be required to comply with erosion control standards administered by the San Francisco Bay Regional Water Quality Control Board (SFRWQCB) through the National Pollutant Discharge Elimination System (NPDES) permit process, which requires implementation of nonpoint source control of stormwater runoff. Furthermore, as mentioned under Section 3, *Air Quality*, the project would be required to comply with BAAQMD best management practices (BMPs) in Section 8.1.2 of the BAAQMD CEQA Guidelines, which address the minimization or avoidance of erosion and loss of topsoil. Additional information related to the prevention of stormwater-induced erosion is provided in Section 10, *Hydrology and Water Quality*. Compliance with these requirements as well as implementation of Mitigation Measure GEO-1 and Mitigation Measure BIO-3 would ensure that impacts of the proposed development associated with soil erosion and the loss of topsoil would be less than significant.

MITIGATION MEASURE AND SIGNIFICANCE AFTER MITIGATION

With implementation of Mitigation Measure GEO-1, which requires incorporation of design measures such as stabilization of surface soils while managing site drainage, and Mitigation Measure BIO-3, which requires implementation of sediment and erosion control measures (e.g., sand or gravel bags, hay bales, check dams) throughout the project site to prevent the entry of sediment and/or pollutants into any waterways or jurisdictional areas, the potentially significant impact associated with erosion or the loss of topsoil would be reduced to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

- d. *Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property;*

Section 21.12.070 of the PAMC requires the preparation of a preliminary soil report in order to determine the presence of expansive soils and recommend corrective action to prevent structural damage. Building on unsuitable soils would have the potential to create future subsidence or collapse issues that could result in the settlement of infrastructure, and/or the disruption of utility lines and other services.

As analyzed in the Geotechnical Engineering Study, the near surface soils on the project site are sandy in nature and therefore are not expansive. Compliance with existing State and local laws and regulations would ensure that impacts associated with expansive soil are minimized by requiring the submittal and review of detailed soils and/or geologic reports prior to construction. Such evaluations must contain recommendations for ground preparation and earthwork specific to the site, which then become an integral part of the construction design. Palo Alto building codes and other City requirements would ensure that potential impacts are minimized or avoided. With implementation of Mitigation Measure GEO-1, impacts associated with expansive soils would be less than significant.

MITIGATION MEASURE AND SIGNIFICANCE AFTER MITIGATION

With implementation of Mitigation Measure GEO-1, the potentially significant impact associated with expansive soils would be reduced to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

e. Would the project 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?

The proposed project would be connected to the local wastewater treatment system. Septic systems would not be used. There would be no impacts.

NO IMPACT

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

There are no unique geological features on the project site. Since the project would include a pool and spa area on the southern portion of the site, maximum depth of excavation could potentially reach no more than 8 feet on the southern portion of the site where the pool is proposed. The project has the potential to uncover unanticipated paleontological resources. This impact is potentially significant.

MITIGATION MEASURES

GEO-2 Discovery of Previously Unidentified Paleontological Resources. In the event a fossil is uncovered during Project construction, all work shall cease until a certified paleontologist can investigate the finds and make appropriate recommendations. Any artifacts uncovered shall be recorded and removed for storage at a location to be determined by the monitor.

SIGNIFICANCE AFTER MITIGATION

Mitigation Measure GEO-2 would provide for the recovery, identification, and curation of previously unrecovered fossils, and Mitigation Measure CR-1 would require implementation of a WEAP prior to ground-breaking activities, which would ensure that potential impacts to paleontological resources be reduced to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

8 Greenhouse Gas Emissions

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project have any of the following impacts:</i>				
a. <i>Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. <i>Conflict with any applicable plan, policy, or regulation adopted to reduce the emissions of greenhouse gases?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

CLIMATE CHANGE AND GREENHOUSE GAS (GHG) EMISSIONS

Climate change is the observed increase in the average temperature of the earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. Climate change is the result of numerous, cumulative sources of greenhouse gases (GHG), gases that trap heat in the atmosphere, analogous to the way in which a greenhouse retains heat. Common GHGs include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxides (N₂O), fluorinated gases, and ozone (O₃). GHGs are emitted by both natural processes and human activities. Of these gases, CO₂ and CH₄ are emitted in the greatest quantities from human activities. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas CH₄ results from off-gassing associated with agricultural practices and landfills. Man-made GHGs, many of which have greater heat-absorption potential than CO₂, include fluorinated gases, such as hydrofluorocarbons (HFC), perfluorocarbons (PFC), and sulfur hexafluoride (SF₆) (California Environmental Protection Agency [Cal EPA] 2015).

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat trapping effect of GHGs, Earth's surface would be about 34° C cooler (Cal EPA 2015). However, it is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations.

IMPACT ANALYSIS

- a. *Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?*
- b. *Would the project conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*

The project's proposed construction activities, energy use, daily operational activities, and mobile sources (traffic) would generate GHG emissions. However, since the proposed project would involve construction of one single-family residence and an associated accessory structure, and would not involve demolition, simultaneous construction phases, simultaneous construction of more than one land use type, extensive site preparation, or extensive material transport, it would not generate substantial amounts of GHG emissions. For single-family residential uses such as the proposed project, BAAQMD's operational GHG screening size is 56 dwelling units. Therefore, the project would meet the screening criteria for operational GHG emissions.

The project would be consistent with the following goal policies within the 2030 Comprehensive Plan aimed at reducing greenhouse gases through the use of clean and efficient energy (City of Palo Alto 2017a):

- **Goal N-7** A clean, efficient energy supply that makes use of cost-effective renewable resources.
- **Policy N-7.4** Maximize the conservation and efficient use of energy in new and existing residences and other buildings in Palo Alto.
- **Policy N-7.6** Support the maximum economic use of solar electric (photovoltaic) and solar thermal energy, both as renewable supply resources for the Electric Utility Portfolio and as alternative forms of local power generation.
- **Policy N-7.7** Explore a variety of cost-effective ways to reduce natural gas usage in existing and new buildings in Palo Alto in order to reduce associated greenhouse gas emissions.

The proposed project would be fully electric and would utilize energy-efficient appliances and lighting as well as water-efficient appliances and fixtures. The project would also include renewable energy in the form of solar roof panels as well as fully insulated slab construction foundation and exterior insulation on the roof. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions and this impact would be less than significant.

LESS THAN SIGNIFICANT IMPACT

9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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Would the project have any of the following impacts:

a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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 public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

- a. *Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*
- b. *Would the project 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?*
- c. *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?*

Residential uses, such as those proposed by the project, typically do not use or store large quantities of hazardous materials other than minor amounts needed for cleaning or landscaping maintenance. During grading and construction activities, limited quantities of miscellaneous hazardous substances, such as gasoline, diesel fuel, hydraulic fluid, solvents, oils, paints, may be transported to the site, used on site, and disposed over after use. However, the project would be required to comply with applicable Federal, State, and local regulations that address the handling, storage, use, and disposal of hazardous substances, including the Occupational Safety and Health Act and the Toxic Substances Control Act. This would eliminate potential significant hazards to the public or the environment through the routine transport, use, or disposal of hazardous materials. Construction contractors would be required to comply with applicable Federal and State environmental and workplace safety laws. The project site is not located within 0.25 mile of an existing or proposed school. Adherence to these regulatory requirements would ensure that impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- d. *Would the project create a significant hazard to the public or the environment from existing hazardous materials contamination by exposing future occupants or users of the site or from location on listed hazardous material sites compiled pursuant to Government Code Section 65962.5?*

A search of the following databases was conducted on April 27, 2022, for known hazardous materials contamination in the project area:

- EnviroStor Database (Department of Toxic Substances Control [DTSC] 2022a)
- Cortese list of Hazardous Waste and Substances Sites (DTSC 2022b)
- Geotracker search for leaking underground fuel tanks, Spills-Leaks-Investigations-Cleanups (SLIC) and Landfill sites (California State Water Resources Control Board 2022)

According to EnviroStor and GeoTracker, there are no hazardous wastes or cleanup sites located on the project site or within 1,000 feet of the site. The nearest hazardous site to the project is located on Portola Road, approximately 0.6 miles northwest of the project site. Therefore, the project would not create a significant hazard to the public or environment and no impact would occur.

NO IMPACT

- 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 public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?*

There are no private airstrips in the vicinity of the site. The Palo Alto Airport of Santa Clara County (PAO) is the closest airport to the project site and is located over 7 miles away. PAO is a 103-acre facility with a single runway, parallel taxiway, and a building area. The airport primarily serves small general aviation aircraft. The area is located entirely outside of the airport safety and traffic pattern zones (Santa Clara County Airport Land Use Commission 2016). Therefore, no impact would occur.

NO IMPACT

- f. *Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

The project would involve construction of a single-family residence on a vacant site. The residence would not obstruct existing roadways or require the construction of new roadways or access points. The proposed buildings would not block emergency response or evacuation routes or interfere with adopted emergency response and emergency evacuation plans. No impact would occur.

NO IMPACT

- g. *Would the project expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*

This impact is further discussed under Section 20, *Wildfire*. The project would not expose people or structures to a significant risk of loss, injury, or death involving wildfires. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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10 Hydrology and Water Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project have any of the following impacts:</i>				
a. <i>Violate any water quality standards or waste discharge requirements or otherwise degrade surface or groundwater quality?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <i>Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. <i>Substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river or through the addition of impervious surfaces in a manner which would:</i>				
1. <i>Result in substantial erosion or siltation on- or off-site?</i>				
2. <i>Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?</i>				
3. <i>Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff</i>				
4. <i>Impede or redirect flows</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. <i>In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. <i>Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

- a. *Would the project violate any water quality standards or waste discharge requirements or otherwise degrade surface or groundwater quality?*

Development of the proposed project would introduce heavy equipment during construction and increase traffic to and from the site during operation. This increase in heavy construction equipment and operational traffic could result in an increase in fuel, oil, and lubricants in the stormwater runoff due to leaks or accidental releases.

Since the project would involve development of an individual detached single-family residence not part of a larger common plan of development, it would not constitute a development project under PAMC Section 16.11.020 and therefore would not be required to obtain a NPDES Construction General Permit or develop and implement a Stormwater Pollution Prevention Plan (SWPPP) for construction activities.

In terms of impacts related to operational activities, impervious surfaces can carry a variety of pollutants, including oil and grease, metals, and sediment and pesticide residues from roadways, parking lots, rooftops, and landscaped areas depositing them into adjacent waterways via the storm drain system. The project would be required to comply with the stormwater pollution prevention measures in PAMC Section 16.11.036 as well as the Santa Clara Valley Urban Runoff Pollution Prevention Program's C.3 requirements. Under Section 16.11.036 of the PAMC and C.3, since the project would create 2,500 square feet or more of impervious surfaces, it would be required to implement one of six site design measures but not treatment or hydromodification control measures (County of Santa Clara 2016).

The proposed project, in accordance with PAMC and C.3 requirements, would be designed to direct runoff from roofs and sidewalks into vegetated areas to treat surface runoff before entering the stormwater system, which would also ensure the protection of the Los Trancos Creek from harmful effluent. The project would also implement rainwater catchment systems as well as utilize recycled water for landscape irrigation. Compliance with the PAMC and C.3 requirements would not result in adverse effects on water quality or violate water quality standards or waste discharge requirements during construction or operation. Therefore, excessive stormwater runoff, substantial erosion or siltation on- or off-site would not occur and the potential for the project to violate water quality standards and substantially degrade water quality would be reduced.

As discussed in Section 7, *Geology and Soils*, the proposed project could involve excavation up to 8 feet for the pool and spa structure. According to the Geotechnical Study (Appendix C), groundwater was encountered at 17 to 18 feet below the site. Therefore, it is unlikely that groundwater would be encountered during excavation activities. However, if groundwater were to be encountered, the project would be required to comply with local regulations. According to the City's *Construction Dewatering System Policy and Plan Preparation Guidelines* (City of Palo Alto 2020a), excavation activities that would require excavation within two feet of known groundwater are required to submit a Construction Dewatering Plan to the City's Public Works Department. The Public Works Department would review and permit the dewatering plan prior to commencement of dewatering as part of the Grading and Excavation Permit process. The Construction Dewatering Plan must

comply with the City's Guidelines, which require that water is tested for contaminants prior to initial discharge and at intervals during dewatering. In the dewatering plan, the applicant must include provisions for keeping sediment and contaminated groundwater out of the storm drain system. With adherence to the City's policies regarding dewatering, contaminated groundwater would not enter the stormwater system.

Although Los Trancos Creek is located within the western border of the site, the proposed project would implement a 20 foot creek setback pursuant to Palo Alto's Stream Corridor Ordinance (PAMC Section 18.40.140), and implementation of Mitigation Measure BIO-3 would further minimize soil erosion and reduce potential runoff of pollutants into the creek. Overall, the proposed project would have a less than significant impact on water quality with implementation of Mitigation Measure BIO-3.

MITIGATION MEASURE AND SIGNIFICANCE AFTER MITIGATION

Mitigation Measure BIO-3 would require implementation of avoidance and minimization measures to reduce impacts on and pollutants entering Los Trancos Creek. With mitigation, impacts would be less than significant.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

- b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

As discussed in Section 19, *Utilities and Service Systems*, the proposed project would receive its water from the California Water Service (Cal Water) Bear Gulch District. Cal Water uses a combination of local surface water and surface water purchased from the City and County of San Francisco (SFPUC). Local surface water, approximately 11 percent of Cal Water's total supply, is derived from their 1,200-acre watershed in the Woodside hills, collected and treated at Cal Water's reservoir and treatment plant in Atherton. The remaining 89 percent of Cal Water's total supply is purchased from the SFPUC (Cal Water 2022). Therefore, water supply to the project site would not rely on groundwater supplies. Development under the proposed project would not include installation of new groundwater wells or use of groundwater from existing wells. Temporary dewatering during construction would not substantially affect groundwater levels, and because the maximum depth of excavation would not be near existing groundwater levels, the project would not result in a significant depletion of groundwater supply. Therefore, the proposed project would not result in a net deficit in aquifer volume or a lowering of the groundwater table. Impacts related to groundwater would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- c1. *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river or through the addition of impervious surfaces in a manner which would result in substantial erosion or siltation on- or off-site?*
- c2. *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river or through the addition of impervious surfaces in a manner which would substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?*
- c3. *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river or through the addition of impervious surfaces in a manner which would create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?*
- c4. *Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of a course of a stream or river or through the addition of impervious surfaces in a manner which would impede or redirect flows?*

Los Trancos Creek runs along the western border of the project site. The proposed project would not alter the course of this creek or other stream or river (no other surface water features are identified in the project site) and would implement a 20 feet creek setback pursuant to Palo Alto's Stream Corridor Ordinance as noted in Section 18.40.140 of the PAMC. Although the proposed project would increase runoff on the site, it would be consistent with PAMC and C.3 stormwater treatment requirements and would include low sloping roofs with built-in perimeter gutters to direct runoff to vegetated areas, as well as pervious driveways throughout the site in order to reduce pollutants and runoff volume. Therefore, the project would not substantially increase runoff volumes, result in substantial erosion or siltation, result in flooding on- or off-site, or alter the existing drainage pattern of the site or area. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- d. *In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?*

The project site is in Flood Zone X, which is defined by the Federal Emergency Management Agency (FEMA) as area of Minimal Flood Hazard/ 0.2 Percent Annual Chance Flood Hazard (Flood Insurance Rate Map 06085C0180H). The site is not in a Special Flood Hazard Area. According to the State of California Tsunami Inundation Map (DOC 2021b), the site is not located within a tsunami inundation zone. According to the City of Palo Alto's Natural Environment Element and Safety Element of the 2030 Comprehensive Plan, mudflows and seiches are not identified as issues for the city. In addition, the nearest body of water that could experience a seiche event is the San Francisco Bay, and it is not anticipated that a seiche in the Bay would have potential to affect the project site. Therefore, the project site is located in a low hazard area for tsunami, seiche, and mudflow. No impact would occur.

NO IMPACT

- e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

As discussed under Impact (a) above, the project would not violate water quality standards or degrade water quality during construction or operation.

The City of Palo Alto is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB). The San Francisco Bay RWQCB provides permits for projects that may affect surface waters and groundwater locally and is responsible for preparing the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan). The Basin Plan designates beneficial uses of water in the region and establishes narrative and numerical water quality objectives. The Basin Plan serves as the basis for the San Francisco Bay RWQCB's regulatory programs and incorporates an implementation plan for achieving water quality objectives (California Water Board 2017). The proposed project would not interfere with the objectives and goals in the Basin Plan. This impact would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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11 Land Use and Planning

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project have any of the following impacts:</i>				
a. <i>Physically divide an established community?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. <i>Cause a 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?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

a. *Would the project physically divide an established community?*

The proposed project would involve construction of a single-family residence on a vacant parcel and would not cut off connected neighborhoods or land uses from each other. No new roads, linear infrastructure or other development features are proposed that would divide an established community or limit movement, travel or social interaction between established land uses. No impact would occur.

NO IMPACT

b. *Cause a 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*

The proposed project’s consistency with the City of Palo Alto 2030 Comprehensive Plan and Zoning Ordinance are discussed below.

CITY OF PALO ALTO 2030 COMPREHENSIVE PLAN

The project site has a Comprehensive Plan land use designation of Open Space/Controlled Development. The Comprehensive Plan defines this category as “Land having all the characteristics of open space but where some development may be allowed on private properties... Residential densities range from 0.1 to 1 dwelling unit per acre but may rise to a maximum of 2 units per acre where second units are allowed, and population densities range from 1 to 4 persons per acre” (City of Palo Alto 2017a). The proposed project involves single-family residential use consistent with the land use designation for this site. Additionally, the project would have a residential density of approximately 0.2 dwelling units per acre, which would be consistent with the allowed density range for the Open Space/Controlled Development land use designation.

CITY OF PALO ALTO ZONING ORDINANCE

The project site is zoned Open Space (OS). The PAMC Section 18.28.010(b) defines the OS district as “intended to protect the public health, safety and welfare, protect and preserve open space land as a limited and valuable resource, and to permit the reasonable use of open space land, while at the same time preserving and protecting its inherent open space characteristics to assure its continued availability for the following: as agricultural land, scenic land, recreation land, conservation or natural resource land; for the containment of urban sprawl and the structuring of urban development; and for the retention of land in its natural or near-natural state, and to protect life and property in the community from the hazards of fire, flood, and seismic activity; and coordinate with and carry out federal, state, regional, county, and city open space plans.”

Pursuant to Section 18.28.040 of the PAMC, single-family dwelling units as well as accessory facilities and uses are permitted in the Open Space district. The project proposes a Floor Area Ratio (FAR) of 4 percent, consistent with PAMC requirements under Section 18.28.050(b)(1). Additionally, the proposed project would incorporate 30 feet setbacks in the front, sides, and rear, as well as a maximum height of 25 feet with a maximum number of two stories, consistent with PAMC Section 18.28.050(a).

Therefore, the proposed project would not conflict with the 2030 Comprehensive Plan or the City of Palo Alto Zoning Ordinance and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

12 Mineral Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project:</i>				
a. <i>Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. <i>Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

SETTING

A small portion of Palo Alto is classified as Mineral Resource Zone-2 (MRZ-2), defined as “adequate information indicated that significant mineral deposits are present or a likelihood of their presence and development should be controlled”. The MRZ-2 is located in the southern portion of the city, adjacent to the San Mateo County/Santa Clara County border north of Foothills Park (0.5 mile east of the project site) (City of Palo Alto 2017b). Pursuant to USGS records, there are no known mineral resources or mines present on the project site and work area (USGS 2022).

IMPACT ANALYSIS

- a. *Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*
- b. *Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?*

The project site and work area are not located in an area with known mineral resources or a mineral resource recovery site. Therefore, the project would not result in the loss of a known mineral resource or mineral resource recovery site. No mineral resource activities would be altered or displaced by the proposed project. There would be no impact.

NO IMPACT

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13 Noise

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project result in:</i>				
<i>a. Generation of a substantial temporary or permanent increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>b. Generation of excessive groundborne vibration or groundborne noise levels?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>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, would the project expose people residing or working in the project area to excessive noise levels?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SETTING

Noise is unwanted sound that disturbs human activity. Environmental noise levels typically fluctuate over time, and different types of noise descriptors are used to account for this variability. Noise level measurements include intensity, frequency, and duration, as well as time of occurrence. Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound power levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Because of the logarithmic scale of the decibel unit, sound levels cannot be added or subtracted arithmetically. If the physical intensity of a sound is doubled, the sound level increases by 3 dBA, regardless of the initial sound level. For example, 60 dBA plus 60 dBA equals 63 dBA. Where ambient noise levels are high in comparison to a new noise source, the change in noise level would be less than 3 dBA. For example, when 70 dBA ambient noise levels are combined with a 60 dBA noise source the resulting noise level equals 70.4 dBA.

Noise that is experienced at any receptor can be attenuated by distance or the presence of noise barriers or intervening terrain. Sound from a single source (i.e., a point source)

radiates uniformly outward as it travels away from the source in a spherical pattern. The sound level attenuates (or drops off) at a rate of 6 dBA for each doubling of distance. For acoustically absorptive, or soft, sites (i.e., sites with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees), ground attenuation of about 1.5 dBA per doubling of distance normally occurs. A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by this shielding depends on the size of the object, proximity to the noise source and receiver, surface weight, solidity, and the frequency content of the noise source. Natural terrain features (such as hills and dense woods) and human-made features (such as buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dBA of noise reduction.

Vibration is a unique form of noise because its energy is carried through buildings, structures, and the ground, whereas noise is simply carried through the air. Thus, vibration is generally felt rather than heard. Some vibration effects can be caused by noise; e.g., the rattling of windows from passing trucks. This phenomenon is caused by the coupling of the acoustic energy at frequencies that are close to the resonant frequency of the material being vibrated. Typically, groundborne vibration generated by manmade activities attenuates rapidly as distance from the source of the vibration increases. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB) in the U.S.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or the slamming of doors. Typical outdoor sources of perceptible groundborne vibration are construction equipment, steel wheeled trains, and traffic on rough roads.

CITY OF PALO ALTO NOISE STANDARDS

The City's Comprehensive Plan Natural Environment Element includes goals and policies related to noise. This element establishes land use compatibility categories for community noise exposure (see Table 2). For residential uses, noise levels up to 60 dBA Ldn are identified as normally acceptable and noise levels between 60 and 75 dBA Ldn are identified as conditionally acceptable.

Table 2 Palo Alto Land Use Compatibility for Community Noise Environments

Land Use Category	Exterior Noise Exposure Ldn or CNEL or dB		
	Normally Acceptable	Conditionally Acceptable	Unacceptable
Residential, Hotel and Motels	50-60	60-75	75+
Outdoor Sports and Recreation, Neighborhood Parks and Playgrounds	50-65	65-80	80+
Schools, Libraries, Museums, Hospitals, Personal Care, Meeting Halls, Churches	50-60	60-75	75+
Office Buildings, Business Commercial, and Professional	50-70	70-80	80+
Auditoriums, Concert Halls, and Amphitheaters	N/A	50-75	75+
Industrial, Manufacturing, Utilities, and Agriculture	50-70	75+	N/A

Source: City of Palo Alto 2017a

The PAMC regulates noise primarily through the Noise Ordinance, which comprises Chapter 9.10 of the Code, under Title 9, Public Peace, Morals and Safety. The Municipal Code contains additional specific and general provisions relating to noise.

The Noise Ordinance also regulates noise associated with construction activities. Section 9.10.060 of the PAMC restricts construction activities to the hours of 8 AM to 6 PM Monday through Friday and 9 AM to 6 PM on Saturday. Construction is prohibited on Sundays and holidays. Construction, demolition or repair activities during construction hours must meet the following standards:

- No individual piece of equipment shall produce a noise level exceeding 110 dBA at a distance of 25 feet. If the device is housed within a structure on the property, the measurement shall be made out-side the structure at a distance as close to 25 feet from the equipment as possible.
- The noise level at any point outside of the property plane of the project shall not exceed 110 dBA.
- The holder of a valid construction permit for a construction project in a non-residential zone shall post a sign at all entrances to the construction site upon commencement of construction, for the purpose of informing all contractors and subcontractors, their employees, agents, materialmen and all other persons at the construction site, of the basic requirements of this chapter.

PROJECT SITE NOISE ENVIRONMENT

Palo Alto’s noise environment is dominated by transportation-related noise, including car and truck traffic and trains. The project site is located in a non-urbanized area and away from noise generating sources such as highways and major roadways. The closest highway to the site is Interstate 280 (I-280), approximately 2.3 miles northeast of the project site.

Residential, educational, and medical uses are more sensitive to noise than are commercial and industrial activities. Noise sensitive uses (“sensitive receptors”) are defined as those

facilities including, but not limited to, areas containing residences, schools, hospitals, rest homes, long-term medical or mental care facilities, or any other land use areas deemed noise sensitive by the local jurisdiction. The nearest sensitive receptors to the geometrical center of the proposed structure are a single-family residence located immediately adjacent to the north (approximately 230 feet), as well as a single-family residence approximately 250 feet west of the site.

IMPACT ANALYSIS

a. Would the project generate a substantial temporary or permanent increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

CONSTRUCTION NOISE

As discussed above, PAMC Section 9.10.060 regulates temporary construction noise. Construction of the project would generate temporary noise that would be audible at the single-family residence adjacent to the north of project site. Noise associated with construction is a function of the type of construction equipment, the location and sensitivity of nearby land uses, and the timing and duration of the construction activities. Based on construction details provided by the applicant, it is estimated that the construction period would involve approximately 30 days for site preparation, 30 days for grading, 270 days for building construction, 30 days for paving, and 30 days for architectural coating. While all phases of construction would generate noise, the building construction phase would represent the longest period of noise-generating activity. According to applicant provided information, pile drivers would not be used in building construction.

Construction noise was estimated using the Federal Highway Administration's Roadway Construction Noise Model (RCNM) (Appendix D). Noise was modeled based on the list of anticipated equipment list for each phase of construction and the distances to nearby receptors. For a conservative approach, it was assumed that all construction equipment per phase would be operating simultaneously and would combine as a collective noise source. Table 3 shows the results of construction noise modeling from the center of activities for the project at distances of 230 feet and 250 feet from the closest property lines at the single-family residences north and west of the site.

Table 3 Calculated Construction Noise Levels for Each Phase of Construction

Construction Phase	Equipment	Estimated Noise at 230 feet (dBA L _{eq} /dBA L _{max})	Estimated Noise at 250 feet (dBA L _{eq} /dBA L _{max})
Site preparation	Backhoe, compactor, crawler tractor, dozer, dumper/tender, excavator, grader, front-end loader, skid steer loader, sweeper/scrubber	74.6/71.7	73.8/71.0
Grading	Backhoe, compactor, dozer, excavator, grader, front-end loader, skid steer loader, sweeper/scrubber	73.6/71.7	72.9/71.0
Building construction	Aerial lift, cement and mortar mixer, concrete/industrial saw, compactor, compressor, crane, dumper/tender, forklift, generator, pressure washer, pump, rough terrain forklift, skid steer loader, sweeper/scrubber, welder	74.5/76.3	73.8/75.6
Paving	Backhoe, concrete/industrial saw, compactor, crawler tractor, grader, front-end loader, paver, paving equipment, roller, sweeper/scrubber	75.6/76.3	74.5/75.6
Architectural coating	Air compressor	60.4/64.4	59.7/63.7
See Appendix D for calculations.			

As shown in Table 3, at the center of the project buildings nearest the property line of the single-family residence north of the site, maximum noise levels generated by project construction equipment are calculated to range from 64.4 to 76.3 dBA L_{max} and 60.4 to 75.6 dBA L_{eq}, while the maximum noise levels from the center of project buildings nearest the property line of the single-family residence west of the site are calculated to range from 63.7 to 75.6 dBA L_{max} and 59.7 to 74.5 dBA L_{eq}. Construction noise levels would therefore be below the City’s adopted standard of 110 dBA at any point outside the property line during allowable construction hours (PAMC Section 9.10.060). Impacts related to construction noise would be less than significant.

OPERATIONAL NOISE

Operation of the proposed residence would not substantially increase existing ambient noise levels. The primary sources of noise that would be associated with the project are vehicle trips to and from the residence, stationary noise sources, periodic landscaping (e.g., lawn mower), talking and music. Development of the proposed project would increase the number of vehicle trips to and from the site, which would incrementally increase traffic noise on area roadways. However, the proposed project would be a single-family residence and would not generate substantial trips. In addition, other operational noise sources such as ground level HVAC equipment, landscaping equipment, talking, and music would be comparable to noise from surrounding residences and consistent with existing ambient noise levels. The proposed project would include a vehicle turnaround area in between the

project site and the adjacent single-family residence north of the site. This would place vehicles adjacent to the existing residence. However, noise from vehicles using the turnaround area would be intermittent and would be anticipated to be below 60 dBA. Therefore, the project would not substantially increase ambient noise levels and noise generated during operation would be comparable to nearby single-family residential uses. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction of the project over an anticipated 14-month period would intermittently generate vibration on and adjacent to the project site. Vibration-generating equipment would include excavators, front-end loaders, and dozers for site preparation and grading, and vibratory rollers for paving. It is assumed that pile drivers, which generate strong groundborne vibration, would not be used during construction. The closest noise sensitive receptors from property line to property line are a single-family residence adjacent to the north (35 feet) and single-family residence approximately 50 feet to the west. Table 4 identifies vibration velocity levels at distances of 35 and 50 feet from the source.

Table 4 Vibration Levels for Construction Equipment at Noise-Sensitive Receptors

Equipment	Estimated VdB at Nearest Sensitive Receptors	
	35 feet	50 feet
Vibratory roller	94	87
Large bulldozer	84	80
Loaded trucks	80	76
Small bulldozer	55	51

Source: Caltrans 2013; See calculations in Appendix D

Based on Table 4, noise-sensitive receptors would experience the strongest vibration of up to 94 VdB during paving with vibratory rollers and up to 84 VdB during the use of large bulldozers during site preparation and grading. Compliance with Section 9.10.060 of the PAMC would restrict vibration-generating construction activity to daytime hours that are outside of normal sleeping hours, i.e., 8 AM to 6 PM Monday through Friday and 9 AM to 6 PM on Saturday. While vibration from construction activity could be perceptible at adjacent residences during daytime hours, this timing restriction would ensure that vibration does not exceed the FTA's criterion of 72 VdB during normal sleeping hours at residential uses. Vibration levels also would not exceed 95 VdB at any fragile historic buildings and therefore would not damage such buildings. The project would have a less than significant impact from groundborne vibration.

LESS THAN SIGNIFICANT IMPACT

- 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, would the project expose people residing or working in the project area to excessive noise levels?*

The Palo Alto Airport (PAO)'s land use plan does not include the project site and is located over 7 miles away. Furthermore, there is no private airstrip in the vicinity of the project site. Thus, future residents would not be exposed to excessive noise levels associated with air traffic.

LESS THAN SIGNIFICANT IMPACT

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14 Population and Housing

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project:</i>				
a. <i>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)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. <i>Displace substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

- a. *Would the project induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*

The current population of Palo Alto is estimated at 67,657 with a per-person household rate of 2.45 (Department of Finance [DOF] 2021). ABAG estimates that the population will increase to 86,510 by 2040 while the per-person household rate will increase to 2.48 (ABAG 2017). The City also currently has 29,406 housing units (DOF 2021). ABAG projections estimate that the number of housing units will increase to 32,940 by 2040.

The project would include development of one single-family residence and an associated accessory structure and would therefore directly generate population growth. The estimated average persons per household in Palo Alto is 2.45 (DOF 2021). Based on that rate, assuming an estimated 2 to 3 people in the main residence and 1 to 2 people in the ADU, the proposed project would add an estimated 3 to 5 new residents. This incremental increase would be within the population forecast for the City. The proposed project would therefore not substantially induce population growth through the provision of new housing units and would result in less than significant impacts.

LESS THAN SIGNIFICANT IMPACT

- b. *Would the project displace substantial amounts of existing housing, necessitating the construction of replacement housing elsewhere?*

There are no existing housing units at the project site or people residing on the project site in a form of temporary housing. Therefore, the project would not displace existing housing units or people. No impacts would occur.

NO IMPACT

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15 Public Services

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project result in any of the following impacts:</i>				
a. <i>Result in an adverse physical impact from the construction of additional school facilities in order to maintain acceptable performance standards?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. <i>Result in an adverse physical impact from the construction of additional fire protection facilities in order to maintain acceptable performance standards?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. <i>Result in an adverse physical impact from the construction of additional police protection facilities in order to maintain acceptable performance standards?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. <i>Result in an adverse physical impact from the construction of additional parks and recreation facilities in order to maintain acceptable performance standards?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. <i>Result in an adverse physical impact from the construction of additional library facilities in order to maintain acceptable performance standards?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

a. *Would the project result in an adverse physical impact from the construction of additional school facilities in order to maintain acceptable performance standards?*

Historically, the demand for school facilities has increased nearly proportionally to the amount of new housing that is built in the Palo Alto Unified School District (PAUSD) service area (City of Palo Alto 2017d). The proposed project would involve the construction one single family residence. Assuming the proposed residence would involve 1 or 2 school-aged children, this would not substantially increase enrollment at area schools. In addition, consistent with state law (Section 65995(h) of the California Government Code, Senate Bill 50, chaptered August 27, 1998), new development would be required to pay school impact fees. Payment of developer impact fees pursuant to state law would ensure that adequate school facilities are provided to accommodate future growth. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- b. *Would the project result in an adverse physical impact from the construction of additional fire protection facilities in order to maintain acceptable performance standards?*

The City of Palo Alto Fire Department (PAFD) provides fire protection, fire suppression, paramedic ambulance service, search and rescue, fire prevention inspections/permits, public fire education programs, emergency preparedness planning, and other services based on community needs. The closest fire department is Station 2 (Mayfield) at 2675 Hanover Street, located approximately 4.5 miles northeast of the project site. The site is within the existing service area of the PAFD and on-site construction would be required to comply with applicable Fire Code requirements. The project involves one single-family residence and would not create excessive demand for emergency services or introduce development to areas outside of normal service range that would necessitate new fire protection facilities. With the continued implementation of existing practices of the City, including compliance with the California Fire Code, the proposed project would not significantly affect community fire protection services and would not result in the need for construction of fire protection facilities.

LESS THAN SIGNIFICANT IMPACT

- c. *Would the project result in an adverse physical impact from the construction of additional police protection facilities in order to maintain acceptable performance standards?*

The Palo Alto Police Department (PAPD) provides police protection for the project vicinity. The closest police station is located at 275 Forest Avenue, approximately 5.8 miles northeast of the project site. The project site is within the PAPD's service area and is currently serviced by the PAPD. The project involves one single-family residence which would not create excessive demand for police services or introduce development to areas outside of normal service range that would necessitate new police protection facilities. The proposed project would not create the need for new or expanded police protection facilities and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- d. *Would the project result in an adverse physical impact from the construction of additional parks and recreation facilities in order to maintain acceptable performance standards?*

Refer to Section 15, *Recreation*.

LESS THAN SIGNIFICANT IMPACT

- e. *Would the project result in an adverse physical impact from the construction of additional library facilities in order to maintain acceptable performance standards?*

The Palo Alto City Library (PACL) provides library services. The proposed project involves one single-family residence which would incrementally increase population growth in the

City. Overall, the project would not substantially impact the capacity of existing library facilities such that the construction of new facilities would be required.

LESS THAN SIGNIFICANT IMPACT

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16 Recreation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. <i>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?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. <i>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?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

IMPACT ANALYSIS

- 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?*
- 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?*

The City of Palo Alto maintains 174 acres of urban parks distributed throughout the City as well as 43.2 miles of trail and over 4,000 acres in natural open space preserves. The four natural open space preserves are: Baylands Nature Preserve (which includes Byxbee Park), Esther Clark Preserve, Foothills Park, and Pearson-Arastradero Preserve (City of Palo Alto 2017c). The project site is within a mile radius of the Pearson-Arastradero Preserve, and approximately 1.6 miles west of Foothills Park. The proposed project would not involve the construction or expansion of recreational or park facilities. Further, the proposed single-family residence would not generate substantial population growth such that the construction of new park or recreational facilities would be required. No impact would occur.

NO IMPACT

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17 Transportation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project:</i>				
a. <i>Conflict with an applicable plan, ordinance or policy addressing the circulation system, taking into account all modes of transportation, including transit, bicycle, and pedestrian facilities?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. <i>Conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. <i>Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. <i>Result in inadequate emergency access?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

- a. *Conflict with an applicable plan, ordinance or policy addressing the circulation system, taking into account all modes of transportation, including transit, bicycle, and pedestrian facilities?*

The project involves construction of a single-family residence served by an existing road. The proposed project would not affect adopted policies, plans and programs in support of alternative transportation. The project would have no impact on adopted policies, plans, and ordinances addressing the circulation system.

NO IMPACT

- b. *Conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?*

Pursuant to the Office of Planning and Research’s (OPR) vehicles miles traveled (VMT) Technical Advisory document, small projects that generate or attract fewer than 110 trips per day or residential projects of 20 units or less would be presumed to have a less than significant impact on VMT (City of Palo Alto 2020b). Since the proposed project would involve construction of one single-family residence with an associated accessory structure, the project would not significantly increase VMT.

LESS THAN SIGNIFICANT IMPACT

- c. *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*

Construction of the proposed project would occur in a low-density area in Palo Alto where it would take access via an appropriately-sized driveway from an existing road, and would not include hazardous design features or incompatible uses. The proposed project would not require temporary lane detours or closures that would affect traffic patterns or capacity. Therefore, impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- d. *Result in inadequate emergency access?*

As discussed in Section 9, *Hazards and Hazardous Materials*, the proposed project would not involve the development of structures that could potentially impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No streets would be closed, rerouted or substantially altered. The project would involve the construction of new entryways to the project site, which would be required to be reviewed and approved by the Palo Alto Fire Department to ensure safety emergency access is provided.

LESS THAN SIGNIFICANT IMPACT

18 Tribal Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in a Public Resources Code section 21074 as either a site, feature, place, 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:</i>				
<i>a. 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</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<i>b. 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 2024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SETTING

As of July 1, 2015, California Assembly Bill 52 of 2014 (AB 52) was enacted and expands CEQA by defining a new resource category, “tribal cultural resources.” AB 52 establishes that “A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment” (PRC Section 21084.2). It further states that the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3).

PRC Section 21074 (a)(1)(A) and (B) defines tribal cultural resources as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe” and 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. 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 these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 also establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to “begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.” Native American tribes to be included in the process are those that have requested notice of projects proposed within the jurisdiction of the lead agency.

In May 2016, the City of Palo received a single request from a tribe to be contacted in accordance AB 52. However, through subsequent correspondence with the tribe, it was concluded that the tribe had contacted the City of Palo Alto in error and did not wish to be contacted regarding future projects within the City’s jurisdiction. The tribe, the Torres Martinez Desert Cahuilla Indians, is not traditionally or culturally affiliated with the geographic area within the City of Palo Alto. Because no other tribes have requested to be contacted, no notices in accordance with AB 52 were sent and no further action is required. As discussed in the Cultural Resources Section, a SLF search of the project area was also negative.

IMPACT ANALYSIS

- a. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 that is 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)?*
- b. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 that is 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 2024.1?*

Although no tribal cultural resources are expected to be present within the project site, there is the possibility of encountering undisturbed subsurface tribal cultural resources during construction activities which could potentially result in significant impacts on unanticipated tribal cultural resources. Therefore, Mitigation Measures CR-1 through CR-3 would be required to reduce impacts on unidentified tribal cultural resources to a less than significant level.

MITIGATION MEASURES AND SIGNIFICANCE AFTER MITIGATION

Implementation of Mitigation Measure CR-1 would require a WEAP for all construction personnel to inform them of the appropriate procedures required in the event of a discovery. Implementation of Mitigation Measure CR-2 would ensure that locally affiliated Native American tribes be given the opportunity to conduct Native American Monitoring. Implementation of Mitigation Measure CR-3 would require that tribal cultural resources are identified properly and appropriately treated in the unanticipated event they are uncovered during construction. Implementation of these mitigation measures would reduce impacts related to disruption of tribal cultural resources to a less than significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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19 Utilities and Service Systems

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. <i>Require or result in the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electrical power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. <i>Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. <i>Result in a determination by the wastewater treatment provider that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. <i>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?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. <i>Comply with federal, state, and local statutes and regulations related to solid waste?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

- a. *Require or result in the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electrical power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?*
- c. *Would the project 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?*

WATER

Water to the project site would be supplied by Cal Water's Bear Gulch District pursuant to Cal Water's will serve letter dated August 19, 2021 (Appendix E). This is discussed in further detail under Impact (b) below.

WASTEWATER

Wastewater services would be provided by the West Bay Sanitary District pursuant to the District's will serve letter dated August 17, 2021 (Appendix E). The West Bay Sanitary District conveys wastewater via the Menlo Park Pump Station and force main, to Silicon Valley Clean Water (SVCW) for treatment and eventually discharge to the San Francisco Bay (West Bay Sanitary District 2022). The SVCW regional wastewater treatment plant has an average dry weather flow permitted capacity of 29 million gallons per day (SVCW 2020).

Assuming the proposed project would generate approximately 280 gallons of wastewater per day (City of Los Angeles 2006), the proposed project would generate an estimated 280 gallons of wastewater per day. The increase in wastewater generation associated with the project would be less than 0.000001^2 percent of the permitted capacity of the SVCW regional wastewater treatment plant. Therefore, there would be sufficient wastewater capacity to serve the project site. The proposed project would not exceed wastewater treatment requirements or require or result in the construction of new wastewater treatment facilities or expansion of existing facilities. The proposed project would not result in a substantial physical deterioration of public wastewater facilities. Impacts would be less than significant.

STORMWATER

As discussed under Impact (a) in Section 10, *Hydrology and Water Quality*, pursuant to and in accordance with PAMC and C.3 requirements, the proposed project would be designed to direct runoff from roofs into vegetated areas to treat surface runoff before entering the stormwater system. In addition, the project would also implement rainwater catchment systems as well as utilize recycled water for landscape irrigation. The project would not require or result in the construction of new stormwater facilities or the expansion of existing facilities. Impacts would be less than significant.

ELECTRICITY

The City of Palo Alto Utilities (CPAU) receives electricity at a single connection point with Pacific Gas and Electric's (PG&E's) transmission system. From there the electricity is delivered to customers through nearly 470 miles of distribution lines, of which 223 miles (48 percent) are overhead lines and 245 miles (52 percent) are underground. The City also maintains six substations, roughly 2,000 overhead line transformers, 1,075 underground and substation transformers, and the associated electric services (which connect the distribution lines to the customers' homes and businesses) (City of Palo Alto 2017a). The proposed project would continue to be served by CPAU and would not require or result in

² 280 gallons per day divided by 29 million gallons per day (permitted capacity) = less than 0.000001 percent

the construction of new utilities or the expansion of existing facilities. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?*

Development of the residential project would increase demand for potable water. Assuming that water use is approximately 120 percent of wastewater generation (280 gallons per day), the proposed project would demand approximately 336 gallons of water per day, or 0.001 acre-feet per day. According to the Cal Water Bear Gulch District 2020 Urban Water Management Plan (UWMP), sufficient water supplies would be available to serve the project from existing entitlements and resources. No new or expanded entitlements would be needed to serve the proposed project. The project would not result in a substantial physical deterioration of public water facilities or result in adverse physical impacts from new or expanded utility facilities due to increased use as a result of the project. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- d. Would the project 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?*
- e. Would the project comply with federal, state, and local statutes and regulations related to solid waste?*

The City is currently contracted with GreenWaste of Palo Alto for collection of garbage, recycling and composting services and partners with the cities of Mountain View and Sunnyvale on the Sunnyvale Materials Recovery and Transfer Station (SMaRT Station). The SMaRT Station processes mixed garbage from Palo Alto and recovers recyclable and compostable materials that would have otherwise gone to landfill. The City is also contracted with Waste Management Inc. to use the Kirby Canyon Landfill for waste disposal (City of Palo Alto 2018). The Kirby Canyon Landfill has a remaining capacity of 16,191,600 tons (CalRecycle 2019) and the daily permitted capacity is 2,600 tons per day (Waste Management 2022).

Using the CalRecycle waste generation rate of 12.23 per pound per household per day (CalRecycle 2018), the project would generate approximately 12.23 pounds, or 0.006 tons, of solid waste per day. The incremental increase in solid waste associated with the project would be within the permitted capacities of Kirby Canyon Landfill. Therefore, the project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs. The proposed project would not result in a substantial physical deterioration of public solid waste facilities. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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20 Wildfire

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>If located in or near a state responsibility area or land classified as very high fire hazard severity zones, would the project result in any of the following impacts:</i>				
<i>a. Substantially impact an adopted emergency response plan or emergency evacuation plan?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>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 a wildfire?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>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?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>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?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

- a. Would the project substantially impact an adopted emergency response plan or emergency evacuation plan?*

According to the Cal Fire Hazard Severity Zone map (Cal Fire 2022), the project site is not located in a Local Responsibility Area (LRA) or State Responsibility Area (SRA) Very High Fire Hazard Severity Zone (VHFHSZ). The project would not obstruct existing roadways or require the construction of new roadways or access points, and project plans include a detailed fire truck turning exhibit showing fire truck access to and within the site and reflecting radius requirements from the PAFD. Therefore, the proposed building would not block emergency response or evacuation routes or interfere with adopted emergency response and emergency evacuation plans. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- b. *Due to slope, prevailing winds, and other factors, would the project exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?*

As mentioned in Impact (a) above, the project site is not located in a LRA or SRA VHFHSZ. The nearest Very High Fire Hazard Severity Zone (VHFHSZ) is located approximately 1 mile northwest of the project site near Portola Valley (Cal Fire 2022). The project would be required to comply with the following 2030 Comprehensive Plan policy listed below which would require fire protection design in new development and ensure adequate emergency access for the PAFD (City of Palo Alto 2017a).

- **Policy S-2.14** Require that the planning and design of development in areas exposed to wildland fire hazards minimize the risks of wildfire and include adequate provisions for vegetation management, emergency access and firefighting.

The project would comply with Policy S-2.14 by requiring fire sprinkler protection in all structures and installing a National Fire Protection Association (NFPA) 13-D fire sprinkler system³ throughout the house, including closets and bathrooms. The project would also comply with wildland urban interface (WUI) requirements pursuant to the 2019 California Residential Code and Chapter 15 of the PAMC which include requirements for vegetation management; roofing; vents; exterior walls; eaves; exterior porch ceilings, floor projections, underfloor protection, underside of appendages; windows, skylights and doors; garages; decking; and accessory structures (City of Palo Alto 2019). The project site is also in proximity to three fire hydrants, one approximately 750 feet north of the proposed driveway, one approximately 420 feet east of the driveway, and one approximately 990 feet south of the driveway. Therefore, the project would not exacerbate wildfire risks and expose project occupants to pollutant concentrations from a wildfire. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

- c. *Would the project 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?*

The project site is not located in a LRA or SRA VHFHSZ. Although the project would involve the construction of a driveway that would extend from Los Trancos Road (entry) to the proposed single-family residence, the driveway would provide emergency access in the case of a fire, and would not exacerbate wildfire risk. Additionally, the project would not involve the construction of new utility infrastructure or power lines that would worsen wildfire risk. Roads, maintained landscaping, and fire-resistant building materials would help prevent the spread of uncontrolled wildfire. Therefore, wildfire impacts from associated project infrastructure would be less than significant.

LESS THAN SIGNIFICANT IMPACT

³ The NFPA 13-D sprinkler system is a residential sprinkler design standard focused on low-rise residential occupancies to ensure life safety and property protection (NFPA 2022).

- d. *Would the project 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?*

The project site is not located in a landslide hazard zone. Therefore, the project would not substantially expose people or structures to flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes, and would not exacerbate existing hazards. Furthermore, as mentioned in Section 10, *Hydrology and Water Quality*, the project would include low sloping roofs with built-in perimeter gutters to direct runoff to vegetated areas, as well as pervious driveways throughout the site which would ensure that runoff does not exceed the existing capacity of stormwater drainage systems which would reduce the potential of flooding. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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21 Mandatory Findings of Significance

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
<i>Would the project:</i>				
a. <i>Have the potential to substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. <i>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)?</i>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. <i>Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IMPACT ANALYSIS

- a. *Would 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, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*

As noted under Section 4, *Biological Resources*, implementation of the proposed project may have potentially significant impacts on biological resources since special-status species have the potential to be present on the project site. Mitigation measures BIO-1 through BIO-7 would reduce impacts to special-status plant and animal species and riparian habitats to a less than significant level. Protected trees under PAMC Chapter 8.10 were also surveyed on or adjacent to the project site. However, only one dead coastal live oak tree would be removed as part of the project. Mitigation Measure BIO-8 would still be required

to reduce impacts on retained trees to a less than significant level. As discussed under Section 5, *Cultural Resources*, and Section 18, *Tribal Cultural Resources*, the project would not eliminate important examples of the major periods of California history or prehistory with adherence to Mitigation measures CR-1, CR-2, and CR-3, which would reduce potential impact to unknown resources to less than significant. Overall, impacts would be less than significant with mitigation.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

- b. *Would 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)?*

There are currently no pending and approved developmental projects in the immediate vicinity of the project that would contribute to the cumulative impact setting (City of Palo Alto 2022b).

Cumulative impacts are addressed in the individual topical sections above: Air Quality, Greenhouse Gas Emissions, Transportation, and Utilities and Service Systems (see CEQA Guidelines Section 15064(h)(3)). Some of the other resource areas were determined to have no impact in comparison to existing conditions and therefore would not contribute to cumulative impacts, such as those related to mineral resources and agricultural resources. As such, cumulative impacts in these issue areas would also be less than significant (not cumulatively considerable). With mitigation, the proposed project would not result in a significant cumulative impact with respect to Air Quality, Biological Resources, Cultural Resources, Geology and Soils, and Tribal Cultural Resources. Therefore, overall cumulative impacts would be less than significant with required mitigation.

LESS THAN SIGNIFICANT IMPACT

- c. *Would the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?*

In general, impacts to human beings are associated with air quality, geology and soils, hazards and hazardous materials, noise, and wildfire impacts. As detailed in the preceding responses, the project would not result, either directly or indirectly, in substantial adverse impacts related to these issue areas. The project’s effects on air quality would be less than significant with implementation of Mitigation Measure AQ-1; and the project’s effects on geology and soils would be less than significant with Mitigation Measures GEO-1 and GEO-2. Therefore, impacts would be less than significant with mitigation incorporated.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

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Appendix A

Biological Resources Technical Report



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November 4, 2021
Project No: 21-11882

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Via email: Emily.Foley@CityofPaloAlto.org

Subject: Biological Resources Constraints Analysis for the 575 Los Trancos Road Project, Palo Alto, California

Dear Ms. Foley:

Rincon Consultants, Inc. (Rincon) has prepared this Biological Resources Constraints Analysis (BRCA) for the City of Palo Alto (City) of potential biological resources constraints to development at the approximately 5-acre property located at 575 Los Trancos Road in Palo Alto. (APN 182-46-012; Figure 1; Attachment 1). This report documents the existing conditions of the proposed development area within this parcel (hereafter known as the “project site”) and identifies sensitive biological resources that do or could occur on the site. Based on the evaluation of sensitive biological resources, the report presents an assessment of the potential significant impacts to biological resources under the California Environmental Quality Act (CEQA) and identifies potential impacts that may require permitting under the California Endangered Species Act (CESA) and/or federal Endangered Species Act (FESA) and/or the Clean Water Act (CWA) and state regulations regarding waters of the State. The report also provides recommendations to address any potential constraints associated with such resources.

Project Location and Description

The project site is an approximately five-acre property located at 575 Los Trancos Road in the City of Palo Alto, Santa Clara County, California. The site is approximately 2.5 miles southwest of U.S. Highway 280. The parcel lies within the *Mindego Hill, California* U.S. Geological Survey (USGS) quadrangle and within the San Francisquito Creek Watershed (Hydrologic Unit Code Number 180500030404). Los Trancos Creek, classified as a riverine habitat, runs west to east along the western border of the project site.

The proposed project would involve construction of a new 7,266 square foot (sf) single-family residence with a new 1,000 sf accessory dwelling unit and associated improvements including a swimming pool and landscaped trees and shrubs. The project site is within the Open Space zoning district. Land use surrounding the project site consists of low-density residential and undeveloped areas. The project site is bordered on the eastern side by Los Trancos Road. The project site consists of an undeveloped and vacant lot, dominated by oak woodland, riparian woodland, and non-native grasses (Figure 2; Attachment 1). The non-native annual grasses are regularly mowed. The project site is surrounded by a residence to the north, Los Trancos Creek to the west, and undeveloped lands to the south and east. See Attachment 2 for representative photographs of the project site.



Methodology

This BRCA includes a review of relevant literature followed by a reconnaissance-level field survey and aquatic resources delineation. The purpose of this BRCA is to document the biological conditions of the project site and to provide information on the potential constraints to development related to sensitive biological resources.

Literature Review

Information on biological resources was compiled from a variety of publicly available sources including:

- Aerial photographs of the project site and vicinity;
- California Department of Fish and Wildlife (CDFW) *California Natural Diversity Database* (CNDDDB; CDFW 2021a);
- California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants* (CNPS 2021);
- CDFW *Biogeographic Information and Observation System* (BIOS; CDFW 2021b);
- CDFW *Special Animals List* (CDFW 2021c);
- CDFW *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2021d);
- U.S. Fish and Wildlife Service (USFWS) *Information for Planning and Consultation System* (IPaC; USFWS 2021a);
- USFWS *Critical Habitat Portal* (USFWS 2021b);
- USFWS *National Wetlands Inventory* (NWI; USFWS 2021c);
- USGS *National Hydrography Dataset* (NHD; USGS 2021);
- NOAA Fisheries California Species Tool (National Oceanic and Atmospheric Administration [NOAA] 2021)
- Essential California Habitat Connectivity Project data (available as GIS layers in BIOS [CDFW 2021b]).

In addition, the *Technical Memorandum Biotic Study* (2014) prepared by Wildlife Research Associates (WRA) for an adjacent site was reviewed. The sources outlined above provide general information and coarse-grained data on biological resources to support a preliminary desktop assessment of the biological conditions of the project site. This level of evaluation allows for an assessment of potential constraints to development from sensitive biological resources and is sufficient to support CEQA environmental review. The potential presence of special-status species is based on the literature review which is intended to assess general habitat suitability within the project site only.

Field Reconnaissance Survey

Rincon Biologist Christian Knowlton conducted a field reconnaissance survey on October 5, 2021. Mr. Knowlton surveyed the entire project site on foot and recorded all biological resources encountered on site. Weather conditions at the time of the survey were clear (0% cloud cover) with winds at approximately zero to three miles per hour (mph) and an air temperature of 61 degrees Fahrenheit (F). The survey was conducted to document the existing site conditions, map vegetation communities, and to evaluate the potential for presence of sensitive biological resources, including sensitive plant and animal species, sensitive plant communities, and habitat for nesting birds protected by federal and state laws. During the survey, an inventory of all plant and animal species observed was compiled.



All plant species encountered were noted and identified to the lowest taxonomic level possible given the condition of the materials during the site visit. Plant species nomenclature and taxonomy followed Baldwin et al. (2012) as updated by The Jepson Online Interchange (University of California, Berkeley 2020). (Jepson Flora Project 2021). The vegetation classification system used for this analysis is based on *A Manual of California Vegetation, Second Edition* (MCV2; Sawyer et al. 2009), but has been modified as needed to accurately describe the existing habitats observed on site. Vegetation communities were mapped onto aerial imagery depicting the project site and then later digitized using ArcGIS® (ESRI 2021).

Wildlife identification and nomenclature followed standard reference texts, including Sibley Birds West: Field Guide to Birds of Western North America (Sibley 2016). The habitat requirements for each regionally occurring special-status species were assessed and compared to the type and quality of the habitats observed within the project site during the field survey. Several sensitive species were eliminated from consideration as having potential to occur on site due to lack of suitable habitat, lack of suitable soils/substrate, and/or knowledge of regional distribution.

Existing Conditions

Topography and Soils

Topography of the site is relatively flat, with elevation approximately 535 feet (163 meters) above mean sea level. A review of the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service's online Web Soil Survey (2019) revealed one soil type mapped within the site: Flaskan sandy clay loam, 5 to 9 percent slopes. The Flaskan series consists of very deep, well drained soils that formed in alluvium from mixed rock sources. (USDA 2021b)

Vegetation Communities and General Land Cover Types

Three terrestrial vegetation communities or other land cover types were observed within the project site. A map approximating the types and acreages of the various vegetation communities and land-cover types that occur within the study area is shown in Attachment 1 (Figure 2). Habitat characterizations were based on the classification systems presented in MCV2 (Sawyer et al. 2009); but have been modified slightly to reflect the existing site conditions most accurately. See Attachment 3 for a complete list of plant species observed within the project site.

Coast Live Oak Woodland

Coast live oak woodland (*Quercus agrifolia* Forest and Woodland Alliance) is typically found on canyon bottoms, slopes, and flats with deep sandy or loamy soils throughout the inner and outer Coast Ranges, Transverse Ranges, and southern coast, usually below 1,200 meters. Coast live oak woodlands are widely distributed throughout the state from northern Mendocino County to San Diego County. This community is dominated by coast live oak (*Q. agrifolia*), often including California bay (*Umbellularia californica*) and Pacific madrone (*Arbutus menziesii*). Stands vary from open or continuous to savanna-like. Dense conditions support sparse understory vegetation including California blackberry (*Rubus ursinus*), poison oak, and snowberry (*Symphoricarpos spp.*), while more open stands have a grassy understory (Sawyer et al. 2009; Holland 1986).

Coast live oak woodland is found throughout the project site. Canopy cover is continuous to scattered, with a moderately dense understory of herbs and shrubs. Other observed tree species commonly



associated with coast live oak woodland include California bay and California buckeye (*Aesculus californica*). The shrub layer of the coast live oak woodland is typically poorly developed and the herbaceous layer is mostly continuous with adjacent grasslands. Shrubs in the project site include poison oak, coyote brush, and California blackberry.

Non-native annual grassland

Non-native annual grassland is typically comprised of annual grasses and forbs introduced during and since the Spanish colonial period. This vegetation community most closely resembles the *Avena* spp. – *Bromus* spp. Herbaceous Semi-Natural Alliance described by Sawyer et al. (2009). Non-native annual grassland is generally found in open areas in valleys and foothills throughout coastal and interior California. It typically occurs on soils consisting of fine-textured loams or clays that are somewhat poorly drained. Non-native annual grasses and weedy annual and perennial forbs, primarily of Mediterranean origin, dominate this vegetation type, probably as a result of human disturbance. Scattered native grass and wildflower species, representing remnants of the original vegetation may also be common (Sawyer et al. 2009).

On the project site, this vegetation community primarily occurs in the interior of the site and is surrounded by coast live oak woodland. The majority of the non-native annual grassland within the project site had been previously mowed. Characteristic non-native annual grasses observed include wild oat (*Avena fatua*), Italian rye (*Festuca perennis*), and foxtail barley (*Hordeum murinum*). Many ruderal herbs were also present, including plantain (*Plantago* spp.).

Riparian

Riparian habitat is found along Los Trancos Creek within the project site. This habitat type is similar to coast live oak woodland described above, with the distinction that it occurs along the banks of the creek and is thus riparian habitat. The MCV has moved similar riparian woodlands into the California sycamore – coast live oak riparian woodlands (*Platanus racemosa* – *Quercus agrifolia* Woodland) alliance, but this vegetation community does not include California sycamore, and the vegetation community present best corresponds to the Central Coast live oak riparian forest as described in Holland (1986). This plant community would be classified as upland where trees are rooted outside of the top of banks at the drainages and as palustrine forested wetland where trees are rooted along the drainage banks, following Cowardin et al. (1979).

General Wildlife

Wildlife activity was low during the reconnaissance survey. Eastern gray squirrel (*Sciurus carolinensis*), Nuttall's woodpecker (*Dryobates nuttallii*), and Steller's jay (*Cyanocitta stelleri*) were observed at the project site during the site survey. See Attachment 4 for a complete list of wildlife species observed within the project site.

Biological Constraints

Special-Status Species

For the purpose of this report, special status species are defined as those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the USFWS or NMFS under



the FESA; those listed or candidates for listing as rare, threatened, or endangered by the CDFW under CESA; animals designated as “Species of Special Concern” (SSC) by the CDFW or “Fully Protected” under the CFGC; and plants with a California Rare Plant Rank (CRPR) of 1B, 2, 3, or 4.

The project site may contain suitable habitat for special-status species. Based on the agency databases and literature review, as well as the results of the reconnaissance survey of the project site, Rincon evaluated 85 special-status species (40 special-status plant species and 45 special-status animal species) documented within the *Mindego Hill, California* USGS 7.5-minute topographic quadrangle and the surrounding eight quadrangles (*Woodside, Palo Alto, Mountain View, La Honda, Cupertino, Franklin Point, Big Basin, and Castle Rock Ridge*). Each of these 85 species was evaluated for its potential to occur in the project site (see Attachment 5). The majority of special-status species are not expected to occur based on the absence of suitable habitat and/or the project site being outside of the geographic range of the species.

Special-Status Plants

As noted above, based on the database and literature review of records, 40 special-status plant species are known to or have the potential to occur within the regional vicinity of the project site (Attachment 4). Potential to occur within the project site was based primarily on the presence of suitable habitat, determined during the site reconnaissance survey, and the proximity to CNDDB/CNPS documented occurrences. No special-status plant species were detected within the project site during the reconnaissance survey; however, this survey was conducted outside of the seasonal bloom period for many special-status plant species and the project site had been recently mowed. As such, it is possible that these special-status plant species occur at the project site but were simply undetected due to the timing of the reconnaissance survey and problematic vegetation conditions due to regular vegetation maintenance.

Of the 40 special-status plant species, one has a moderate potential to occur on the project site. Woodland woollythreads (*Monolopia gracilens*), CRPR 1B.2, can be found in a variety of habitat types, including some that occur on the project site, such as woodlands and grassy sites in openings. Blooming period for this species is March through July. Multiple occurrences of woodland woollythreads have been recorded within five miles of the project area, including the most recent occurrence from 2018 approximately one mile southwest of the project site. Protections are afforded for this and other special-status plants through CEQA, regardless of their listing status under the FESA, CESA, or the Native Plant Protection Act (NPPA).

Special-Status Animals

Forty-five special-status animal species were reported to occur within the regional vicinity, based on the database and literature review. Habitats within the project site have moderate to high potential to support nine special-status wildlife species: steelhead - central California coast (CCC) distinct population segment (steelhead) (*Oncorhynchus mykiss irideus*), Santa Cruz black salamander (*Aneides niger*), California giant salamander (*Dicamptodon ensatus*), California red-legged frog (*Rana draytonii*), western pond turtle (*Emys marmorata*), San Francisco gartersnake (*Thamnophis sirtalis tetrataenia*) pallid bat (*Antrozous pallidus*), Townsend’s big-eared bat (*Corynorhinus townsendii*), and San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*). Each of these species is discussed in more detail below.



Steelhead

The project site is located within the known range of the federally listed as threatened steelhead. Steelhead that occur in this geographic area are considered part of the CCC DPS. This DPS was listed by NMFS in 2006 and includes steelhead populations in streams from the upper Russian River in Mendocino County to Aptos Creek in southern Santa Cruz County (NMFS 2016).

Steelhead are capable of surviving in a wide range of temperature conditions within freshwater and estuarine environments but prefer temperatures less than 57 degrees Fahrenheit. Eggs tend to experience mortality at temperatures greater than 55 degrees Fahrenheit, and steelhead appear to have difficulty obtaining sufficient oxygen from water temperatures greater than 70 degrees Fahrenheit. Elevated summer water temperatures have been identified as a problem (CDFW 1996). Steelhead do best where dissolved oxygen concentrations are at least seven parts per million. In streams, deep low-velocity pools are important wintering habitats. Spawning habitat consists of gravel substrates that are free of excessive silt.

Los Trancos Creek runs along the property boundary on the western side. It is immediately adjacent to the project site and is critical habitat for steelhead. A 20-foot creek setback is marked on the proposed project plan, indicating that the creek is outside the limits of disturbance. Implementation of the proposed project may result in direct or indirect impacts to steelhead at all life stages. The results and conclusions presented herein represent our best professional judgement but do not represent determinations of the NMFS and CDFW as these agencies have ultimate jurisdiction over the steelhead through administration and enforcement of the FESA and CESA, respectively.

Santa Cruz black salamander

Santa Cruz black salamander (*Aneides flavipunctatus niger*) is a state species of special concern. This species is typically found in mixed deciduous woodlands, coniferous forests, and coastal grasslands in Santa Cruz, Santa Clara, and San Mateo counties. They primarily reside in moist habitats with wet soils, rotten logs, and surface debris for cover adjacent to ravines and water courses below 3,500 feet in elevation (Zeiner 1990, CDFW 2021a, Nafis 2020).

Los Trancos Creek and the riparian corridor within the project site provides suitable breeding and foraging habitat for Santa Cruz black salamander. The grassland and oak woodland within the project site may also be utilized by dispersing salamanders. Implementation of the proposed project may result in direct or indirect impacts to individuals within the project site.

California giant salamander

California giant salamander (*Dicamptodon ensatus*) is a state species of special concern that occurs in damp coastal forests and riparian woodland habitats up to 6,500 feet in elevation. Terrestrial adults are commonly found in damp litter, in burrows, or under fallen logs, and aquatic adults typically occur near cold, clear, permanent or semi-permanent water sources with rocky substrates. Breeding occurs from March to May and eggs are laid in slow moving waters and springs and under streambanks (Zeiner 1990, CDFW 2021a, Nafis 2020).

Los Trancos Creek and the riparian corridor within the project site provides suitable breeding and foraging habitat for California giant salamander. The grassland and oak woodland within the project site may also provide habitat for burrowing animals which may provide refugia for California giant



salamander. Implementation of the proposed project may result in direct or indirect impacts to individuals within the project site.

California red-legged frog

The California red-legged frog is federally listed as threatened and a state species of special concern throughout its range. The historic range of California red-legged frog extended along the coast from the vicinity of Point Reyes National Seashore, Marin County, and inland from the vicinity of Redding, Shasta County, southward to northwestern Baja California, Mexico. California red-legged frog inhabits quiet pools of streams, marshes, and ponds. All life history stages are most likely to be encountered in and around breeding sites, which include coastal lagoons, marshes, springs, permanent and semi-permanent natural ponds, and ponded and backwater portions of streams, as well as artificial impoundments such as stock ponds, irrigation ponds, and siltation ponds. Eggs are typically deposited in permanent pools, attached to emergent vegetation (USFWS 2011).

Los Trancos Creek and the riparian corridor within the project site may provide suitable breeding habitat, in slow moving pools, and foraging habitat for California red-legged frog. The closest documented breeding habitat is approximately 2.6 miles north of the project site within San Francisquito Creek. The grassland and oak woodland within the project site may also provide habitat for burrowing animals which may provide refugia for California red-legged frog. Implementation of the proposed project may result in direct or indirect impacts to individuals within the project site.

Western pond turtle

Western pond turtle (*Actinemys marmorata* [= *Emys marmorata*]) is a state species of special concern. This species is a semi-aquatic turtle that occurs in ponds, marshes, rivers, streams and irrigation ditches that typically support aquatic vegetation. It requires downed logs, rocks, mats of vegetation, or exposed banks for basking. Western pond turtle lay their eggs in nests dug along the banks of streams or other uplands in sandy, friable soils. Western pond turtles, especially those that reside near creeks, are known to overwinter in upland habitats. Upland movements can be quite extensive, and individuals have been recorded nesting or overwintering hundreds of meters from aquatic habitats. The typical nesting season is usually from April through August; however, variation exists depending upon geographic location.

Los Trancos creek may provide suitable foraging habitat for the western pond turtle. The oak woodland and annual grassland may also provide suitable breeding and foraging habitat. Western pond turtles have been documented approximately 2.9 miles north of the project site within San Francisquito Creek. Implementation of the proposed project may result in direct or indirect impacts to individuals within the project site.

San Francisco garter snake

San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) is federally and state listed as endangered. The historical distribution of the San Francisco garter snake included wetland areas on the San Francisco peninsula from the San Francisco County line south along the eastern and western foothills of the Santa Cruz Mountains to at least Upper Crystal Springs Reservoir and Año Nuevo Point in San Mateo County, and Waddell Creek in Santa Cruz County. The San Francisco garter snake occurs in a number of aquatic and terrestrial habitats throughout their range.

San Francisco garter snake has been documented within the San Francisquito Creek watershed, which Los Trancos Creek is a part of. Suitable aquatic and terrestrial habitats are found along Los Trancos



creek. Implementation of the proposed project may result in direct or indirect impacts to individuals within the project site.

Special-Status Bat Species

Pallid bat, and Townsend's big-eared bat are CDFW SSC. Pallid bats are found in grasslands, shrublands, woodlands, and forests, and may roost in trees or buildings. Townsend's big-eared bat are found in a wide variety of habitats and may roost in abandoned buildings or large trees. Bats prefer open areas or open areas under a tree canopy for foraging, and often roost near water. Several large and mature oak trees contain dense canopy cover within the project site may provide suitable roosting habitat for these special-status bat species. Implementation of the proposed project may result in direct or indirect effects to roosting special-status bat species, should they be present within the project site and/or immediate surrounding vicinity.

San Francisco dusky-footed woodrat

The San Francisco woodrat is one of eleven described subspecies of the dusky-footed woodrat (Hooper 1938) and is recognized by the CDFW as a species of special concern. Dusky-footed woodrats are well known for their large terrestrial stick houses/nests, some of which can last for twenty or more years (Linsdale and Tevis 1951). Middens/nests can be placed on the ground against or straddling a log or exposed roots of a standing tree and are often located in dense brush. Middens/nests are also placed in the crotches and cavities of trees and in hollow logs. Sometimes arboreal nests are constructed, this behavior seems to be more common in habitat with evergreen trees such as live oak. The body coloring is brown/grey with white/grey underside and white/dusky coloring on feet. The woodrats have a hairy brown tail, usually with a lighter underside, and large ears (Burt and Gossenheider 1980). The San Francisco dusky-footed woodrat can be found throughout the San Francisco Bay area in grasslands, scrub and wooded areas (Hall 1981).

Several San Francisco dusky-footed woodrat nests were observed during the reconnaissance survey. The oak woodland provides suitable breeding and foraging habitat throughout the project site. Implementation of the proposed project may result in direct or indirect impacts to individuals within the project site.

Nesting Birds

The California Fish and Game Code (CFG) Section 3503 and the federal Migratory Bird Treaty Act (MBTA) protect native bird species and their nests. The blue oak woodland habitat within and adjacent to the project site provides suitable nesting habitat for a variety of bird species. No active or inactive bird nests were observed within the project site during the reconnaissance-level field surveys. However, species of birds that typically occur in the region, such as red-shoulder hawk (*Buteo lineatus*), Steller's jay, and Anna's hummingbird (*Calypte anna*), may nest in the project site or surrounding area. Implementation of the proposed project may result in direct or indirect effects to nesting bird species, should they be present within the project site and/or immediate surrounding vicinity.



Special-Status Vegetation Communities and Critical Habitat

Sensitive Natural Communities

Plant communities are also considered sensitive biological resources if they have limited distributions, have high wildlife value, include sensitive species, or are particularly susceptible to disturbance. The CDFW ranks sensitive communities as “threatened” or “very threatened” and keeps records of their occurrences in CNDDDB. CNDDDB vegetation alliances are ranked 1 through 5 based on NatureServe’s (2010) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Some alliances with the rank of 4 and 5 have also been included in the 2020 sensitive natural communities list under CDFW’s revised ranking methodology (CDFW 2020). Three sensitive natural communities are known to occur within the nine-quadrangle search radius, none of which are present within the project site:

- Northern Coastal Salt Marsh
- Serpentine Bunch Grass
- Valley Oak Woodland

Critical Habitat

Critical habitat for steelhead is present in Los Trancos Creek, shown in Appendix A (Figure 2), both within and immediately adjacent to the project site. (NOAA 2021). Designated critical habitat is also located in several of the rivers surrounding the project site within five miles for coho Salmon (Central California Coast ESU; *Oncorhynchus kisutch* pop. 4). However, the project site does not overlap with these rivers and no drainages onsite are connected to the rivers where critical habitat is designated. Designated critical habitat for California red-legged frog and Bay checkerspot butterfly (*Euphydryas editha bayensis*) is located within five miles of the project area (USFWS 2021b); however, the project does not overlap with either of these designated critical habitats.

Oak Trees

Coast live oak trees and valley oak trees with a diameter at breast height of greater than 11.5 inches occur within project site. Pursuant to Section 8.10, *Tree Preservation and Management Regulations*, of the Palo Alto Municipal Code, these on-site oak trees would qualify as protected trees. Under Section 8.10.020, all protected trees that are planned for removal must be approved by the director of planning and development services, on the basis of a tree report prepared by a certified arborist. The proposed project may result in trimming and or disturbance close in proximity to several of the trees and may include work within oak tree driplines. As such, implementation of the proposed project may result in direct or indirect impacts to protected oak trees within the project site.

Jurisdictional Waters and Wetlands

Los Trancos Creek is an intermittent stream within and immediately adjacent to the project site and is potentially under the jurisdiction of the U.S. Army Corps of Engineers (USACE), CDFW, and/or Regional Water Quality Control Board (RWQCB). Riparian habitat (coast live oak woodland) occurs adjacent to the creek. Coast live oak woodland is not a CDFW sensitive natural community, but riparian habitat is considered to be a jurisdictional wetland by CDFW. Project plans appear to avoid impacts to Los Trancos



Creek, however the proposed project may result in indirect impacts to the creek and direct or indirect impacts to riparian habitat if project activities occur within the dripline of the riparian canopy.

Discussion and Recommendations

The project site contains: potentially suitable habitat for one special-status plant species, nine special-status wildlife species and nesting bird species; native oak trees; and potentially jurisdictional areas. If the project will be subject to environmental review under CEQA and there will be impacts to special-status species that are not listed as threatened or endangered under CESA and/or FESA, it may be considered significant and compensatory mitigation and/or specific avoidance and minimization measures may be required before and during construction of the project.

Special-Status Plant Species

The project site contains suitable habitat for one special-status plant species, as described above. It was not observed within the project site during the reconnaissance survey; however, the reconnaissance survey was conducted outside the bloom period for the species. Following are recommendations to address constraints due to the potential presence of special-status plants within the project site:

- A qualified biologist should conduct a protocol level botanical survey, including a site visit during the blooming period in March through July, and to ensure impacts to special-status plant species are avoided, minimized, and/or mitigated.
- If the CRPR 1 rank plant is found, a qualified biologist shall determine if the project will result in a significant impact and if so, prepare compensatory mitigation measures.

Special-Status Wildlife Species

The project site contains suitable habitat for nine special-status wildlife species. Los Trancos Creek is designated critical habitat for steelhead, and the non-native annual grassland in the woodland openings may provide suitable habitat for several other species. The large and mature oak trees on the project site provide potentially suitable habitat for nesting birds as well as special-status bat species. None of these species were observed onsite during the reconnaissance-level field surveys and no focused or protocol-level species surveys were conducted. Following are recommendations to address constraints due to the potential for occurrence of special-status wildlife and the presence of their habitats within the project site:

Steelhead:

Best management practices (BMPs) should be implemented during all construction activities that take place in or adjacent to Los Trancos Creek to prevent erosion and sedimentation into the creek and to prevent the spill of contaminants in or around the creek. Construction should occur between June and December, outside of steelhead migration season in the region.

The following BMPs should be implemented on-site during construction to prevent any indirect impacts to waters and wetlands:

- Vehicles and equipment should be checked at least daily for leaks and maintained in good working order. Spill kits should be available on-site at all times and a spill response plan should be developed and implemented.



- Sediment and erosion control measures (e.g., sand or gravel bags, hay bales, check dams) should be implemented and maintained throughout the project site to prevent the entry of sediment and/or pollutants into any waterways or jurisdictional areas. No monofilament plastic will be used for erosion control.

California Giant Salamander and Santa Cruz Black Salamander

Immediately prior to initial ground disturbance and vegetation removal, a qualified biologist shall conduct a preconstruction clearance survey of the site for special status amphibians. If California giant salamander and/or Santa Cruz black salamander are observed on site, they shall be relocated to suitable habitat in the immediate vicinity by the qualified biologist. The following additional measures shall be implemented to reduce potential impacts:

- Vegetation disturbance shall be the minimum necessary to achieve the goals of the project.
- All trash shall be removed from the site daily and disposed of properly to avoid attracting potential predators to the site.
- No pets shall be permitted on site during project activities.
- All vehicles shall be in good working condition and free of leaks. All leaks shall be contained and cleaned up immediately to reduce the potential of soil/vegetation contamination.
- All hole and trenches shall be covered at the end of the day or ramped to avoid entrapment.

California red-legged frog:

A qualified biologist shall conduct a pre-construction survey within 14 days prior to initiation of construction activities. The USFWS will be notified should California red-legged frog be observed within the project site. The following avoidance and mitigation measures should be implemented to avoid impacts to California red-legged frog:

- Construction crew shall be taught during the WEAP training to check beneath the staging equipment each morning prior to commencement of daily construction activities. Should California red-legged frog occur within the staging areas, construction activities shall be halted until the California red-legged frog vacates the project site on its own or until a biologist with a USFWS Recovery Permit for California red-legged frog relocates the California red-legged frog.
- Prior to ground disturbance a temporary wildlife exclusion barrier shall be installed along the limits of disturbance. A qualified biologist will inspect the area prior to barrier installation. The barrier will be designed to prevent California red-legged frog from entering the project area, and will remain in place until all development activities have been completed. This barrier will be inspected daily by a qualified biologist and maintained and repaired as necessary to ensure that it is functional and is not a hazard to California red-legged frogs or San Francisco garter snakes on the outer side of the barrier.
- A qualified biologist shall be present during all grading and initial ground disturbing activities. Should California red-legged frog be observed within the project site, the USFWS shall be notified and construction shall be halted until either the California red-legged frog exits the site on its own or until a biologist with a USFWS Recovery Permit for California red-legged frog relocates the California red-legged frog.



- No work should occur during a rain event (over 0.25"). If a rain event occurs, a qualified biologist should inspect the site again prior to resuming work.

Western pond turtle

A qualified biologist shall conduct pre-construction clearance surveys for western pond turtle within 48 hours prior to the start of construction (including staging and mobilization) in areas of suitable habitat. The biologist shall flag limits of disturbance for each construction phase. Areas of special biological concern within or adjacent to the limits of disturbance should have highly visible orange construction fencing installed by a contractor between said area and the limits of disturbance. If western pond turtles are observed they shall be allowed to leave the site on their own.

San Francisco garter snake

A qualified biologist shall conduct a focused pre-construction survey within 24 hours of the initiation of project activities. If San Francisco garter snake is found, the USFWS shall be notified immediately to determine the correct course of action and the proposed project shall not begin until approved by the USFWS.

- Construction personnel will participate in a worker environmental awareness program training. The training will cover the need to check beneath and around equipment each morning prior to commencement of daily construction activities. Should San Francisco garter snake occur within the project areas, construction activities shall be halted until the San Francisco garter snake vacates the project site on its own or until a biologist with a USFWS Recovery Permit for San Francisco garter snake relocates the snake.
- Vegetation will be cut to 6 inches in height or when the ground is visible, using hand tools (including string trimmers or chainsaw for brush). Once the ground is visible, a visual survey for San Francisco garter snake will be conducted by the biologist prior to additional ground disturbance. If San Francisco garter snake is found, USFWS will be notified immediate to determine the correct course of action.
- Prior to ground disturbance a temporary wildlife exclusion barrier shall be installed along the limits of disturbance. A qualified biologist will inspect the area prior to barrier installation. The barrier will be designed to prevent San Francisco garter snake from entering the project area and will remain in place until all development activities have been completed. This barrier will be inspected daily and maintained and repaired as necessary to ensure that it is functional and is not a hazard to California red-legged frogs or San Francisco garter snakes on the outer side of the barrier.
- Prior to conducting non-native plant removal or treatments (e.g., spraying with herbicide, cutting, pulling, digging out), the permittee shall make every reasonable attempt to ensure that SFGS are not hidden within the plant or residual plant matter to be treated.

Special-Status Bat Species:

There is suitable roosting habitat for special-status bats present in the large oak trees throughout the project site. Disturbance of maternity roosts from construction activities, resulting in roost destruction or abandonment, would be a potentially significant impact to special-status bat species and would be violations of CFGC. The following are recommendations and possible constraints due to special-status bat species within the project site:



- Prior to tree removal, a qualified biologist should conduct a focused survey of all trees to be removed or impacted by construction activities to determine whether active roosts of special-status bats are present on site. If tree removal is planned for the fall, the survey should be conducted in September to ensure tree removal would have adequate time to occur during seasonal periods of bat activity, as described below. If tree removal is planned for the spring, then the survey should be conducted during the earliest possible time in March, to allow for suitable conditions for both the detection of bats and subsequent tree removal. Trees containing suitable potential bat roost habitat features should be clearly marked or identified.
- If day roosts are found to be potentially present, the biologist should prepare a site-specific roosting bat protection plan to be implemented by the contractor following the City of Palo Alto's approval. The plan should incorporate the following guidance as appropriate:
 - When possible, removal of trees identified as suitable roosting habitat should be conducted during seasonal periods of bat activity, including the following:
 1. Between September 1 and about October 15, or before evening temperatures fall below 45 degrees Fahrenheit and/or more than 0.5 inch of rainfall within 24 hours occurs.
 2. Between March 1 and April 15, or after evening temperatures rise above 45 degrees Fahrenheit and/or no more than 0.5 inch of rainfall within 24 hours occurs.
 - If a tree must be removed during the breeding season and is identified as potentially containing a colonial maternity roost, then a qualified biologist should conduct acoustic emergence surveys or implement other appropriate methods to further evaluate if the roost is an active maternity roost. Under the biologist's guidance, the contractor should implement measures similar to or better than the following:
 1. If it is determined that the roost is not an active maternity roost, then the roost may be removed in accordance with the other requirements of this recommendation.
 2. If it is found that an active maternity roost of a colonial roosting species is present, the roost should not be disturbed during the breeding season (April 15 to August 31).
 - Potential colonial hibernation roosts should only be removed during seasonal periods of bat activity. Potential non-colonial roosts that cannot be avoided should be removed on warm days in late morning to afternoon when any bats present are likely to be warm and able to fly. Appropriate methods should be used to minimize the potential harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on day one. The noise and vibration disturbance, together with the visible alteration of the tree, is very effective in causing bats that emerge nightly to feed to not return to the roost that night. The remainder of the tree is removed on day two.

San Francisco dusky-footed woodrat

A qualified biologist should conduct a pre-construction survey for woodrats no more than 14 days prior to construction. Nests within 50 feet of project activity that would not be directly impacted by project activity should be demarcated with a 10-foot avoidance buffer and left intact. If a nest(s) that cannot be avoided are found during the pre-construction survey, an approved biologist should dismantle the nest and relocate it to suitable habitat outside the work area no more than 50 feet away with the goal of ensuring the individuals are allowed to leave the work area(s) unharmed before on site activities begin. Nest relocation should occur within 48 hours of construction activities to ensure that nests are not



reestablished. With the implementation of mitigation (worker training program and relocation of active nests), impacts to San Francisco dusky-footed woodrat would be reduced to less than significant.

Nesting Birds:

There is suitable nesting habitat for nesting birds throughout the project site. If construction activities are scheduled to occur during the avian nesting season (typically February 1 to September 15), then typical avoidance and minimization measures to prevent take of bird nests, eggs or nestlings under CFGC and the MBTA could pose constraints on the project. The following are recommendations and possible constraints due to special-status birds and nesting birds within the project site:

- A general pre-construction nesting bird survey should be conducted by a qualified biologist, within 14 days prior to the initiation of construction activities. If construction is stopped for more than 14 days during the nesting season, a pre-construction survey should be conducted prior to the re-start of construction activities. Surveys should include the disturbance area plus a 200-foot buffer for passerine species, and a 500-foot buffer for raptors.
- If active nests are located, an appropriate avoidance buffer should be established within which no work activity would be allowed which would impact these nests. The avoidance buffer would be established by the qualified biologist on a case-by-case basis based on the species and site conditions. Larger buffers may be required depending upon the status of the nest and the construction activities occurring in the vicinity of the nest. The buffer area(s) should be closed to all construction personnel and equipment until juveniles have fledged and/or the nest is inactive. A qualified biologist should confirm that breeding/nesting is complete, and the nest is no longer active prior to removal of the buffer. If work within a buffer area cannot be avoided, then a qualified biologist should be present to monitor all project activities that occur within the buffer. The biological monitor should evaluate the nesting avian species for signs of disturbance and should have the ability to stop work.

Protected Trees

Pursuant to Chapter 8.10 of the Palo Alto Municipal Code the on-site coast live oak and valley oak trees would qualify as protected trees. Depending on the extent of disturbance, the proposed project may result in trimming and or disturbance close in proximity to several of the trees within the project site. Therefore, Section 8.10.050, *Tree Preservation and Management Regulations* would require an arborist report, conducted by a qualified arborist, tree mitigation may be required in accordance with the City of Palo Alto Tree Technical Manual. Additionally, should one or more protected trees be planned for removal, a tree protection and replacement plan may be required. This plan would include but is not limited to the following protective measures for trees:

- Prior to initiating any construction activity on a construction project, including demolition or grading, temporary protective fencing should be installed at each site tree.
 1. Fencing should be located at the Tree Protection Zone (TPZ) illustrated on the Improvement Plans.
 2. Fencing should serve as a barrier to prevent encroachment of any type by construction activities, equipment, materials storage, or personnel.
- The Tree Protection Zone (TPZ) is illustrated on the Improvement Plans and represents the area around each tree, or group of trees, which must be protected at all times with tree protection fencing.



1. No encroachment into the TPZ is allowed at any time without approval from the project arborist.
 2. Any unauthorized entry into the TPZ is a violation of the Tree Protection Ordinance and shall be subject to enforcement through civil, criminal or administrative remedies, including applicable penalties.
- Contractors and subcontractors should direct all equipment and personnel to remain outside the fenced area at all times until project is complete and should instruct personnel and sub-contractors as to the purpose and importance of fencing and preservation.
 - No grade changes should be made within the protective barriers without prior approval by the Planning Director.
 - No attachments or wires other than those of a protective or non-damaging nature should be attached to a protected tree.
 - Excavation or landscape preparation within the protective barriers should be limited to the use of hand tools and small handheld power tools and should not be of a depth that could cause root damage.
 - When the existing grade around a protected tree is to be raised the project and/or City arborist should provide written directions on which method(s) may be used to drain liquids away from the trunk.
 - When the existing grade around a protected tree is to be lowered the project and/or City arborist should provide written directions on which method(s) may be used (terracing, retaining wall, etc.) to allow the dripline to be left at the original grade.
 - No equipment, solvents, paint, asphalt, or debris of any kind should be placed, stored, or allowed within the protective barrier.

Potentially Jurisdictional Areas

Los Trancos Creek is within and adjacent to the project area. It is a tributary to San Francisquito Creek, which flows into San Francisco Bay, a Traditional Navigable Water, thus it is potentially under the jurisdiction of USACE, CDFW, and the Regional Water Quality Control Board (RWQCB). In addition, riparian habitat on the project site would be considered jurisdictional by CDFW and RWQCB. Therefore, the following avoidance and minimization measures are recommended:

- If the project will avoid impacts to the riparian area (shown on Figure 2), we recommend installing high visibility orange construction fence between the jurisdictional areas and the construction activities, including a 20-foot buffer setback, to avoid all potential impacts to jurisdictional areas.
- If the project will impact the riparian areas, a formal delineation report and map should be prepared. If wetland areas cannot be avoided, regulatory permits from USACE, CDFW, and RWQCB would be required prior to construction.
- Vehicles and equipment should be checked at least daily for leaks and maintained in good working order. Spill kits should be available on-site at all times and a spill response plan should be developed and implemented.
- Sediment and erosion control measures (e.g., straw wattles, silt fence, check dams) should be implemented and maintained throughout the project site to prevent the entry of sediment and/or pollutants into any waterways or jurisdictional areas. No monofilament plastic will be used for erosion control.



Conclusion

As noted above, this report is intended to identify sensitive biological resources and potential occurrence of special-status species that represent potential constraints to development of the 575 Los Trancos Road project. This report provides analysis sufficient to support CEQA, though further analysis may be required for compliance with FESA, or CESA, and/or the CFGC. Thank you for the opportunity to support your environmental analysis needs for this important project. Please contact us if you have any questions.

Sincerely,
Rincon Consultants, Inc.

A handwritten signature in black ink, appearing to read "Christian Knowlton".

Christian Knowlton
Biologist

A handwritten signature in blue ink, appearing to read "Sherri Miller".

Sherri Miller
Principal

Attachments

- Attachment 1 Figures
- Attachment 2 Representative Site Photographs
- Attachment 3 Plant Species List Observed
- Attachment 4 Wildlife Species List Observed
- Attachment 5 Special-Status Species Evaluation Tables



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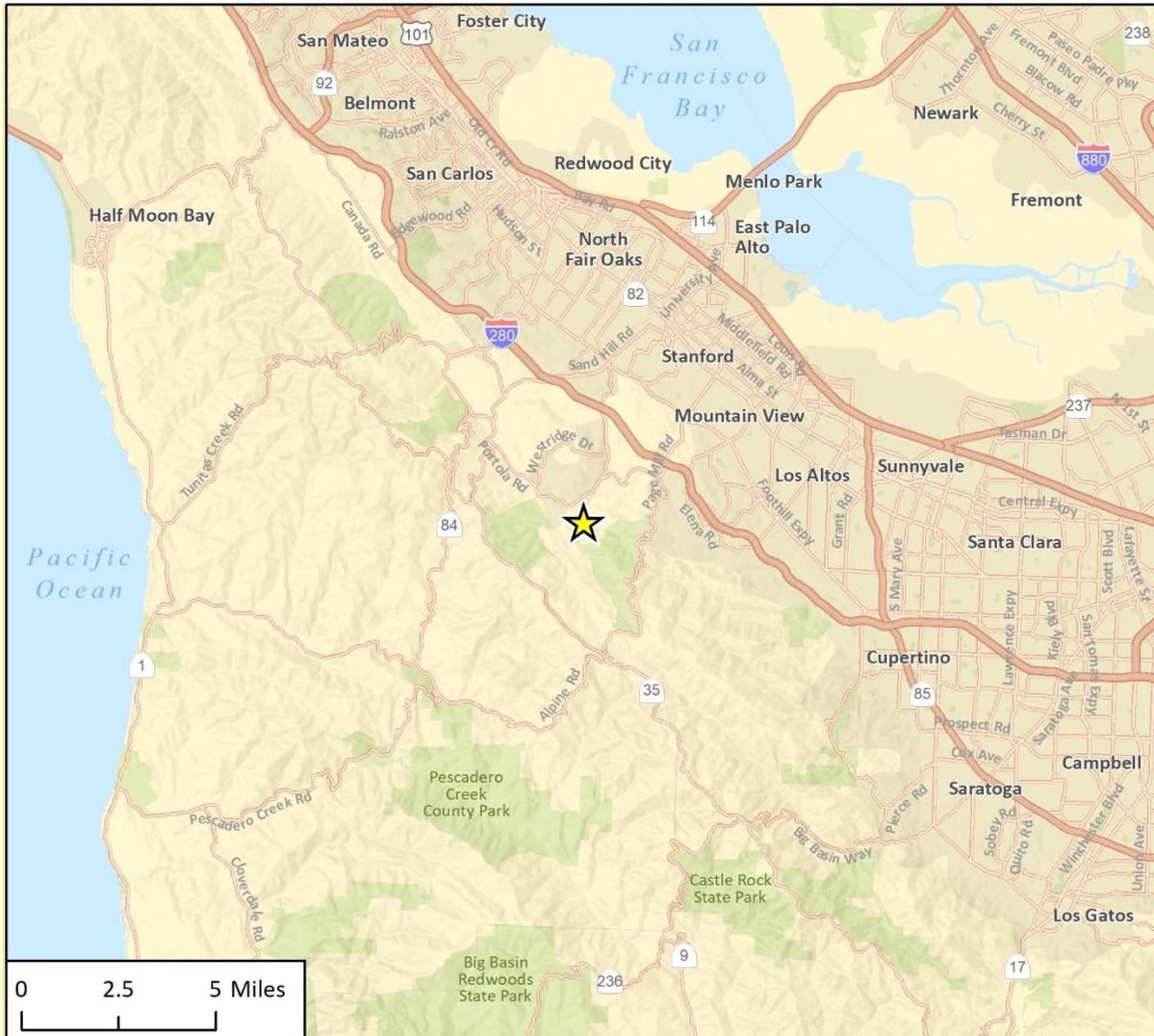


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Attachment 1

Figures

Figure 1 Regional Location



Basemap provided by Esri and its licensors © 2021.

★ Project Location

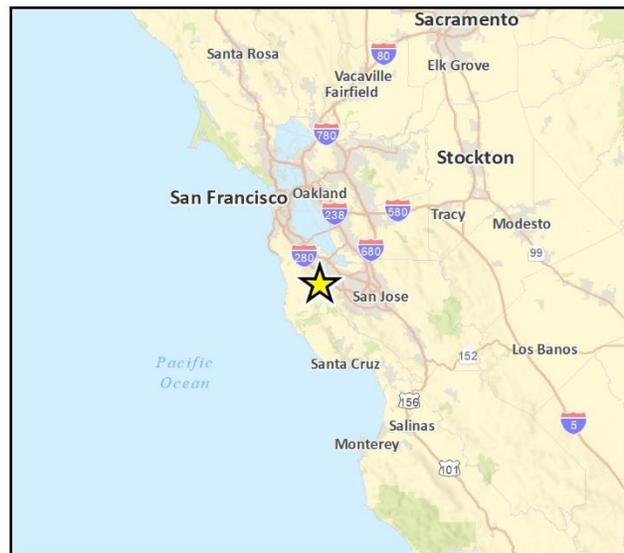
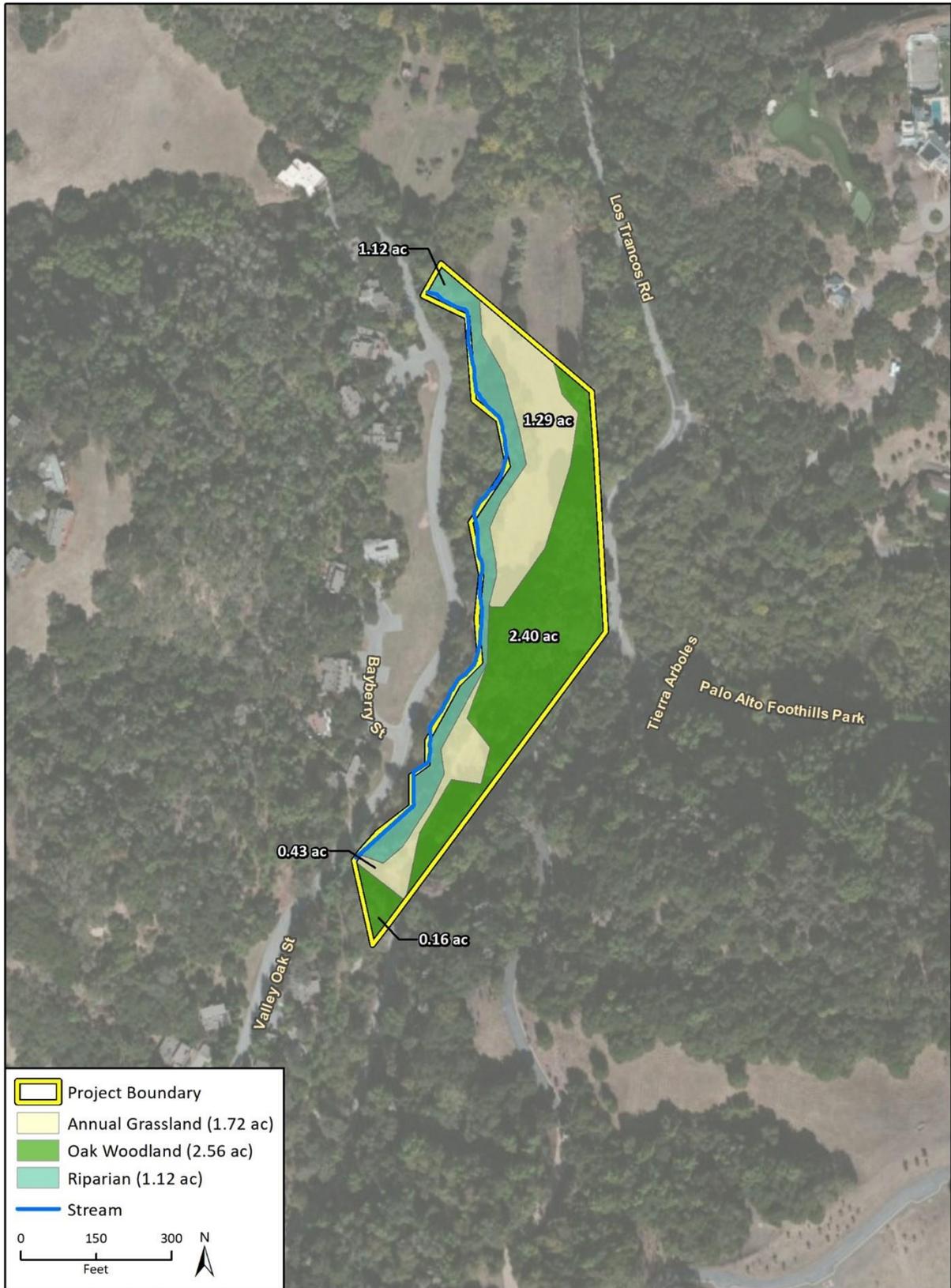


Fig 1 Regional Location

Figure 2 Land Cover Types



Imagery provided by Microsoft Bing and its licensors © 2021.

Fig.X Habitat Type

Attachment 2

Representative Site Photographs



Photograph 1. Overview of the coast live oak woodland within the project site. Photograph taken from the northern end of the project site, facing south.



Photograph 2. View of mowed non-native annual grassland surrounded by the oak woodland within the project area facing the northern boundary of the project area.



Photograph 3. Photograph of Los Trancos creek immediately adjacent to the west of the project area.



Photograph 4. San Francisco dusky footed woodrat nest within the project area.



Photograph 5. View of the oak woodland at the southern extent of the project area.



Photograph 6. View of the riparian woodland along the southern extent of the project area.



Photograph 7. Representative photo of the oak woodland within the project area.

Attachment 3

Plant Species List Observed

Scientific Name	Common Name	Origin & Cal-IPC Status ¹
<i>Aesculus californica</i>	California buckeye	Native
<i>Artemisia douglasiana</i>	mugwort	Native
<i>Avena spp.</i>	wild oats	Introduced; Cal-IPC Moderate
<i>Bromus diandrus</i>	ripgut grass	Introduced; Cal-IPC Moderate
<i>Cynodon dactylon</i>	Bermuda grass	Introduced; Cal-IPC Moderate
<i>Genista monspessulana</i>	French broom	Introduced; Cal-IPC High
<i>Plantago lanceolata</i>	English plantain	Introduced; Cal-IPC Limited
<i>Quercus agrifolia</i>	Coast live oak	Native
<i>Quercus lobata</i>	valley oak	Native
<i>Rubus armeniacus</i>	Himalayan blackberry	Introduced; Cal-IPC High
<i>Salix lasiolepis</i>	arroyo willow	Native
<i>Toxicodendron diversilobum</i>	poison oak	Native
<i>Umbellularia californica</i>	California bay	Native

¹Cal-IPC: California Invasive Plant Council ratings

Attachment 4

Wildlife Species List Observed

Scientific Name	Common Name
<i>Neotoma fuscipes annectens</i>	San Francisco dusky-footed woodrat
<i>Dryobates nuttallii</i>	Nuttall's woodpecker
<i>Melanerpes formicivorus</i>	Acorn woodpecker
<i>Sciurus niger</i>	Fox squirrel
<i>Cyanocitta stelleri</i>	Steller's jay
<i>Certhia americana</i>	Brown creeper
<i>Sciurus carolinensis</i>	Eastern gray squirrel
<i>Melospiza crissalis</i>	California towhee
<i>Junco hyemalis</i>	Dark eyed junco

Attachment 5

Special-Status Species Evaluation Tables

Special-Status Plant Species in the Regional Vicinity (Nine Quad) of the Project Site

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
<i>Acanthomintha duttonii</i> San Mateo thorn-mint	FE/SE G1/S1 1B.1	Chaparral, Valley and foothill grassland. Uncommon serpentinite vertisol clays; in relatively open areas. 50-300m. Blooms Apr-Jun.	Not Expected	Suitable serpentine soils not present. One historic occurrence from 1977 has been recorded within 5 miles, approximately 5 miles to the north of the site, and is considered extirpated (CDFW 2021a).
<i>Allium peninsulare</i> var. <i>franciscanum</i> Franciscan onion	None/None G5T2/S2 1B.2	Cismontane woodland, Valley and foothill grassland. Clay soils; often on serpentine; sometimes on volcanics. Dry hillsides. 52-305m. Blooms (Apr)May-Jun.	Not Expected	Suitable woodland habitat and grasslands are present. No native grassland communities are present within the site. Clay soils are present; however, no serpentine formations occur within the project site. One recent occurrence from 2013 is recorded within 5 miles of the project site, approximately 3.25 miles to the northeast (CDFW 2021a).
<i>Amsinckia lunaris</i> bent-flowered fiddleneck	None/None G3/S3 1B.2	Cismontane woodland, Coastal bluff scrub, Valley and foothill grassland. 3-500m. Blooms Mar-Jun.	Not Expected	Grasslands and coast live oak woodland are present. The non-native grasslands present are not a natural vegetation community and are frequently disturbed by mowing. No occurrences have been reported within 5 miles (CDFW 2021a).
<i>Arctostaphylos andersonii</i> Anderson's manzanita	None/None G2/S2 1B.2	Broadleafed upland forest, Chaparral, North Coast coniferous forest. Open sites, redwood forest. 60-760m. Blooms Nov-May.	Not Expected	Suitable vegetation communities absent. This species would have been observed if present.
<i>Arctostaphylos regismontana</i> Kings Mountain manzanita	None/None G2/S2 1B.2	Broadleafed upland forest, Chaparral, North Coast coniferous forest. Granitic or sandstone outcrops. 305-730m. Blooms Dec-Apr.	Not Expected	Suitable vegetation communities, elevations, and rock outcrops absent. Would have been observed if present.
<i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i> coastal marsh milk-vetch	None/None G2T2/S2 1B.2	Coastal dunes, Coastal scrub, Marshes and swamps. Mesic sites in dunes or along streams or coastal salt marshes. 0-30m. Blooms (Apr)Jun-Oct.	Not Expected	No suitable habitat or elevations occurs in the project site.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
<i>Astragalus tener</i> var. <i>tener</i> alkali milk-vetch	None/None G2T1/S1 1B.2	Playas, Valley and foothill grassland, Vernal pools. Low ground, alkali flats, and flooded lands; in annual grassland or in playas or vernal pools. 1-60m. Blooms Mar-Jun.	Not Expected	No suitable habitat occurs in the project site. Outside of suitable elevation.
<i>Centromadia parryi</i> ssp. <i>congdonii</i> Congdon's tarplant	None/None G3T1T2/S1S2 1B.1	Valley and foothill grassland. Alkaline soils, sometimes described as heavy white clay. 0-230m. Blooms May-Oct(Nov).	Not Expected	Suitable soils absent.
<i>Chloropyron</i> <i>maritimum</i> ssp. <i>palustre</i> Point Reyes salty bird's-beak	None/None G4?T2/S2 1B.2	Marshes and swamps. Usually in coastal salt marsh with <i>Salicornia</i> , <i>Distichlis</i> , <i>Jaumea</i> , <i>Spartina</i> , etc. 0-10m. Blooms Jun-Oct.	Not Expected	No suitable habitat occurs in the project site.
<i>Chorizanthe</i> <i>pungens</i> var. <i>hartwegiana</i> Ben Lomond spineflower	FE/None G2T1/S1 1B.1	Lower montane coniferous forest. Zayante coarse sands in maritime ponderosa pine sandhills. 90-610m. Blooms Apr-Jul.	Not Expected	No suitable habitat occurs in the project and it does not contain maritime ponderosa forests.
<i>Cirsium fontinale</i> var. <i>fontinale</i> fountain thistle	FE/SE G2T1/S1 1B.1	Chaparral, Cismontane woodland, Meadows and seeps, Valley and foothill grassland. Serpentine seeps and grassland. 45-175m. Blooms (Apr)May-Oct.	Not Expected	No suitable habitat occurs in the project site and serpentine soils are not present.
<i>Collinsia corymbosa</i> round-headed Chinese-houses	None/None G1/S1 1B.2	Coastal dunes. 0-20m. Blooms Apr-Jun.	Not Expected	No suitable habitat or elevations occur in the project site.
<i>Collinsia multicolor</i> San Francisco collinsia	None/None G2/S2 1B.2	Annual herb. Blooms March-May. Closed-cone coniferous forest, coastal scrub. On decomposed shale (mudstone) mixed with humus. 30-250m (100-820ft).	Not Expected	Closed cone coniferous forests and suitable soils are absent.
<i>Dirca occidentalis</i> western leatherwood	None/None G2/S2 1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Closed-cone coniferous forest, North Coast coniferous forest, Riparian forest, Riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 25-425m. Blooms Jan-Mar(Apr).	Not Expected	Suitable habitat, including riparian woodland is present on the project site; however, this species would have been observed if present.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
<i>Eriophyllum latilobum</i> San Mateo woolly sunflower	FE/SE G1/S1 1B.1	Cismontane woodland, Coastal scrub, Lower montane coniferous forest. Often on roadcuts; found on and off of serpentine. 45-330m. Blooms May-Jun.	Low Potential	Coast live oak woodland is present. One historic occurrence from 1962 is recorded within 5 miles of the project site, approximately 1.8 miles to the southwest (CDFW 2021a).
<i>Eryngium aristulatum</i> var. <i>hooveri</i> Hoover's button-celery	None/None G5T1/S1 1B.1	Vernal pools. Alkaline depressions, vernal pools, roadside ditches and other wet places near the coast. 3-45m. Blooms (Jun)Jul(Aug).	Not Expected	No suitable habitat occurs in the project site, which outside of known elevation for this species.
<i>Eryngium jepsonii</i> Jepson's coyote-thistle	None/None G2/S2 1B.2	Valley and foothill grassland, Vernal pools. Clay. 3-300m. Blooms Apr-Aug.	Not Expected	No vernal pools within the project site. Suitable soils not present
<i>Fissidens pauperculus</i> minute pocket moss	None/None G3?/S2 1B.2	North Coast coniferous forest. Moss growing on damp soil along the coast. In dry streambeds and on stream banks. 10-1024m.	Not Expected	No suitable habitat occurs in the project site, and no occurrences have been recorded within 5 miles (CDFW 2021a).
<i>Fritillaria liliacea</i> fragrant fritillary	None/None G2/S2 1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland. Often on serpentine; various soils reported though usually on clay, in grassland. 3-410m. Blooms Feb-Apr.	Low Potential	Suitable habitat present although no serpentine soils were observed on the project site. One historical occurrence from 1932 has been recorded within 5 miles of the project site, approximately 2.5 miles to the north (CDFW 2021a).
<i>Hesperocypris abramsiana</i> var. <i>abramsiana</i> Santa Cruz cypress	FT/SE G1T1/S1 1B.2	Chaparral, Closed-cone coniferous forest, Lower montane coniferous forest. Restricted to the Santa Cruz Mountains, on sandstone & granitic-derived soils; often w/ <i>Pinus attenuata</i> , redwoods. 280-800m. Blooms .	Not Expected	No suitable habitat or elevation occurs in the project site. Would have been observed if present.
<i>Hesperocypris abramsiana</i> var. <i>butanoensis</i> Butano Ridge cypress	FT/SE G1T1/S1 1B.2	Chaparral, Closed-cone coniferous forest, Lower montane coniferous forest. Sandstone. 400-490m. Blooms Oct.	Not Expected	No suitable habitat or elevation occurs in the project site. Would have been observed if present.
<i>Hesperolinon congestum</i> Marin western flax	FT/ST G1/S1 1B.1	Chaparral, Valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral. 5-370m. Blooms Apr-Jul.	Not Expected	Suitable soils are absent.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
<i>Hoita strobilina</i> Loma Prieta hoita	None/None G2?/S2? 1B.1	Chaparral, Cismontane woodland, Riparian woodland. Serpentine; mesic sites. 30-860m. Blooms May-Jul (Aug-Oct).	Not Expected	Although suitable woodlands, including riparian woodlands occur on the project site, suitable serpentine soils are absent and no occurrences have been recorded within 5 miles.
<i>Legenere limosa</i> legenere	None/None G2/S2 1B.1	Vernal pools. In beds of vernal pools. 1-880m. Blooms Apr-Jun.	Not Expected	No suitable vernal pool habitat occurs in the project site.
<i>Limnanthes douglasii</i> ssp. <i>sulphurea</i> Point Reyes meadowfoam	None/SE G4T1/S1 1B.2	Coastal prairie, Marshes and swamps, Meadows and seeps, Vernal pools. Vernal wet depressions in open rolling, coastal prairies and meadows; typically in dark clay soil. 0-140m. Blooms Mar-May.	Not Expected	No suitable habitat occurs in the project site.
<i>Malacothamnus arcuatus</i> arcuate bush-mallow	None/None G2Q/S2 1B.2	Chaparral, Cismontane woodland. Gravelly alluvium. 15-355m. Blooms Apr-Sep.	Low Potential	Suitable woodland habitat is present; however, regular vegetation maintenance decreases the likelihood of their occurrence. No individuals were observed during the site visit. Two recent occurrences (2013 and 2015) have been recorded within 5 miles of the project site (CDFW 2021a).
<i>Monolopia gracilens</i> woodland woollythreads	None/None G3/S3 1B.2	Broadleaved upland forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland. Grassy sites, in openings; sandy to rocky soils. Often seen on serpentine after burns, but may have only weak affinity to serpentine. 100-1200m. Blooms (Feb)Mar-Jul.	Moderate Potential	Suitable habitat is present within the project site and three recent occurrences (2015-2018) have been recorded within 5 miles of the project site (CDFW 2021a).
<i>Pedicularis dudleyi</i> Dudley's lousewort	None/SR G2/S2 1B.2	Chaparral, Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland. Deep shady woods of older coast redwood forests; also in maritime chaparral. 60-900m. Blooms Apr-Jun.	Low Potential	Woodland habitat occurs on the project site however, deep shady forests and maritime chaparral are absent. No occurrences have been recorded within 5 miles (CDFW 2021a).

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
<i>Pentachaeta bellidiflora</i> white-rayed pentachaeta	FE/SE G1/S1 1B.1	Cismontane woodland, Valley and foothill grassland. Open dry rocky slopes and grassy areas, often on soils derived from serpentine bedrock. 35-620m. Blooms Mar-May.	Not Expected	The annual grassland present on the project site is not a natural grassland community and is regularly maintained, thus would not provide suitable habitat. No occurrences have been recorded within 5 miles (CDFW 2021a).
<i>Piperia candida</i> white-flowered rein orchid	None/None G3/S3 1B.2	Broadleafed upland forest, Lower montane coniferous forest, North Coast coniferous forest. Sometimes on serpentine. Forest duff, mossy banks, rock outcrops, and muskeg. 30-1310m. Blooms (Mar)May-Sep.	Not Expected	No suitable habitat occurs in the project site. Only one occurrence from 1992 has been recorded within 5 miles of the project site (CDFW 2021a).
<i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i> Choris' popcornflower	None/None G3T1Q/S1 1B.2	Chaparral, Coastal prairie, Coastal scrub. Mesic sites. 3-160m. Blooms Mar-Jun.	Not Expected	No suitable habitat occurs in the project site.
<i>Plagiobothrys diffusus</i> San Francisco popcornflower	None/SE G1Q/S1 1B.1	Coastal prairie, Valley and foothill grassland. Historically from grassy slopes with marine influence. 60-360m. Blooms Mar-Jun.	Not Expected	Grasslands present in the project site are not natural grassland communities and no occurrences have been recorded within 5 miles (CDFW 2021a).
<i>Senecio aphanactis</i> chaparral ragwort	None/None G3/S2 2B.2	Chaparral, Cismontane woodland, Coastal scrub. Drying alkaline flats. 15-800m. Blooms Jan-Apr(May).	Not Expected	No suitable soils occur in the project site.
<i>Stuckenia filiformis</i> ssp. <i>alpina</i> slender-leaved pondweed	None/None G5T5/S2S3 2B.2	Marshes and swamps. Shallow, clear water of lakes and drainage channels. 300-2150m. Blooms May-Jul.	Not Expected	No suitable habitat nor elevation occurs in the project site
<i>Suaeda californica</i> California seablite	FE/None G1/S1 1B.1	Marshes and swamps. Margins of coastal salt marshes. 0-15m. Blooms Jul-Oct.	Not Expected	No suitable habitat occurs in the project site.
<i>Trifolium amoenum</i> two-fork clover	FE/None G1/S1 1B.1	Coastal bluff scrub, Valley and foothill grassland. Sometimes on serpentine soil, open sunny sites, swales. Most recently cited on roadside and eroding cliff face. 5-415m. Blooms Apr-Jun.	Low Potential	Grassland habitat is present; however, it is non-native, and not a natural community. One historical occurrence has been recorded in 1950, approximately 3 miles north of the project site (CDFW 2021a).

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
<i>Trifolium buckwestiorum</i> Santa Cruz clover	None/None G2/S2 1B.1	Broadleafed upland forest, Cismontane woodland, Coastal prairie. Moist grassland. Gravelly margins. 105-610m. Blooms Apr-Oct.	Low Potential	Suitable woodland habitat is present; however, no occurrences have been recorded within five miles of the project site (CDFW 2021a).
<i>Trifolium hydrophilum</i> saline clover	None/None G2/S2 1B.2	Marshes and swamps, Valley and foothill grassland, Vernal pools. Mesic, alkaline sites. 0- 300m. Blooms Apr-Jun.	Not Expected	No alkaline soils or suitable natural vegetation communities occur within the project site. No occurrences have been recorded within five (CDFW 2021a).

Regional Vicinity refers to within a 9-quad search radius of site.

FE = Federally Endangered FT = Federally Threatened FC = Federal Candidate Species

SE = State Endangered ST = State Threatened SC = State Candidate SR = State Rare

CRPR (CNPS California Rare Plant Rank):

1A=Presumed Extinct in California

1B=Rare, Threatened, or Endangered in California and elsewhere

2A=Plants presumed extirpated in California, but more common elsewhere

2B=Plants Rare, Threatened, or Endangered in California, but more common elsewhere

CRPR Threat Code Extension:

.1=Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2=Fairly endangered in California (20-80% occurrences threatened)

.3=Not very endangered in California (<20% of occurrences threatened)

Special-Status Animal Species in the Regional Vicinity (Nine Quad) of the Project Site

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Invertebrates				
<i>Euphydryas editha bayensis</i> Bay checkerspot butterfly	FT/None G5T1/S1	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. <i>Plantago erecta</i> is the primary host plant; <i>Orthocarpus densiflorus</i> & <i>O. purpurscens</i> are the secondary host plants.	Not Expected	No suitable habitat present within the project site
<i>Speyeria zerene myrtleae</i> Myrtle's silverspot butterfly	FE/None G5T1/S1	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County. Larval foodplant thought to be <i>Viola adunca</i> .	Not Expected	No suitable habitat present within the project site, species has been extirpated from its range in the vicinity of the project site.
Fish				
<i>Oncorhynchus mykiss irideus</i> pop. 8 steelhead - central California coast DPS	FT/None G5T2T3Q/S2S3	DPS includes all naturally spawned populations of steelhead (and their progeny) in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). Also includes the drainages of San Francisco and San Pablo Bays.	High Potential	Steelhead are known in the San Francisquito Creek watershed and have been observed in Los Trancos Creek (Leidy et al. 2005).
<i>Spirinchus thaleichthys</i> longfin smelt	FC/ST G5/S1	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	Not Expected	No suitable habitat present within the project site
Amphibians				
<i>Aneides niger</i> Santa Cruz black salamander	None/None G3/S3 SSC	Mixed deciduous and coniferous woodlands and coastal grasslands in San Mateo, Santa Cruz, and Santa Clara counties. Adults found under rocks, talus, and damp woody debris.	Moderate Potential	Suitable habitat is present, there are five records within five miles of the project site
<i>Dicamptodon ensatus</i> California giant salamander	None/None G3/S2S3 SSC	Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County, and east to Napa County. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	Moderate Potential	Suitable habitat is present, there are five records within five miles of the project site
<i>Rana boylei</i> foothill yellow-legged frog	None/SE G3/S3 SSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	Not Expected	Suitable habitat is present however, the species is presumed to be extirpated from the region.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
<i>Rana draytonii</i> California red-legged frog	FT/None G2G3/S2S3 SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	Moderate Potential	Suitable foraging habitat is present within the project site. There are 10 recorded occurrences within five miles of the project site (CDFW 2021a). The nearest breeding habitat is approximately 2.6 miles north in San Francisquito Creek.
Reptiles				
<i>Emys marmorata</i> western pond turtle	None/None G3G4/S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Moderate Potential	Suitable habitat for breeding and foraging is present within the project site. There are three records within five miles of the project site, closest record is approximately 2.9 miles north in San Francisquito Creek.
<i>Thamnophis sirtalis tetrataenia</i> San Francisco gartersnake	FE/SE G5T2Q/S2 FP	Vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo County and extreme northern Santa Cruz County. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important.	Moderate Potential	Suitable habitat is present and there are 13 recorded occurrences within five miles of the project site (CDFW 2021a).
Birds				
<i>Asio flammeus</i> short-eared owl	None/None G5/S3 SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	Not Expected	Suitable habitat is not present and there are no recorded occurrences within five miles of the project site (CDFW 2021a).
<i>Asio otus</i> long-eared owl	None/None G5/S3? SSC	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	Low Potential	Suitable habitat is present. One historic occurrence from 1987 has been recorded within 5 miles of the project site, approximately 4 miles to the southeast (CDFW 2021a).

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
<i>Athene cunicularia</i> burrowing owl	None/None G4/S3 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Not Expected	No suitable habitat is present within the project site. Grassland present on the site is routinely mowed and disturbed. The only recorded occurrence within 5 miles is from 2017, approximately 2.8 miles south of the project site (CDFW 2021a).
<i>Brachyramphus marmoratus</i> marbled murrelet	FT/SE G3/S2	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	Not Expected	No suitable habitat present and the project site is 11 miles inland, outside of the known species range.
<i>Charadrius nivosus nivosus</i> western snowy plover	FT/None G3T3/S2 SSC	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	Not Expected	No suitable habitat present within the project site.
<i>Circus hudsonius</i> northern harrier	None/None G5/S3 SSC	Coastal salt & freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	Not Expected	Although suitable foraging habitat is present within the project site, no nearby marshes are known and no occurrences have been recorded within five miles of the project site (CDFW 2021a).
<i>Coturnicops noveboracensis</i> yellow rail	None/None G4/S1S2 SSC	Summer resident in eastern Sierra Nevada in Mono County. Small numbers winter regularly in the San Francisco Bay estuary.	Not Expected	Outside of usual species range and no suitable habitat present within the project site.
<i>Elanus leucurus</i> white-tailed kite	None/None G5/S3S4 FP	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Not Expected	No suitable habitat present within the project site.
<i>Falco peregrinus anatum</i> American peregrine falcon	FD/SD G4T4/S3S4 FP	Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	Not Expected	No suitable nesting habitat present within the project site.
<i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat	None/None G5T3/S3 SSC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	Not Expected	No suitable habitat present within the project site.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
<i>Haliaeetus leucocephalus</i> bald eagle	FD/SE G5/S3 FP	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	Not Expected	No suitable nesting or foraging habitat present within the project site.
<i>Laterallus jamaicensis coturniculus</i> California black rail	None/ST G3G4T1/S1 FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Not Expected	No suitable habitat present within the project site
<i>Melospiza melodia pusillula</i> Alameda song sparrow	None/None G5T2?/S2S3 SSC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits Salicornia marshes; nests low in Grindelia bushes (high enough to escape high tides) and in Salicornia.	Not Expected	No suitable habitat present within the project site.
<i>Rallus obsoletus obsoletus</i> California Ridgway's rail	FE/SE G3T1/S1 FP	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	Not Expected	No suitable habitat present within the project site.
<i>Rynchops niger</i> black skimmer	None/None G5/S2 SSC	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs. .	Not Expected	No suitable nesting or foraging habitat present within the project site.
<i>Sternula antillarum browni</i> California least tern	FE/SE G4T2T3Q/S2 FP	Nests along the coast from San Francisco Bay south to northern Baja California. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, land fills, or paved areas.	Not Expected	No suitable habitat present within the project site.
Mammals				
<i>Antrozous pallidus</i> pallid bat	None/None G4/S3 SSC	Found in a variety of habitats including deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts in crevices of rock outcrops, caves, mine tunnels, buildings, bridges, and hollows of live and dead trees which must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Moderate Potential	Suitable habitat is present and there are three recorded occurrences within five miles of the project site (CDFW 2021a).
<i>Corynorhinus townsendii</i> Townsend's big-eared bat	None/None G4/S2 SSC	Occurs throughout California in a wide variety of habitats. Most common in mesic sites, typically coniferous or deciduous forests. Roosts in the open, hanging from walls & ceilings in caves, lava tubes, bridges, and buildings. This species is extremely sensitive to human disturbance.	Moderate Potential	Suitable habitat is present and there are 13 recorded occurrences within five miles of the project site (CDFW 2021a).
<i>Neotoma fuscipes annectens</i> San Francisco dusky-footed woodrat	None/None G5T2T3/S2S3 SSC	Typically found in forest habitats with moderate to dense understory. Can occur in chaparral, riparian woodlands, and coniferous forests, particularly redwood. Builds middens out of grasses, leaves, and woody debris. This subspecies is found only in the San Francisco Bay region.	Present	Nests were observed during reconnaissance surveys.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
<i>Reithrodontomys raviventris</i> salt-marsh harvest mouse	FE/SE G1G2/S1S2 FP	Only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.	Not Expected	No suitable habitat present within the project site.
<i>Sorex vagrans halicoetes</i> salt-marsh wandering shrew	None/None G5T1/S1 SSC	Salt marshes of the south arm of San Francisco Bay. Medium high marsh 6-8 ft above sea level where abundant driftwood is scattered among Salicornia.	Not Expected	No suitable habitat present within the project site.
<i>Taxidea taxus</i> American badger	None/None G5/S3 SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Not Expected	No suitable habitat present within the project site.

Regional Vicinity refers to within a 5-mile search radius of site.

FE = Federally Endangered FT = Federally Threatened FC = Federal Candidate Species FS = Federally Sensitive
SE = State Endangered ST = State Threatened SC = State Candidate SS = State Sensitive
SSC = CDFW Species of Special Concern SFP = State Fully Protected

Appendix B

Arborist Report

Kielty Arborist Services LLC

Certified Arborist WE#0476A

P.O. Box 6187

San Mateo, CA 94403

650-515-9783

June 7th, 2021, Revised August 24th, 2021

Innovative Homes, LLC

c/o: John Suppes

412 Olive Avenue

Palo Alto, CA 94306

Site: 575 Los Trancos Road, Palo Alto CA

Dear Innovative Homes, LLC,

As requested on Friday May 28th, 2021, Kielty Arborist Services visited the above site to inspect and comment on the trees. Your concerns as to the future health and safety of the trees has prompted this letter. A review of the trees and a tree protection plan will be found within this report. Preliminary site plan A1.1 dated 4/8/21 has been reviewed as a part of this report.

Method:

All inspections were made from the ground; the trees were not climbed for this inspection. The trees in question were located on an existing topography map provided by you. The trees were then measured for diameter at 54 inches above ground level (DBH or diameter at breast height). The trees were given a condition rating for form and vitality. The trees condition ratings are based on 50 percent vitality and 50 percent form, using the following scale.

1	-	29	Very Poor
30	-	49	Poor
50	-	69	Fair
70	-	89	Good
90	-	100	Excellent

The height of the trees was measured using a Nikon Forestry 550 Hypsometer. The spread was paced off. Comments and recommendations for future maintenance are provided.

Survey Key:

DBH-Diameter at breast height (54" above grade)

CON- Condition rating (1-100)

HT/SP- Tree height/ canopy spread

*indicates neighbor's trees

P-Indicates protected tree by city ordinance

R-Indicates proposed tree removal

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Survey:

Tree#	Species	DBH	CON	HT/SP	Comments
1P	Coast live oak (<i>Quercus agrifolia</i>)	28.0	65	50/30	Good vigor, good form, near utilities and existing driveway.
2P	Coast live oak (<i>Quercus agrifolia</i>)	19.5	60	45/30	Fair vigor, fair form, codominant at 8 feet with fair union, suppressed.
3P	Coast live oak (<i>Quercus agrifolia</i>)	39.3	70	45/55	Good vigor, fair form, heavy laterals, aesthetically pleasing, recommended to cable and prune heavy leaders.
4P	Valley oak (<i>Quercus lobata</i>)	44.1	60	65/50	Fair vigor, fair form, minor dead wood, 10" and 6" dead limbs observed, codominant at 20 feet, heavy lateral limbs, history of limb loss, recommended to removed dead wood.
5P	Valley oak (<i>Quercus lobata</i>)	22.4	60	55/35	Fair vigor, fair form, suppressed, tall for diameter.
6P	Valley oak (<i>Quercus lobata</i>)	39.4	55	60/60	Fair vigor, poor form, codominant at 6 feet, heavy into site, one side of canopy pruned for utilities, bleeding canker on trunk, recommended to treat canker, prune where heavy and cable where possible.
7P	Coast live oak (<i>Quercus agrifolia</i>)	25.5	60	55/35	Fair vigor, fair form, suppressed, history of limb loss.
8P	Valley oak (<i>Quercus lobata</i>)	25.7	65	60/35	Fair vigor, fair form, suppressed.
9P	Coast live oak (<i>Quercus agrifolia</i>)	20.4	50	35/35	Fair vigor, poor form, heavily suppressed, grows towards street.
10P	Coast live oak (<i>Quercus agrifolia</i>)	35.0	70	60/45	Good vigor, fair form, large 10" dead limb. recommended to remove dead limb.
11P	Coast live oak (<i>Quercus agrifolia</i>)	36.9	45	35/50	Good vigor, poor form, grows horizontally. recommended to prop and prune if retained.
12P	Valley oak (<i>Quercus lobata</i>)	22.5-17.9	65	50/50	Good vigor, fair form, codominant at 2 feet, heavy into site.

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Survey:

<u>Tree#</u>	<u>Species</u>	<u>DBH</u>	<u>CON</u>	<u>HT/SP</u>	<u>Comments</u>
13P	Coast live oak (<i>Quercus agrifolia</i>)	22.8	45	35/30	Good vigor, poor form, topped for utilities.
14	Bay (<i>Umbellularia californica</i>)	12.2-12	30	20/12	Poor vigor, poor form, dead leader, decay at root crown, topped.
15	Coast live oak (<i>Quercus agrifolia</i>)	10.1	50	30/12	Fair vigor, poor form, topped for line clearance.
16P	Coast live oak (<i>Quercus agrifolia</i>)	13.8	50	30/15	Fair vigor, poor form, topped for line clearance.
17P	Valley oak (<i>Quercus lobata</i>)	48.8	70	65/65	Good vigor, good form, mature. recommended to prune where heavy and to cable codominant leaders.
18P	Coast live oak (<i>Quercus agrifolia</i>)	22.0	70	45/30	Good vigor, fair form.
19P	Coast live oak (<i>Quercus agrifolia</i>)	22.6-16.8 13.6	65	45/45	Fair vigor, fair form, multi leader at grade, minor dead wood.
20P	Valley oak (<i>Quercus lobata</i>)	29.8	40	50/40	Fair to poor vigor, poor form, codominant at 10 feet, codominant leader is dead, decay at root crown, recommended to expose root crown and inspect, remove dead codominant leader.
21P	Valley oak (<i>Quercus lobata</i>)	35.2	70	60/60	Fair vigor, fair form, heavy lateral limbs.
22P	Valley oak (<i>Quercus lobata</i>)	26.3	60	60/60	Fair vigor, fair form, suppressed, signs of decay at root crown, recommended to expose root crown and inspect.
23P	Coast live oak (<i>Quercus agrifolia</i>)	17.0	65	50/30	Fair vigor, fair form, slight lean into site.
24P	Coast live oak (<i>Quercus agrifolia</i>)	17.2	50	25/35	Fair vigor, poor form, suppressed, heavy lean well pruned.
25P	Coast live oak (<i>Quercus agrifolia</i>)	37.5	65	60/60	Fair vigor, fair form, codominant at 12 feet. recommended to prune and cable.

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Survey:

<u>Tree#</u>	<u>Species</u>	<u>DBH</u>	<u>CON</u>	<u>HT/SP</u>	<u>Comments</u>
26P	Coast live oak (<i>Quercus agrifolia</i>)	24-10	40	10/40	Good vigor, poor form, grows horizontally, suppressed, recommended to prop and prune.
27P	Coast live oak (<i>Quercus agrifolia</i>)	32.1-22	60	60/60	Fair vigor, fair form, codominant at grade. recommended to cable and prune codominant leaders.
28	Bay (<i>Umbellularia californica</i>)	14.9	50	45/30	Fair vigor, fair form, suppressed.
29	Black walnut (<i>Juglans nigra</i>)	29.6	30	50/45	Poor vigor, poor form, in decline.
30P	Coast live oak (<i>Quercus agrifolia</i>)	19.4	60	50/35	Good vigor, fair form, codominant at 20 feet with poor union, recommended to prune and cable.
31	Coast live oak (<i>Quercus agrifolia</i>)	7.5	50	30/15	Fair vigor, fair form, suppressed.
32	Black walnut (<i>Juglans nigra</i>)	12.0	60	45/25	Fair vigor, fair form.
33	Bay (<i>Umbellularia californica</i>)	8.0	50	30/15	Fair vigor, fair form, suppressed.
34	Bay (<i>Umbellularia californica</i>)	9.0	50	30/15	Fair vigor, fair form, suppressed.
35	Bay (<i>Umbellularia californica</i>)	10.0	50	45/20	Fair vigor, fair form, suppressed.
36P	Coast live oak (<i>Quercus agrifolia</i>)	24.8	60	55/40	Fair vigor, fair form, heavy lean, on creek bank, crown reduction pruning recommended.
37R	Red willow (<i>Salix laevigata</i>)	6-3	0	20/12	DEAD.
38P	Coast live oak (<i>Quercus agrifolia</i>)	34.3	70	55/50	Good vigor, fair form.

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Survey:

<u>Tree#</u>	<u>Species</u>	<u>DBH</u>	<u>CON</u>	<u>HT/SP</u>	<u>Comments</u>
39	Big leaf maple (<i>Acer macrophyllum</i>)	29.2	30	50/45	Poor vigor, poor form, large leader failure in past, in decline.
40	Bay (<i>Umbellularia californica</i>)	10-12	55	40/30	Fair vigor, fair form, on creek bank, codominant at grade.
41	Bay (<i>Umbellularia californica</i>)	8-10	55	40/20	Fair vigor, fair form, suppressed, on creek bank.
42	Red willow (<i>Salix laevigata</i>)	16.3	30	30/15	Poor vigor, poor form, heavy decay on trunk, in decline.
43R	Olive (<i>Olea europaea</i>)	42.1	20	30/25	Poor vigor, poor form, in decline, nearly dead.
44R	Olive (<i>Olea europaea</i>)	30.2	20	30/25	Poor vigor, poor form, in decline, nearly dead.
45R	Black walnut (<i>Juglans nigra</i>)	12.6	65	30/25	Good vigor, good form.
46P	Coast live oak (<i>Quercus agrifolia</i>)	33.5	50	60/50	Fair vigor, fair form, decay at root crown, recommended to expose root crown and inspect.
47P/R	Coast live oak (<i>Quercus agrifolia</i>)	36.0	0	50/60	DEAD
48P	Coast live oak (<i>Quercus agrifolia</i>)	36.0	10	15/15	Fair vigor, poor form, failed tree, stump re sprout.
49P	Coast live oak (<i>Quercus agrifolia</i>)	29.8	70	50/40	Good vigor, good form, dense canopy.
50*P	Coast live oak (<i>Quercus agrifolia</i>)	30est	80	45/40	Good vigor, good form.
51P	Coast live oak (<i>Quercus agrifolia</i>)	16.2	65	30/20	Good vigor, fair form, suppressed.
52P	Coast live oak (<i>Quercus agrifolia</i>)	10-8	65	30/20	Good vigor, fai form, suppressed.

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Survey:

<u>Tree#</u>	<u>Species</u>	<u>DBH</u>	<u>CON</u>	<u>HT/SP</u>	<u>Comments</u>
53	Coast live oak <i>(Quercus agrifolia)</i>	11.1	50	20/30	Good vigor, poor form, suppressed, leans.
54P	Coast live oak <i>(Quercus agrifolia)</i>	16.2	60	35/30	Good vigor, poor form, suppressed, leans.
55	Bay <i>(Umbellularia californica)</i>	66.0	40	70/40	Fair to poor vigor, poor form, multi leader at 5 feet, ganoderma fungus at base, recommended to prune out dead wood, and test for extent of decay.
56	Bay 10-6-9-7-10-4-4-11 <i>(Umbellularia californica)</i>		50	50/30	Fair vigor, poor form, multi at base.
57	Bay 13-12-6 <i>(Umbellularia californica)</i>		50	45/30	Fair vigor, poor form, multi at base.
58	Bay 6.0 <i>(Umbellularia californica)</i>		40	30/15	Fair vigor, poor form, suppressed.
59	Bay 28.6 <i>(Umbellularia californica)</i>		50	60/30	Fair vigor, fair form, codominant at 8 feet.
60	Redwood 8.1 <i>(Sequoia sempervirens)</i>		80	25/10	Good vigor, good form, recently planted.
61	Redwood 6.4 <i>(Sequoia sempervirens)</i>		80	18/10	Good vigor, good form, recently planted.
62	Redwood 10.3 <i>(Sequoia sempervirens)</i>		80	18/10	Good vigor, good form, recently planted.
63	Redwood 5.1 <i>(Sequoia sempervirens)</i>		80	18/10	Good vigor, good form, recently planted.
64	Redwood 5.5 <i>(Sequoia sempervirens)</i>		80	18/10	Good vigor, good form, recently planted.
65	Redwood 9.2 <i>(Sequoia sempervirens)</i>		80	18/10	Good vigor, good form, recently planted.
66	Redwood 8.3 <i>(Sequoia sempervirens)</i>		80	18/10	Good vigor, good form, recently planted.

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Survey:

Tree#	Species	DBH	CON	HT/SP	Comments
67	Redwood (<i>Sequoia sempervirens</i>)	6.7	80	18/10	Good vigor, good form, recently planted.
68	Redwood (<i>Sequoia sempervirens</i>)	9.9	80	18/10	Good vigor, good form, recently planted.
69	Redwood (<i>Sequoia sempervirens</i>)	5.5	80	18/10	Good vigor, good form, recently planted.
70	Bay (<i>Umbellularia californica</i>)	7-25-10-13-18-30-17	50	20/35	Fair to poor vigor, poor form, multi leader at grade.
71	White alder (<i>Alnus rhombifolia</i>)	24.2	45	60/25	Fair vigor, poor form, suppressed, leans against bay tree.
72	Coast live oak (<i>Quercus agrifolia</i>)	10.1	60	45/25	Fair vigor, fair form, suppressed.
73	Coast live oak (<i>Quercus agrifolia</i>)	8.6	60	45/25	Fair vigor, fair form, suppressed.
74	Coast live oak (<i>Quercus agrifolia</i>)	5.1	50	18/12	Fair vigor, poor form, suppressed.
75	Coast live oak (<i>Quercus agrifolia</i>)	5.3	50	15/12	Fair vigor, poor form, suppressed.
76	Elderberry (<i>Sambucus nigra</i>)	8-7	20	25/20	Poor vigor, poor form.
77	Black walnut (<i>Juglans nigra</i>)	5.0	60	40/15	Good vigor, fair form.
78	Bay (<i>Umbellularia californica</i>)	13-14-11	50	45/35	Fair vigor, poor form, multi leader at grade.
79	Bay (<i>Umbellularia californica</i>)	8.0	30	20/10	Fair vigor, poor form, topped for utilities, next to driveway.
80P	Coast live oak (<i>Quercus agrifolia</i>)	25.8	45	25/35	Good vigor, poor form, topped for utilities, next to driveway.

575 Los Trancos

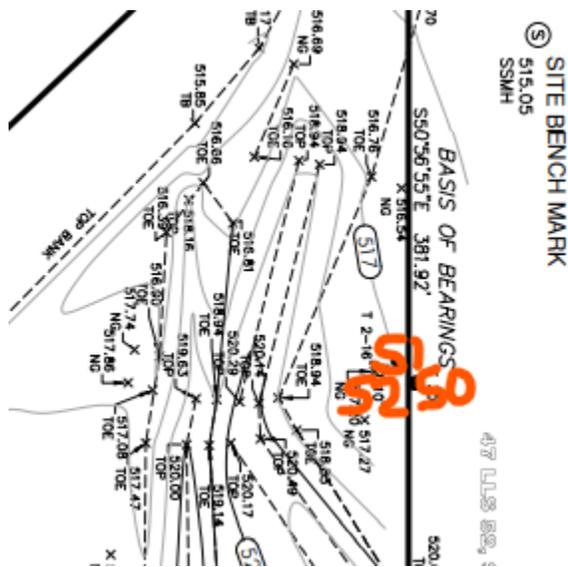
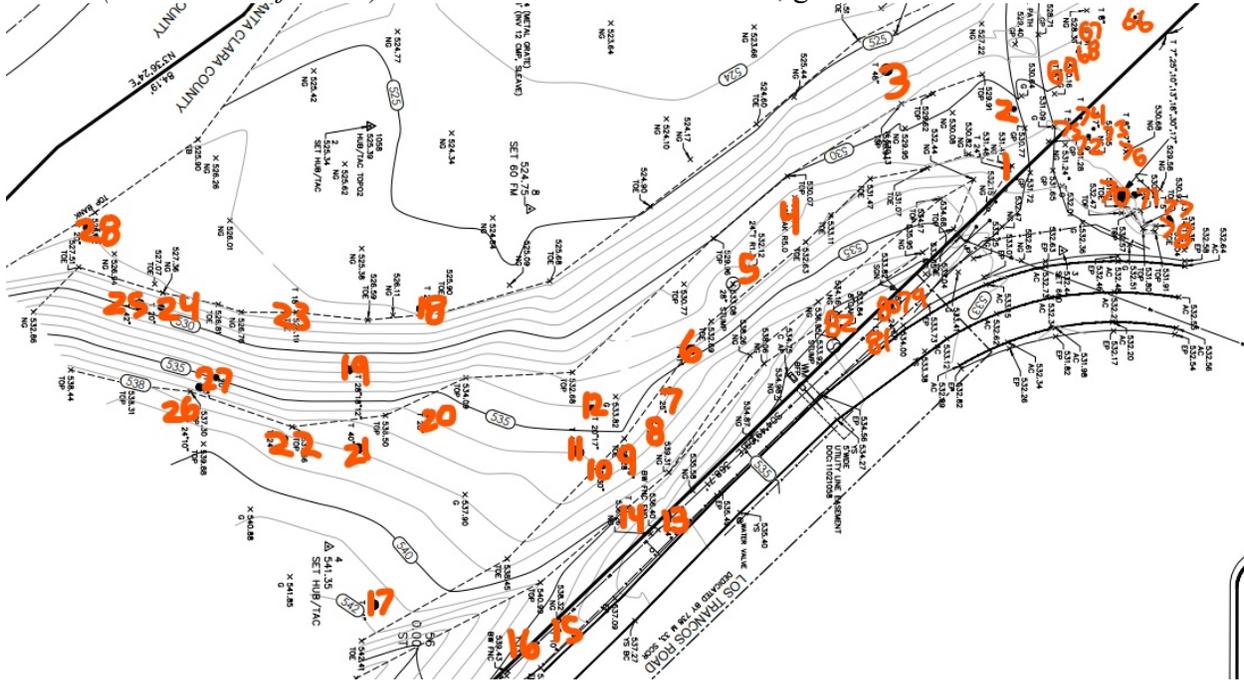
(8)

Survey:

Tree# Species DBH CON HT/SP Comments

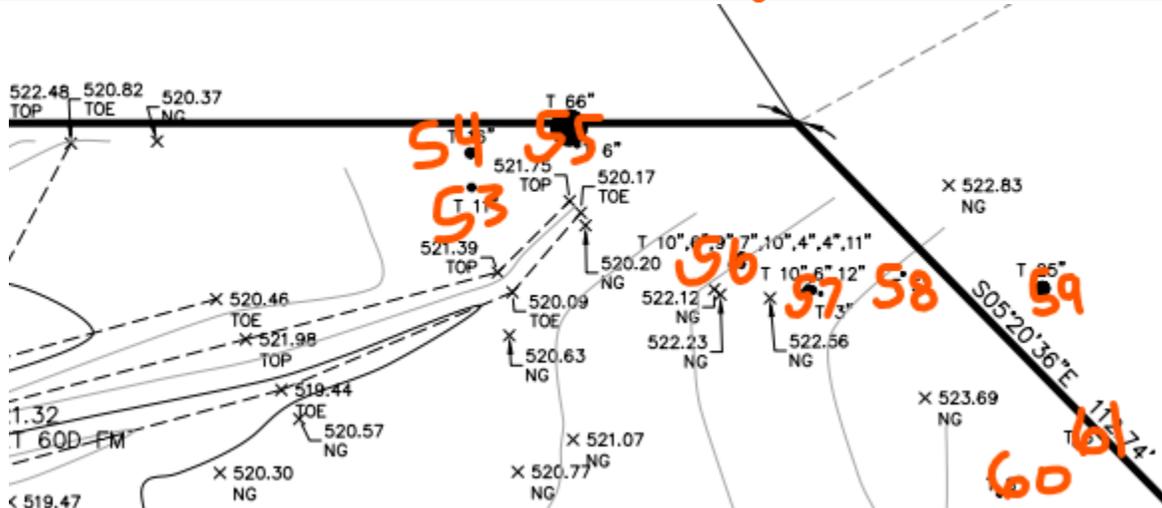
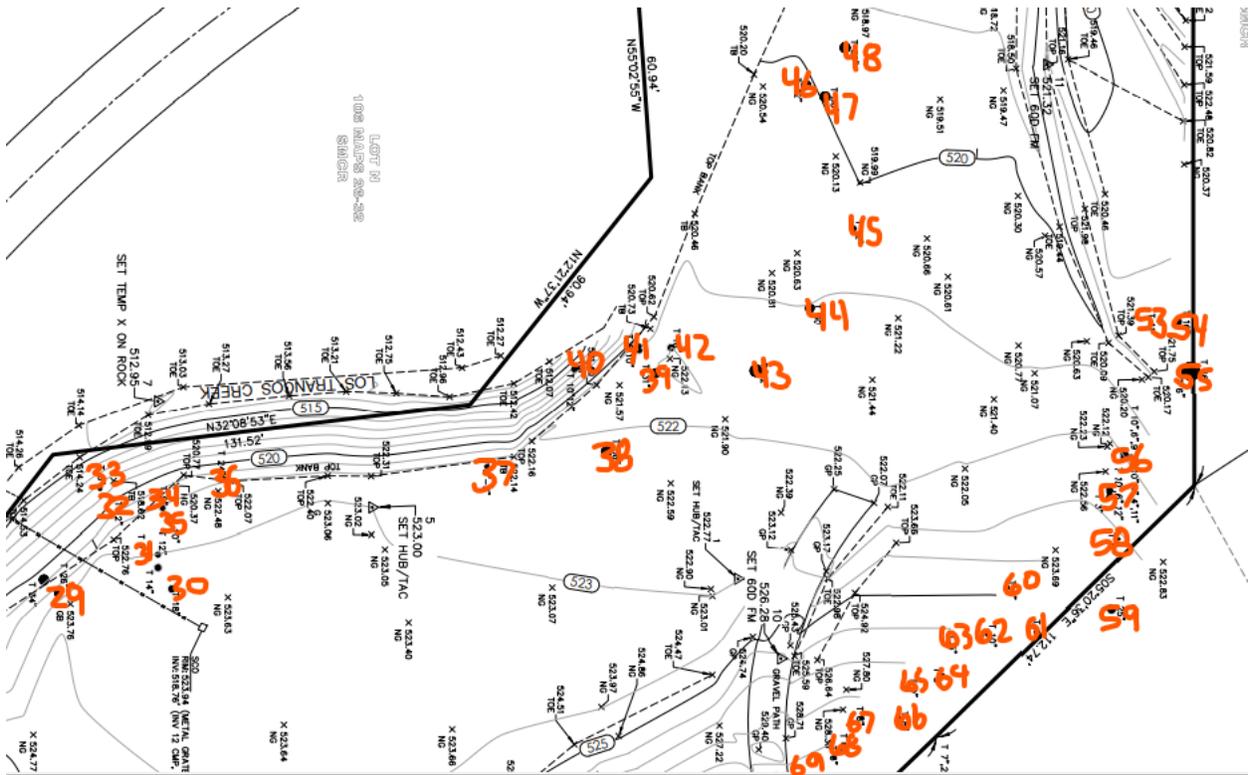
81P Coast live oak 13.3 45 20/15 Fair vigor, poor form, topped for utilities.
(*Quercus agrifolia*)

82 Buckeye 8.0 45 18/12 Fair vigor, poor form, under utilities, poor location, grows towards road.
(*Aesculus californica*)



⑤ SITE BENCH MARK
515.05
SSMH

47 LLS 82, 1



Showing tree locations

Non-protected trees to be removed:

Red willow tree #37 is dead and should be removed as soon as possible as it is hazardous and a fire hazard for the site.



Olive trees #43 and #44 are in very poor condition. These trees are expected to be dead within the next few months. The trees are within the proposed driveway area. Tree removal and replacement is recommended. Black walnut tree #45 is in fair condition. This tree is also proposed for removal to facilitate the proposed construction of the driveway.

Showing nearly dead olive trees #43 and #44



Protected trees proposed for removal:

Coast live oak tree #47 is dead. The tree should be removed as soon as possible as it is a fire hazard for the site.

Showing oak tree #47

Tree replacement measures:

The tree canopy replacement standard as seen in Palo Alto’s Tree Technical Manual was used to establish the number of replacement trees required on site. Below is a list of the canopy distance for each tree to be removed followed by the number of replacement trees required to fulfill city requirements.

Red Willow #37=12’ wide canopy

Replacement trees= The tree is dead. No replacement trees are recommended.

Olive tree #43= 25’ wide canopy

Replacement trees= Three 24” box size trees or two 36” box trees

Olive tree #44= 25’ wide canopy

Replacement trees= Three 24” box size trees or two 36” box trees

Black walnut tree #45= 25’ wide canopy

Replacement trees= Three 24” box size trees or two 36” box trees

Coast live oak tree #47= 60’ wide canopy

Replacement trees= The tree is dead. No replacement trees are recommended.

Tree Canopy - Replacement Standard

COLUMN 1	COLUMN 2	COLUMN 3
Canopy of the Removed Tree (Avg. dist. across the canopy*)	Replacement Trees	Alternative Tree
4'-9'	Two 24" Box Size (minimum)	One 36" Box Size
10'-27'	Three 24" Box Size	Two 36" Box Size
28'-40'	Four 24" Box Size	Two 48" Box Size
40'-56'	Six 24" Box Size	Two 48" Box & Two 36" Box Size
56'-60'	Two 24" Box & Two 36" Box + Two 48" Box Size	**
60'+	**	**

Showing tree canopy replacement standard used



Showing large oaks on site

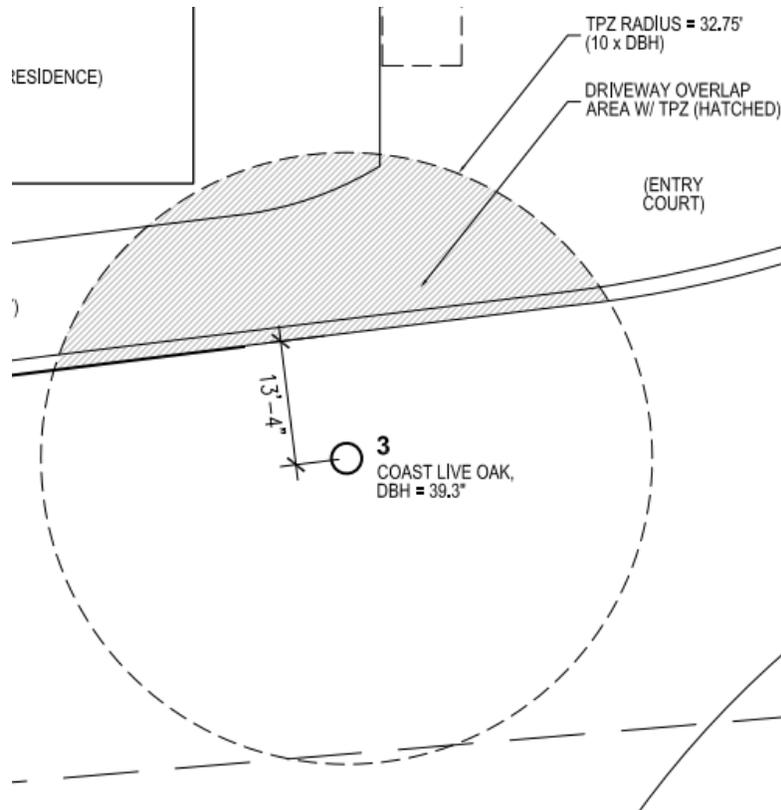
Summary of retained trees:

Many large mature native oak trees were observed on site. Between the home and the proposed building pad are where the larger oak trees exist. These trees have grown in a grove like fashion with trees developing leans and heavy lateral limbs. Crown reduction pruning and cabling of codominant leaders is recommended for many of the larger oak trees on site. These recommendations can be seen in bold within the survey portion of the report. Oak trees #20, 22, and 46 are recommended to have their root crowns exposed and inspected as signs of possible root rot disease were observed. A large ganoderma fungus and dead wood was observed on the root crown of bay tree #55. A drill test and root crown exposure is recommended to explore the extent of decay at the root crown. A general crown cleaning to remove dead wood is recommended for the oak trees to be retained as little to no tree maintenance has taken place on the site. The retained oak trees are recommended to be annually inspected by a Certified Arborist for any needed work. The area underneath the dripline of the retained oak trees is recommended to maintain a dry landscape.

Impacts/Recommendations:

Preliminary site plan A1.1 was reviewed for writing this section of the report. The retained trees are all a fair distance away from the proposed work on site. Oak tree #3 is shown at 13 feet from the proposed driveway. Oak tree #4 is shown at 21 feet from the secondary driveway. The driveway is shown on a sloped area. It is recommended to use a retaining wall to reduce any grading needed on the tree side of the secondary driveway and main driveway when near oak trees #3 and #4. This will help to reduce impacts as much as possible due to the grading that would be needed if the driveway was to be built without a retaining wall. Excavation for the retaining wall is recommended to be done by hand while under the Project Arborist supervision when working within 10 times the diameter of the protected trees on site. Roots encountered will need to be cleanly cut. Cut root ends will need to be kept moist by covering the cut root ends with layers of wetted down burlap. A soaker hose is recommended to be installed at the retaining wall cut once the retaining wall has been built. The soaker hose is recommended to be turned on every week during the first dry season following the retaining wall build. After one year the soaker hose shall be permanently suspended. The two oak trees will need to be inspected monthly during the required monthly inspections during the proposed construction. Once construction has been completed, the trees are recommended to be inspected annually in the spring. Impacts are expected to be minor.

Coast Live Oak tree #3 is the closest tree to the proposed driveway. At 10 times the tree’s diameter the tree protection zone radius is 32.75 feet or a 3370 square foot area. The proposed driveway and retaining wall overlaps this area by 838 square feet. The tree’s root zone will be encroached by 24.9% as shown in the provided diagram below. This is within Best Management Practices acceptable threshold for a species with a good tolerance to construction impacts and in good condition (or 25%). The recommendations stated in the last paragraph will help to keep impacts at a minor level. This tree is also recommended to be deep water fertilized anytime between fall and early spring.



TREE #3 PROTECTION ZONE AREA = 3370 SF
 DRIVEWAY OVERLAP AREA = 838 SF
 TPZ % OVERLAP = 838 / 3370 = 24.9%

Showing percentage of root zone impacted for Oak tree #3

The proposed driveway follows the same direction of the existing driveway near oak trees #1 and #2. Excavation for the new driveway when within the dripline of oak trees #1 and #2 shall not exceed more than 8” under existing grade. The finished grade of the driveway near these two trees is recommended to be at the existing grade or higher up. This will help to reduce impacts to the trees. Roots encountered measuring 2” in diameter or larger will need to be retained within the base rock section by packing base rock around roots. The existing driveway near these trees may have helped to reduce root growth in the area of proposed work through compaction. All excavation underneath the dripline of a protected tree will need to be carried out by hand while under the direct supervision of the Project Arborist.

A building wall is located at 11 feet from oak tree #30. Hand excavation under the Project Arborist supervision is recommended when working within 10 times the tree's diameter. Encountered roots must be cleanly cut using a hand saw or loppers. Once the wall has been built a soaker hose is recommended to be installed at the wall cut. The soaker hose is recommended to be turned on every week during the first dry season following the wall build. After one year the soaker hose shall be permanently suspended. The oak tree will need to be inspected monthly during the required monthly inspections during the proposed construction. Once construction has been completed, the tree is recommended to be inspected annually in the spring.

Tree Protection Plan:

Tree protection zones should be established and maintained throughout the entire length of the project. Fencing for the protection zones should be 6-foot-tall metal chain link type supported by 2-inch diameter metal poles pounded into the ground to a depth of no less than 2 feet. The support poles should be spaced no more than 10 feet apart on center. The location for the protection fencing for the protected trees on site should be placed at the tree driplines where possible (type 1 tree protection fencing). All other non-protected trees are recommended to be protected by fencing placed at the dripline as well. No equipment or materials should be stored or cleaned inside protection zones. Signs should be placed on fencing signifying "Tree Protection Zone - Keep Out". If fencing needs to be reduced for access or any other reasons, the non-protected areas must be protected by a landscape buffer. All tree protection and inspection schedule measures, design recommendations, watering and construction scheduling shall be implemented in full by the owner and contractor.



IMAGE 2.15-1
Tree Protection Fence at the Dripline



IMAGE 2.15-2
Tree Protection Fence at the Dripline

• Type 1 Tree Protection

The fences shall enclose the entire area under the **canopy dripline or TPZ** of the tree(s) to be saved throughout the life of the project, or until final improvement work within the area is required, typically near the end of the project (see *Images 2.15-1 and 2.15-2*). Parking Areas: If the fencing must be located on paving or sidewalk that will not be demolished, the posts may be supported by an appropriate grade level concrete base.

Showing type 1 tree protection fencing

Landscape Buffer

Where tree protection does not cover the entire root zone of the trees at the dripline or when a smaller tree protection zone is needed for access, a landscape buffer consisting of wood chips spread to a depth of six inches with plywood or steel plates placed on top will be placed where foot traffic is expected to be heavy. The landscape buffer will help to reduce compaction to the unprotected root zone. If plywood is used the pieces of plywood shall be attached in a way that minimizes movement.

Tree Pruning

During construction any Pruning will be supervised by the site arborist and must stay underneath 25% of the tree total foliage.

Root Cutting

Any roots to be cut should be monitored and documented. Large roots or large masses of roots to be cut should be inspected by the site arborist. The site arborist may recommend irrigation or fertilizing at that time. Cut all roots clean with a saw or loppers. Roots to be left exposed for a period of time should be covered with layers of burlap and kept moist. Roots to be cut measuring larger than 1.5" in diameter shall be shown to the Project Arborist before being cut.

Trenching and Excavation

Trenching for irrigation, electrical, drainage or any other reason, should be located outside of the trees calculated root zone of 10 times the tree diameters when possible. If not possible, trenching shall be hand dug when beneath the dripline of desired trees. Any excavation underneath the dripline of a protected tree will need to be supervised by the Project Arborist. Hand digging and careful placement of pipes below or beside protected roots will dramatically reduce root loss, thus reducing trauma to desired trees. Trenches should be back filled as soon as possible using native materials and compacted to near original levels. Trenches to be left open with exposed roots shall be covered with burlap and kept moist. Plywood laid over the trench will help to protect roots below. Roots retained within trenches are recommended to be wrapped in layers of wetted down burlap to avoid root desiccation.

Irrigation

Normal irrigation should be maintained throughout the entire length of the project for the imported trees. Irrigation should consist of surface flooding, with enough water to wet the entire root zone every other week during the dry season. The native trees on site (oaks, bays, and buckeyes) shall only be irrigated during the months of May and September to combat a prolonged drought period, or if their root zones are traumatized.

Grading

All existing grades underneath the dripline of a protected tree shall remain as is where possible.

Inspections

The site will be inspected after the tree protection measures are installed and before the start of construction. Monthly inspections are mandatory for a site such as this. Inspections will be carried out during the first week of each month. The inspections will be documented with inspection letters being provided to the owner, contractor, and City Arborist. Other inspections will be carried out on an as needed basis. The monthly inspections are required by the city of Palo Alto as a condition of approval. It is the contractor's responsibility to notify the site arborist when construction is to start, and whenever there is to be work performed within the dripline of a protected tree on site at least 48 hours in advance. During the site visits the site arborist will offer mitigation measures specific to the work completed. Kielty Arborist Services can be reached at 650-515-9783 or 650-532-4418, or by email at kkarbor0476@yahoo.com. A final inspection letter will also be required by the city before final occupancy.

Further information about tree protection can be found in the Tree Technical Manual provided by the city of Palo Alto. This information should be kept on site at all times. The information included in this report is believed to be true and based on sound arboricultural principles and practices.

Sincerely,

Kevin R. Kielty Certified Arborist WE#0476A



Kielty Arborist Services

P.O. Box 6187
San Mateo, CA 94403
650-515-9783

ARBORIST DISCLOSURE STATEMENT

Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of trees, and attempt to reduce the risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or seek additional advice.

Arborists cannot detect every condition that could possibly lead to the structural failure of a tree. Trees are living organisms that fail in ways we do not fully understand. Conditions are often hidden within trees and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specified period of time. Likewise, remedial treatments, like a medicine, cannot be guaranteed.

Treatment, pruning, and removal of trees may involve considerations beyond the scope of the arborist's services such as property boundaries, property ownership, site lines, disputes between neighbors, landlord-tenant matters, etc. Arborists cannot take such issues into account unless complete and accurate information is given to the arborist. The person hiring the arborist accepts full responsibility for authorizing the recommended treatment or remedial measures.

Trees can be managed, but they cannot be controlled. To live near a tree is to accept some degree of risk. The only way to eliminate all risks is to eliminate all trees.

Arborist: Kevin Kielty
Kevin R. Kielty
Date: August 24th, 2021

Appendix C

Geotechnical Engineering Study



April 9, 2021

File No.: 304309-001

Mr. John Suppes
Clarum Homes
P.O. Box 60970
Palo Alto, CA 94306

PROJECT: PROPOSED SINGLE FAMILY RESIDENCE and ADU
575 LOS TRANCOS ROAD
PALO ALTO, CALIFORNIA

SUBJECT: Geotechnical Engineering Study

REF.: Revised Proposal to Perform a Geotechnical Engineering Study and Liquefaction Analysis, Proposed Single Family Residence and ADU, 575 Los Trancos Road, Palo Alto, California, by Earth Systems Pacific, dated November 20, 2020, revised December 4, 2020.

Soil Investigation, Proposed Single-Family Residence, Los Trancos Property (APN 182-46-003), Palo Alto, California, by Harding Lawson Associates, dated January 26, 1990.

Dear Mr. Suppes:

In accordance with your authorization of the above referenced proposal, this geotechnical engineering study has been prepared by Earth Systems Pacific (Earth Systems) for use in the development of plans and specifications for the proposed single family residence and accessory dwelling unit (ADU) in Palo Alto, California. Preliminary geotechnical recommendations for site preparation and grading; foundations; slabs-on-grade; exterior flatwork; swimming pool; utility trench backfill; site drainage and finish improvements; and observation and testing are presented herein.

We appreciate the opportunity to have provided services for this project and look forward to working with you again in the future. Please do not hesitate to contact this office if there are any questions concerning this report.

Sincerely,
Earth Systems Pacific


Phillip Penrose
Staff Engineer

Doc. No.: 2104-004.SER/kt

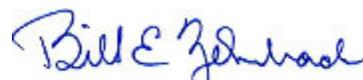

Bill Zehrbach, GE 926
Principal Engineer





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Boring Logs

Harding Lawson Associates

1990

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Logs of Test Borings

Earth Systems Pacific

2021

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Summary of Laboratory Test Results

APPENDIX D

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1.0 INTRODUCTION

Site Setting

The subject property is an irregular shaped, 5.47-acre parcel located at 575 Los Trancos Road in Palo Alto, California (APN 182-46-012). The site has a latitude of 37.3666°N and a longitude of 122.2012°W. The general location of the site is shown on the Site Location Map (Figure 1).

Site Description

The subject property is located on the west side of Los Trancos Road, about a half mile south of the intersection of Los Trancos Road and Alpine Road. The property is bounded by Los Trancos Road to the east, Los Trancos Creek and Valley Oak Street to the west, an existing residence to the north and undeveloped land to the south.

The property is currently undeveloped. The center of the parcel is covered with grasses and the property borders are covered by trees and dense brush. Los Trancos Creek runs along the western edge of the property. An existing gravel road starts at the northeastern corner of the property off Los Trancos Road and grants access to the property and the neighboring property to the north. The center of the lot, where the proposed developments lie, is mostly flat. The lot slopes towards the creek on the west side and slopes upwards towards Los Trancos Road on the east side.

Planned Development

We understand that you plan to construct a new residence in approximately the center of the parcel. The proposed ADU is expected to be constructed on the southern portion of the parcel and the swimming pool is proposed on the southwestern portion of the parcel. See Figure 2, Site Plan. Based on the preliminary plans by *LNAI Architecture* (dated February 10, 2021), it is our understanding that the new residence will be a two-story building with a partial second story.

Scope of Services

The scope of work for the geotechnical engineering study included a general site reconnaissance, evaluation of the subsurface soil and groundwater conditions from a geotechnical engineering standpoint by drilling borings and laboratory testing of selected samples, engineering analysis of the collected data, and preparation of this report. The analysis and subsequent recommendations were based on our understanding of the proposed development at the subject site.



The report and recommendations are intended to comply with the considerations of Section 1803 of the California Building Code (CBC), 2019 Edition, and common geotechnical engineering practice in this area at this time under similar conditions. The tests were performed in general conformance with the standards noted, as modified by common geotechnical practice in this area at this time under similar conditions.

Preliminary geotechnical recommendations for site preparation and grading, foundations, slabs-on-grade, exterior flatwork, swimming pool, utility trench backfill, site drainage and finish improvements, and geotechnical observation and testing are presented to guide the development of project plans and specifications. It is our intent that this report be used by the client to form the geotechnical basis of the design of the project as described herein, and in the preparation of plans and specifications.

Detailed evaluation of the site geology and potential geologic hazards, and analyses of the soil for mold or other microbial content, asbestos, percolation rates, corrosion potential, radioisotopes, hydrocarbons, or other chemical properties are beyond the scope of this report. This report also does not address issues in the domain of contractors such as, but not limited to, site safety, loss of volume due to stripping of the site, shrinkage of soils during compaction, excavatability, shoring, temporary slope angles, and construction means and methods. Ancillary features such as swimming pools, temporary access roads, fences, light poles, and non-structural fills are not within our scope and are also not addressed.

To verify that pertinent issues have been addressed and to aid in conformance with the intent of this report, it is requested that final grading and foundation plans be submitted to this office for review. In the event that there are any changes in the nature, design, or locations of improvements, or if any assumptions used in the preparation of this report prove to be incorrect, the conclusions and recommendations contained herein should not be considered valid unless the changes are reviewed, and the conclusions of this report are verified or modified in writing by the Geotechnical Engineer. The criteria presented in this report are considered preliminary until such time as they are verified or modified in writing by the Geotechnical Engineer in the field during construction.

2.0 GEOLOGIC SETTING

According to the Geologic Map of the Palo Alto 30' x 60' Quadrangle, California (Brabb et. al, 2000), the site is mapped as being underlain by Pleistocene older alluvial fan deposits (Qpoaf). The site is located in a liquefaction hazards zone as delineated by the State of California and the County of Santa Clara.



The entire San Francisco Bay Area is considered to be an active seismic region due to the presence of several active faults. Three northwest-trending major earthquake faults that are responsible for the majority of the movement on the San Andreas fault system extend through the Bay Area. They include the San Andreas fault, the Hayward fault and the Calaveras fault, which are respectively located approximately 0.4 miles to the southwest, 19.3 miles to the northeast and 22.4 miles to the northeast. The Monte Vista-Shannon fault is located approximately 1.4 miles northeast of the site. Using information from recent earthquakes, improved mapping of active faults, and a new model for estimating earthquake probabilities, the 2014 Working Group on California Earthquake Probabilities updated the 30 year earthquake forecast for California. They concluded that there is a 72 percent probability (or likelihood) of at least one earthquake of magnitude 6.7 greater striking somewhere in the San Francisco Bay region before 2043. A summary of the significant faults in the near vicinity of the site are listed below.

Major Active Faults

Fault	Distance from Site (miles)	Probability of $M_w \geq 6.7$ within 30 Years ¹
San Andreas	0.4 (SW)	6%
Monte-Vista Shannon	1.9 (NE)	1%
Hayward	19.3 (NE)	21%
Calaveras	22.4 (NE)	7%

¹ Working Group on California Earthquake Probabilities, 2015

3.0 FIELD INVESTIGATION AND LABORATORY TESTING

Previous Geotechnical Studies

Harding Lawson Associates prepared a Soil Investigation for the subject lot dated January 26, 1990. Their investigation included the drilling of 5 exploratory borings on the lot at the approximate locations indicated on Figure 2, Site Plan. The logs of these borings are presented in Appendix A.

Subsurface Exploration (Current)

The subsurface exploration for this study consisted of drilling two exploratory borings at the site on February 23, 2021. The approximate locations of the test borings are shown on (Figure 2).

The borings were advanced to depths of 34 feet below ground surface (bgs). The drilling process consisted of using a truck-mounted drilling rig equipped with 8-inch diameter hollow stem augers. Once reaching the desired depth, a standard Mod-Cal or SPT sampler, connected to steel



rods was lowered into the hole. The samplers were driven into undisturbed ground with a 140-pound, safety hammer falling about 30 inches per drop. The samplers were driven up to 18 inches and the hammer blows required to drive every six inches of the samplers were recorded and are presented on the boring logs. The number of blows required to drive the final 12 inches of the sampler into the undisturbed ground were used as Penetration Resistance and this was used to interpret soil consistency/density. The borings were then backfilled with lean cement grout. The boring logs show soil description including: color, major and minor components, USCS classification, changes in soil conditions with depth, moisture content, consistency/density, plasticity, sampler type, and sampling depths and laboratory test results. Copies of the logs of boring drilled for this investigation are presented in Appendix B.

Soils encountered in the borings were logged in general accordance with the Unified Soil Classification System. An Earth Systems engineer prepared the logs and retained samples for laboratory testing.

Subsurface Profile

The borings drilled at the site revealed the presence of loose to very dense sand with variable percentages of clay and gravel. This is consistent with the geological mapping by Brabb et al.(2000). In Boring B-1, the upper 5 feet consisted of medium dense well graded sand with gravel. Below the well-graded sand, a clayey sand layer with variable percentages of gravel was encountered and extended to the bottom of the boring at 34 feet bgs. Some cobbles were encountered in the boring at 7 feet bgs. In Boring B-2, loose clayey sand with gravel was encountered at the surface and extended to 17 feet bgs. The sand became denser at approximately 7 feet bgs. At 17 feet bgs, a medium dense, well graded sand with clay and gravel layer was encountered. The clay content increased at 23 feet and decreased again at 28 feet bgs to well graded sand with clay and gravel, which extended to the bottom of the boring at 34 feet bgs.

Groundwater was encountered at 17 to 18 feet bgs in the borings drilled at the site to the maximum depth of exploration of 34 feet bgs.

Laboratory Testing

Five liner samples were tested to measure moisture content and dry density (ASTM D 2216-17 and D 2937-17), and four samples were tested to determine the percentage of material passing the minus #200 sieve (ASTM D 1140-17). Copies of the laboratory test results are included in Appendix C.



4.0 DATA ANALYSIS

Subsurface Soil Classification

Based on the subsurface data collected as a part of our subsurface exploration and our review of the published geologic literature, the site is assigned to Site Class C (very dense soil and soft rock) as defined by Table 20.3-1 of the ASCE 7-16.

Seismic Design Parameters

The following seismic design parameters represent the general procedure as outlined in Section 1613 of the CBC and in ASCE 7. The values determined below are based on the 2009 National Earthquake Hazard Reduction Program (NEHRP) maps and were obtained using the United States Geological Survey's Design Maps Web Application.

Summary of Seismic Parameters - CBC 2019 (Site Coordinates 37.3859°N, 122.1399°W)

Parameter	Design Value
Site Class	C
Mapped Short Term Spectral Response Parameter, (S_s)	2.549
Mapped 1-second Spectral Response Parameter, (S_1)	1.008
Site Coefficient, (F_a)	1.2
Site Coefficient, (F_v)	1.4
Site Modified Short Term Response Parameter, (S_{Ms})	3.059
Site Modified 1-second Response Parameter, (S_{M1})	1.411
Design Short Term Response Parameter, (S_{Ds})	2.04
Design 1-second Response Parameter, (S_{D1})	0.94
Seismic Design Category	E

Static Settlement

Based on our understanding of the proposed development and because the building loads are anticipated to be fairly light, anticipated static settlements are on the order of 1 inch with a differential settlement of ½ inch.

Liquefaction

Soil liquefaction is a phenomenon where saturated granular soils undergo a substantial loss of strength due to increased pore water pressure resulting from cyclic stress applications induced by earthquakes or other vibrations. In this process, the soil acquires mobility sufficient to permit both vertical and horizontal movements, which may result in significant deformations. Soils most



susceptible to liquefaction are loose, uniformly graded, fine-grained sands. In addition, recent literature indicates that fine grained soils may also be susceptible to liquefaction or cyclic strain softening. Examples of highly susceptible fine-grained soil include “non-plastic silts and clayey silts of low plasticity ($PI < 12$) at high water content to liquid limit ratios ($w_c/LL > 0.85$).” Examples of soils moderately susceptible to liquefaction include “clayey silts and silty clays of moderate plasticity ($12 < PI < 18$) at natural water content and Liquid Limits ratios (w_c/LL) greater than 0.80.” (Bray and Sancio, 2006). It is generally acknowledged that liquefaction will not affect surface improvements if these deposits are located at a depth greater than 50 feet below the ground surface. In the deeper deposits, the greater overburden pressure is sufficient to prevent liquefaction effects from occurring.

Analysis Parameters

The referenced 1990 report by Harding Lawson Associates, gave a historic groundwater level of 8 feet bgs from an unknown reference, thus we used this value in our analysis. It should be noted that this value is likely conservative. According to United States Geological Survey’s (USGS) Unified Hazard Tool, the predominant earthquake contributor is the San Andreas fault with mean magnitude using deaggregation of 7.8. The liquefaction analysis was performed utilizing the peak ground acceleration of 1.16g (PGAm) based on the Office of Statewide Health Planning and Development Seismic Design Maps Web Application. Any sand-like deposit (Soil Behavior Type Index, $I_c < 2.6$) below the groundwater table was assumed to be potentially liquefiable. The liquefaction analysis was based on the methodologies suggested by Idriss and Boulanger (2008 and 2014). The loose sand layers above the water table are subject to dry sand settlement. A two-thirds reduction in the PGA was used for the dry sand settlement, thus a separate analysis is presented in Appendix D.

Analysis Results

The calculated seismically induced settlement (liquefaction and dry sand settlement) was calculated to be approximately 1 to 1.7 inches. The liquefaction and dry sand analysis results are included in Appendix D.

Discussion

In general, there is a high potential of granular deposits to liquefy during a seismic event. Seismically induced settlements are expected to be on the order of 1.7 inches total or less and approximately 1 inch of differential settlement during a design level seismic event.

The creek at the rear of the property is approximately 80 feet from the building and is approximately 10 feet high. Estimates of lateral displacement are approximately 10 inches at the site. The zone of soil susceptible to liquefaction and lateral displacement are present at depths



from 19 to 23 feet at Boring B-1 and appear to be at an elevation below the channel. The zone of soil susceptible to liquefaction at Boring B-2 is 8.5 to 13.5 feet bgs, indicating that the potentially liquefiable soils across the site are discontinuous. This is consistent with the analysis results of Harding Lawson Associates. As such, the potential for lateral displacement is considered low.

5.0 CONCLUSIONS

Site Suitability

The subject site is suitable for the proposed residential improvements from a geotechnical engineering standpoint, provided the recommendations included in this report are followed. The primary geotechnical concerns at the site are loose soils in the upper 5 feet and the settlement due to seismic shaking.

Soil Expansion Potential

The near surface soils were sandy in nature and thus not deemed expansive. Thus, no measures other than moisture conditioning the pad are deemed necessary.

Foundations

Due to the settlement from seismic shaking, the proposed loads of the residence and ADU may be supported on either a mat slab foundation or a post-tensioned slab foundation. Details of the foundation recommendations are included in the following sections of the report.

Site Preparation and Grading

Due to the loose soil in the upper 5 feet, a program of over-excavation is deemed necessary. The upper 2½ feet of existing ground in the building areas should be over-excavated and recompacted. Cuts and fills to create the pad for the residence are expected to be minimal. Additional grading work is anticipated to include backfill work related to placement of new utility lines and construction of the driveway, patios, and pool decking. Grading operations are discussed in detail in the *Recommendations* section of this report.

Groundwater

Groundwater was encountered at approximately 17 to 18 feet bgs during our subsurface exploration. Harding Lawson Associates reported an historic high groundwater level of 8 feet bgs. Variations in rainfall, temperature, and other factors may affect water levels, and therefore groundwater levels should not be considered constant. Groundwater is not expected to have an adverse effect on the construction or performance of the proposed residence and related structures.



Seismicity

The San Francisco Bay area is recognized by geologists and seismologists as one of the most seismically active regions in the United States. The significant earthquakes in this area are generally associated with crustal movement along well-defined, active fault zones which regionally trend in a northwesterly direction. Although research on earthquake prediction has greatly increased in recent years, seismologists cannot predict when and where an earthquake will occur. Nevertheless, on the basis of current technology, it is reasonable to assume that the proposed development will be subjected to at least one moderate to severe earthquake during its lifetime. During such an earthquake, the danger from fault offset on the site is low, but strong shaking of the site is likely to occur and, therefore, the project should be designed in accordance with the seismic design provisions of the latest California Building Code. It should be understood that the California Building Code seismic design parameters are not intended to prevent structural damage during an earthquake, but to reduce damage and minimize loss of life.

6.0 RECOMMENDATIONS

Site Preparation and Grading

General Site Preparation

1. The site should be prepared for grading by removing existing trees to be removed and their root systems, vegetation, debris, and other potentially deleterious materials from areas to receive improvements. Existing utility lines that will not be serving the proposed residence should be either removed or abandoned. The appropriate method of utility abandonment will depend upon the type and depth of the utility. Recommendations for abandonment can be made as necessary.
2. Due to the loose surficial soil, a program of over-excavation and backfilling is deemed necessary. The upper loose soil within the area of the proposed improvements should be (over-excavated to 2½ feet bgs. The lateral extent of the over-excavation should extend at least 5 feet beyond the perimeter of the proposed residence, ADU, driveway and pool decking as determined in the field by the Geotechnical Engineer during grading operations. The exposed ground should be reviewed by the Geotechnical Engineer to determine the need for additional excavation work.
3. Ruts or depressions resulting from the removal of tree root systems should be properly cleaned out down to undisturbed native soil. The bottoms of the resulting depressions should be scarified and cross-scarified at least 8 inches in depth, moisture conditioned



and recompacted. The depressions should then be backfilled with approved, compacted, moisture conditioned structural fill, as recommended in other sections of this report.

4. Site clearing, and backfilling operations, should be conducted under the field observation of the Geotechnical Engineer. The Geotechnical Engineer should be notified at least 48 hours prior to commencement of grading operations.

Compaction Recommendations

1. In general, the underlying native soil in the areas proposed to receive additional fill, exterior flatwork or new structures should be scarified at least 8 inches, moisture conditioned and recompacted to the recommended relative compaction presented below, unless noted otherwise.
2. Recompacted native soils and fill soils should be compacted to a minimum relative compaction of 90 percent of maximum dry density at a moisture content at least 2 percentage points above optimum.
3. In areas to be paved, the upper 8 inches of subgrade soil should be compacted to a minimum 92 percent of maximum dry density at a moisture content at least 2 percentage points above optimum. The aggregate base courses should be compacted to a minimum 95 percent of maximum dry density at a moisture content that is slightly over optimum. The subgrade and base should be firm and unyielding when proof-rolled with heavy, rubber-tired equipment prior to paving. The pavement subgrade soils should be frequently moistened as necessary prior to placement of the aggregate base to maintain the soil moisture content near optimum.

Fill Recommendations

1. Structural fill is defined herein as a native or import fill material which, when properly compacted, will support foundations, pavements, and other fills. The on-site native soils that are free of debris, organics and other deleterious material, may be used as structural fill.
2. Import fill is not anticipated at the site. Should import fill be required, the soil should meet the following criteria:
 - a. Be coarse grained and have a plasticity index of less than 12 and/or an expansion index less than 20;



- b. Be free of organics, debris or other deleterious material;
 - c. Have a maximum rock size of 3 inches; and
 - d. Contain sufficient clay binder to allow for stable foundation and utility trench excavations.
3. A sample of the of the soil proposed to be imported to the site should be submitted at least three days before being transported to the site for evaluation by the geotechnical engineer. During importation to the site the material should be further reviewed on an intermittent basis.

Foundations

Mat Slab Foundation

1. The proposed residence and ADU may be supported by a concrete mat foundation bearing on the native soil. The mat slab should be designed using a maximum localized allowable bearing pressure of 2,000 psf for dead plus live load. This value may be increased by one-third when transient loads such as wind or seismicity are included. The mat slab should be sufficiently thick to uniformly spread the concentrated loads imposed by any building columns. The mat should be designed using a modulus of subgrade reaction value of 125 psi per inch. The slab should be designed for an edge cantilever distance of 6 feet and an interior span condition of 10 feet.
2. The mat slab should be thickened at the edges to penetrate a minimum of 6 inches into the prepared subgrade for a minimum width of 2 feet. The mat slab should be placed on top of a vapor retarder and capillary break layer extending to the thickened edge along the perimeter.
3. Resistance to lateral loads should be calculated based on a passive equivalent fluid pressure of 300 pcf and a friction factor of 0.3.

Post-Tensioned Slab Foundation

1. The post-tensioned slabs should be designed in accordance with the provisions of the current edition of the California Building Code and the recommendations of the Post-Tensioning Institute. Values for Edge Moisture Variation Distance and Estimated Differential Swell were calculated in accordance with the third edition of *Design of Post-Tensioned Slabs-on-Ground* by the Post-Tensioning Institute (2008).



Edge Moisture Variation Distance (e_m)	
Center Lift Condition	9.0 feet
Edge Lift Condition	5.0 feet
Estimated Differential Swell (y_m)	
Center Lift Condition	0.5 inches
Edge Lift Condition	0.8 inches
Allowable Bearing Capacity (dead load)	1,500 psf
Allowable Bearing Capacity (dead + live loads)	2,000 psf
Allowable Bearing Capacity (DL+LL+ wind or seismic)	2,500 psf
Subgrade Friction Factor (slab against subgrade)	0.3
Total settlement (static)	< 1 inch
Differential settlement (static)	< 0.5 inches

2. To further protect moisture-sensitive floor coverings, the perimeters of the post-tensioned slabs should be deepened to penetrate a minimum of 6 inches into the subgrade soil. Also, the concrete could be proportioned to reduce its porosity (and its corresponding potential for transmitting moisture) by limiting the w/c ratio to 0.48 or less.
3. Post-tensioned slabs should be constructed and maintained in accordance with the publication *Construction and Maintenance Manual for Post-Tensioned Slab-on-Ground Foundations* by the Post-Tensioning Institute. Particular attention should be paid to the “Property Owner Maintenance” and “Landscaping” sections of the Manual.

Interior Slab-on-Grade Construction

4. The building pad should be periodically moisture conditioned as necessary to maintain the soil moisture content at a minimum of 2 percent above optimum until the placement of concrete or vapor retarding membranes. The moisture content of the soil should be verified by the Geotechnical Engineer prior to placement of the concrete or vapor retarding membranes.
5. In areas where moisture transmitted from the subgrade would be undesirable, a vapor retarder underlain by a capillary break consisting of 4 inches of crushed rock should be utilized beneath the floor slab. The vapor retarder should comply with ASTM Standard Specification E 1745-17 and the latest recommendations of ACI Committee 302. The vapor retarder should be installed in accordance with ASTM Standard Practice E 1643-18a. Care should be taken to properly lap and seal the vapor retarder, particularly around utilities, and to protect it from damage during construction. A sand layer above the vapor retarder is optional.



6. If sand, gravel or other permeable material is to be placed over the vapor retarder, the material over the vapor retarder should be only lightly moistened and not saturated prior to casting the slab. Excess water above the vapor retarder would increase the potential for moisture damage to floor coverings. Recent studies, including those by ACI Committee 302, have concluded that excess water above the vapor retarder would increase the potential for moisture damage to floor coverings and could increase the potential for mold growth or other microbial contamination. These studies also concluded that it is preferable to eliminate the sand layer and place the slab in direct contact with the vapor retarder, particularly during wet weather construction. However, placing the concrete directly on the vapor retarder would require special attention to using the proper vapor retarder, concrete mix design, and finishing and curing techniques.
7. When concrete slabs are in direct contact with vapor retarders, the concrete water to cement (w/c) ratio must be correctly specified to control bleed water and plastic shrinkage and cracking. The concrete w/c ratio for this type of application is typically in the range of 0.45 to 0.50. The concrete should be properly cured to reduce slab curling and plastic shrinkage cracking. Concrete materials, placement, and curing methods should be specified by the architect/engineer.

Exterior Flatwork

1. Exterior flatwork should have a minimum thickness of 4 full inches and should be reinforced as directed by the architect/engineer. Patio slabs and walkways should be underlain by a minimum 4 inches of compacted aggregate base over properly compacted subgrade soil.
2. Assuming that movement (i.e., 1/4-inch or more) of exterior flatwork beyond the structure is acceptable, the flatwork should be designed to be independent of the building foundations. The flatwork should not be doweled to foundations, and a separator should be placed between the two.
3. To reduce shrinkage cracks in concrete, the concrete aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the concrete should be properly placed and finished, contraction joints should be installed, and the concrete should be properly cured. Concrete materials, placement and curing specifications should be at the direction of the designer; ACI 302.1R-04 and ACI 302.2R-04 are suggested as resources for the designer in preparing such specifications.



Swimming Pool

1. The swimming pool design should be based on a minimum soil equivalent fluid pressure of 45 pcf. To reduce the potential for future expansion, the soil exposed in the pool excavation should be kept in a moist condition prior to placement of the gunite.
2. The pool may be designed with a pressure relief valve. The necessity of the valve should be under the discretion of the pool designer.
3. The pool excavation should be observed by a representative from Earth Systems. If soft soils or other unanticipated conditions are observed in the excavation, compaction of the soil or other remedial measures may be recommended. Recommendations for remedial grading or other measures (if deemed necessary) should be provided by the Geotechnical Engineer based on the conditions observed at the time of construction.
4. Any portions of the pool shell that will be above ground should be designed to support the water in the pool without soil support in accordance with Section 1808.7.3 of the California Building Code.
5. If portions of the pool walls will be within a horizontal distance of 7 feet from the top of an adjacent slope, those portions of the wall should be capable of supporting the water in the pool without soil support per section 1808.7.3 of the California Building Code.

Utility Trench Backfills

1. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utility pipes. The site soils may be used for trench backfill above the select material.
2. Trench backfill in the upper 8 inches of subgrade beneath pavement areas should be compacted to a minimum of 92 percent of maximum dry density at a moisture content at least 2 percentage points above optimum moisture content and the aggregate base courses should be compacted to a minimum 95 percent of maximum dry density at a moisture content at least 2 percentage points over optimum. Trench backfill in other areas should be compacted to a minimum of 90 percent of maximum dry density at a moisture content at least 2 percentage points above optimum moisture content. Jetting of utility trench backfill should not be allowed.



3. Where utility trenches extend under perimeter foundations, the trenches should be backfilled entirely with approved fill soil compacted to a minimum of 90 percent of maximum dry density at a moisture content at least 2 percentage points above optimum moisture content. The zone of approved fill soil should extend a minimum distance of 2 feet on both sides of the foundation. If utility pipes pass through sleeves cast into the perimeter foundations, the annulus between the pipes and sleeves should be completely sealed.
4. Parallel trenches excavated in the area under foundations defined by a plane radiating at a 45-degree angle downward from the bottom edge of the footing should be avoided, if possible. Trench backfill within this zone, if necessary, should consist of Controlled Density Fill (Flowable Fill).

Management of Site Drainage and Finish Improvements

1. Unpaved ground surfaces should be finish graded to direct surface runoff away from site improvements at a minimum 5 percent grade for a minimum distance of 10 feet. If this is not practical due to the terrain or other site features, swales with improved surfaces should be provided to divert drainage away from improvements. The landscaping should be planned and installed to maintain proper surface drainage conditions.
2. Runoff from driveways, roof gutters, downspouts, planter drains and other improvements should discharge in a non-erosive manner away from foundations, pavements, and other improvements. The downspouts may discharge onto splash blocks that direct the flow away from the foundation.
3. Stabilization of surface soils, particularly those disturbed during construction, by vegetation or other means during and following construction is essential to protect the site from erosion damage. Care should be taken to establish and maintain vegetation.
4. Open areas adjacent to exterior flatwork should be irrigated or otherwise maintained so that constant moisture conditions are created throughout the year. Irrigation systems should be controlled to the minimum levels that will sustain the vegetation without saturating the soil.
5. Bio-retention swales constructed within 10 feet or less from the building foundation should be lined with a 20-mil pond liner.



Geotechnical Observation and Testing

1. It must be recognized that the recommendations contained in this report are based on a limited number of borings and rely on continuity of the subsurface conditions encountered.
2. It is assumed that the Geotechnical Engineer will be retained to provide consultation during the design phase, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.
3. Unless otherwise stated, the terms "compacted" and "recompacted" refer to soils placed in level lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 90 percent of maximum dry density. The standard tests used to define maximum dry density and field density should be ASTM D 1557-12 and ASTM D 6938-17, respectively, or other methods acceptable to the geotechnical engineer and jurisdiction.
4. "Moisture conditioning" refers to adjusting the soil moisture to at least 3 percentage points above optimum moisture content prior to application of compactive effort. If the soils are overly moist so that they become unstable, or if the recommended compaction cannot be readily achieved, drying the soil to optimum moisture content or just above may be necessary. Placement of gravel layers or geotextiles may also be necessary to help stabilize unstable soils. The Geotechnical Engineer should be contacted for recommendations for mitigating unstable soils.
5. At a minimum, the following should be provided by the Geotechnical Engineer:
 - Review of final grading and foundation plans,
 - Professional observation during site preparation, grading, and foundation excavation,
 - Oversight of soil compaction testing during grading,
 - Oversight of soil special inspection during grading.
6. Special inspection of grading should be provided as per Section 1705.6 and Table 1705.6 of the CBC; the soils special inspector should be under the direction of the Geotechnical Engineer. In our opinion, the following operations should be subject to *continuous* soils special inspection:
 - Scarification and recompaction,
 - Fill placement and compaction,
 - Over-excavation to the recommended depth.



7. In our opinion, the following operations may be subject to *periodic* soils special inspection, subject to approval by the Building Official:
 - Site preparation,
 - Compaction of utility trench backfill,
 - Retaining wall backfill,
 - Pool excavation,
 - Removal of existing development features,
 - Compaction of subgrade and aggregate base,
 - Observation of foundation and basement excavations,
 - Building pad moisture conditioning.
8. It will be necessary to develop a program of quality control prior to beginning grading. It is the responsibility of the owner, contractor, or project manager to determine any additional inspection items required by the architect/engineer or the governing jurisdiction.
9. The locations and frequencies of compaction tests should be as per the recommendations of the Geotechnical Engineer at the time of construction. The recommended test locations and frequencies may be subject to modification by the geotechnical engineer based upon soil and moisture conditions encountered, the size and type of equipment used by the contractor, the general trend of the compaction test results, and other factors.
10. A preconstruction conference among a representative of the owner, the Geotechnical Engineer, soils special inspector, the architect/engineer, and contractors is recommended to discuss planned construction procedures and quality control requirements. Earth Systems should be notified at least 48 hours prior to beginning grading operations.

7.0 CLOSURE

This report is valid for conditions as they exist at this time for the type of project described herein. Our intent was to perform the investigation in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project at this time under similar conditions. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client as discussed in the Scope of Services section. Application beyond the stated intent is strictly at the user's risk.



If changes with respect to the project type or location become necessary, if items not addressed in this report are incorporated into plans, or if any of the assumptions stated in this report are not correct, Earth Systems should be notified for modifications to this report. Any items not specifically addressed in this report should comply with the CBC and the requirements of the governing jurisdiction.

The preliminary recommendations of this report are based upon the geotechnical conditions encountered during the investigation and may be augmented by additional requirements of the architect/engineer, or by additional recommendations provided by Earth Systems based on conditions exposed at the time of construction.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems. This report should be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems, the client, and his authorized agents for use exclusively on the subject project. Any other use is subject to federal copyright laws and the written approval of Earth Systems.

FIGURES

Figure 1 – Site Location Map

Figure 2 – Site Plan

Figure 1

TN
MN
13.2



Approximate Scale in Feet

Base: Google Earth (2021)



Earth Systems Pacific

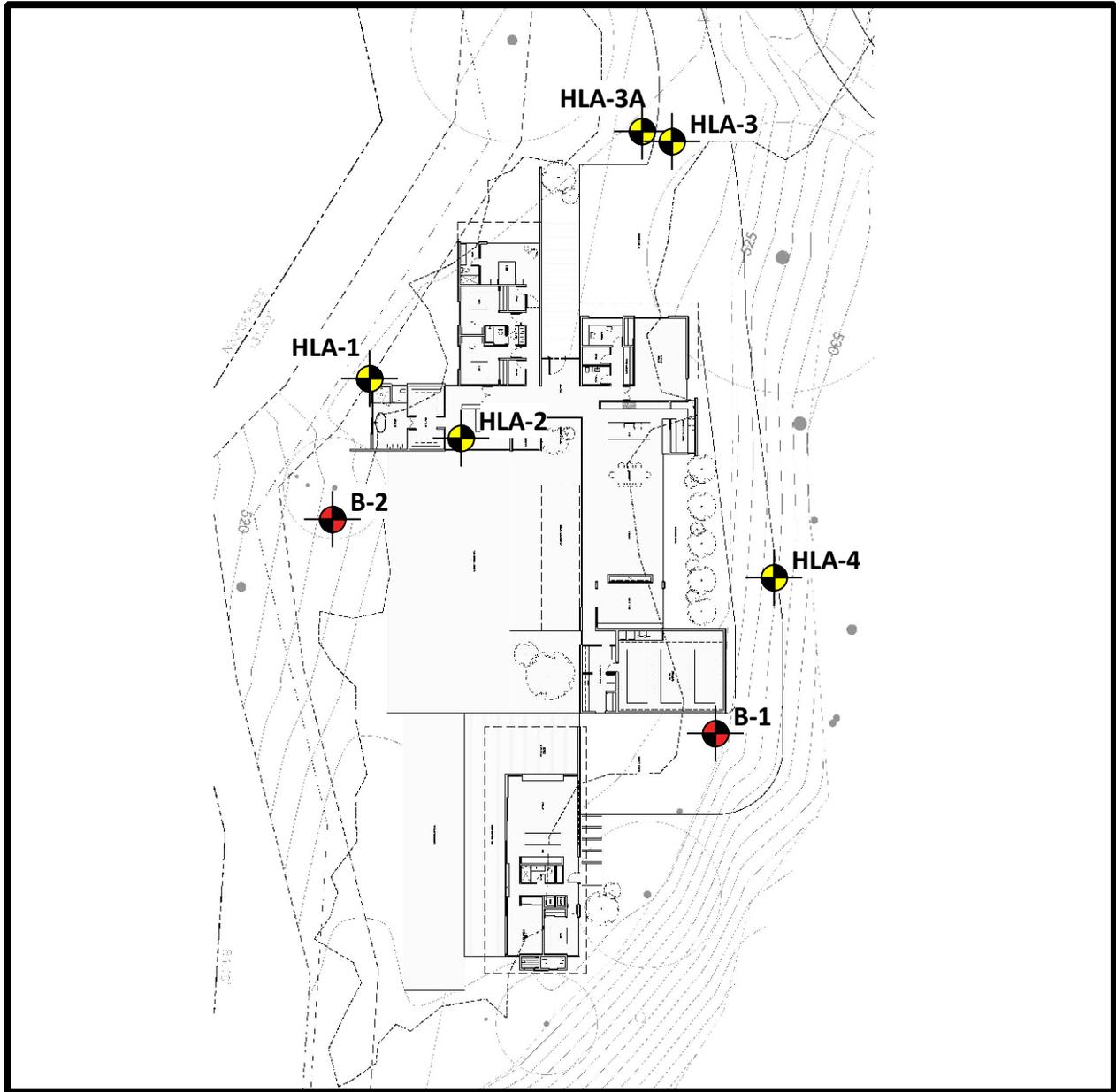
Proposed Single Family Residence and ADU
575 Los Trancos Road
Palo Alto, California

Site Location Map

304309-001

Figure 2

TN
MN
13.2



 **B-2** Approximate Boring Location (ESP, 2021)

 **HLA-4** Approximate Boring Location (Harding Lawson Associates, 1989)

Base: Google Earth (2021)



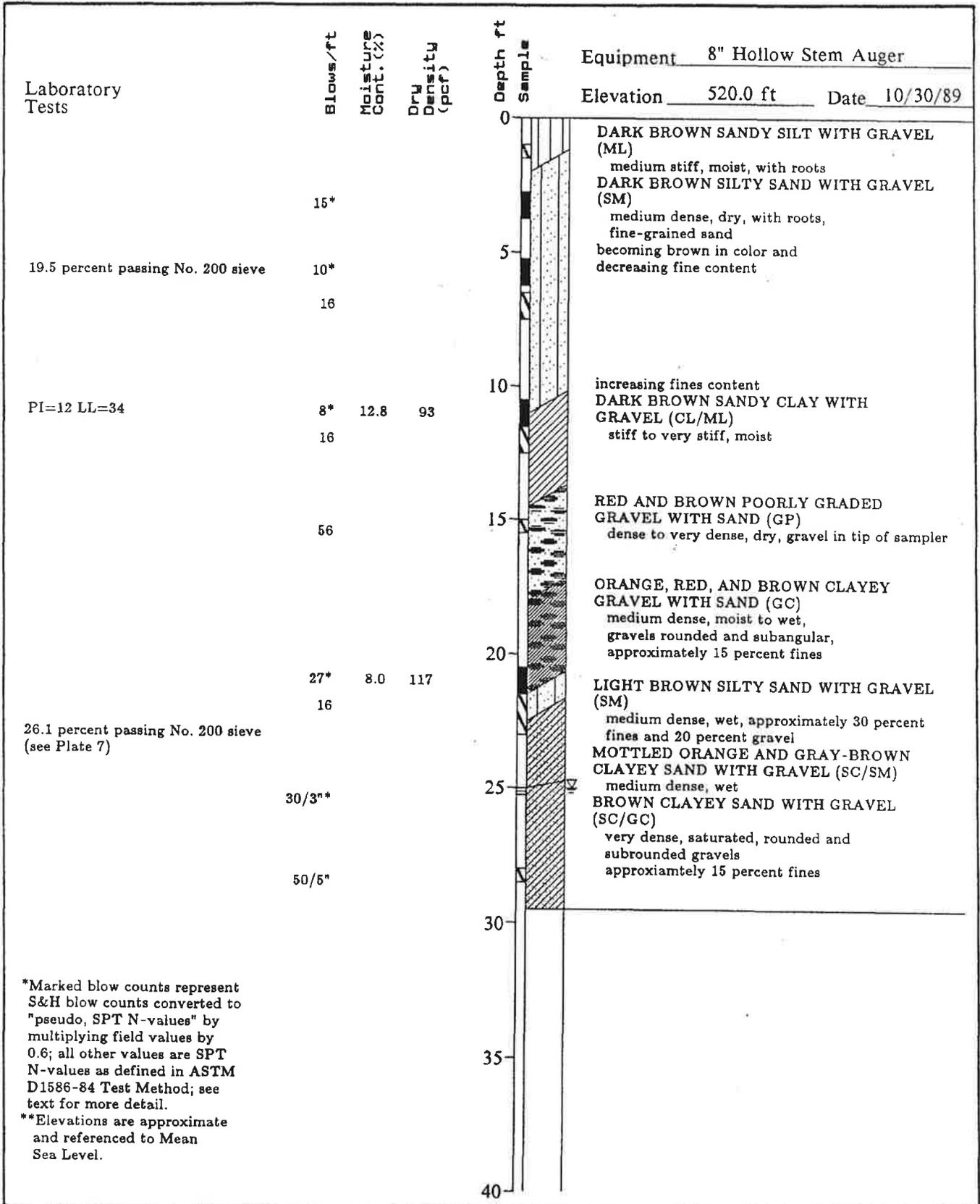
Earth Systems Pacific

Proposed Single Family Residence and ADU
575 Los Trancos Road
Palo Alto, California

Site Plan
304309-001

APPENDIX A

Boring Logs
Harding Lawson Associates
1990



*Marked blow counts represent S&H blow counts converted to "pseudo, SPT N-values" by multiplying field values by 0.6; all other values are SPT N-values as defined in ASTM D1586-84 Test Method; see text for more detail.

**Elevations are approximate and referenced to Mean Sea Level.



Harding Lawson Associates
Engineering and Environmental Services

Log of Boring B-1
Conroe Residence
Palo Alto, California

(sheet 1 of 1)

PLATE

2

DRAWN
B4740-G5

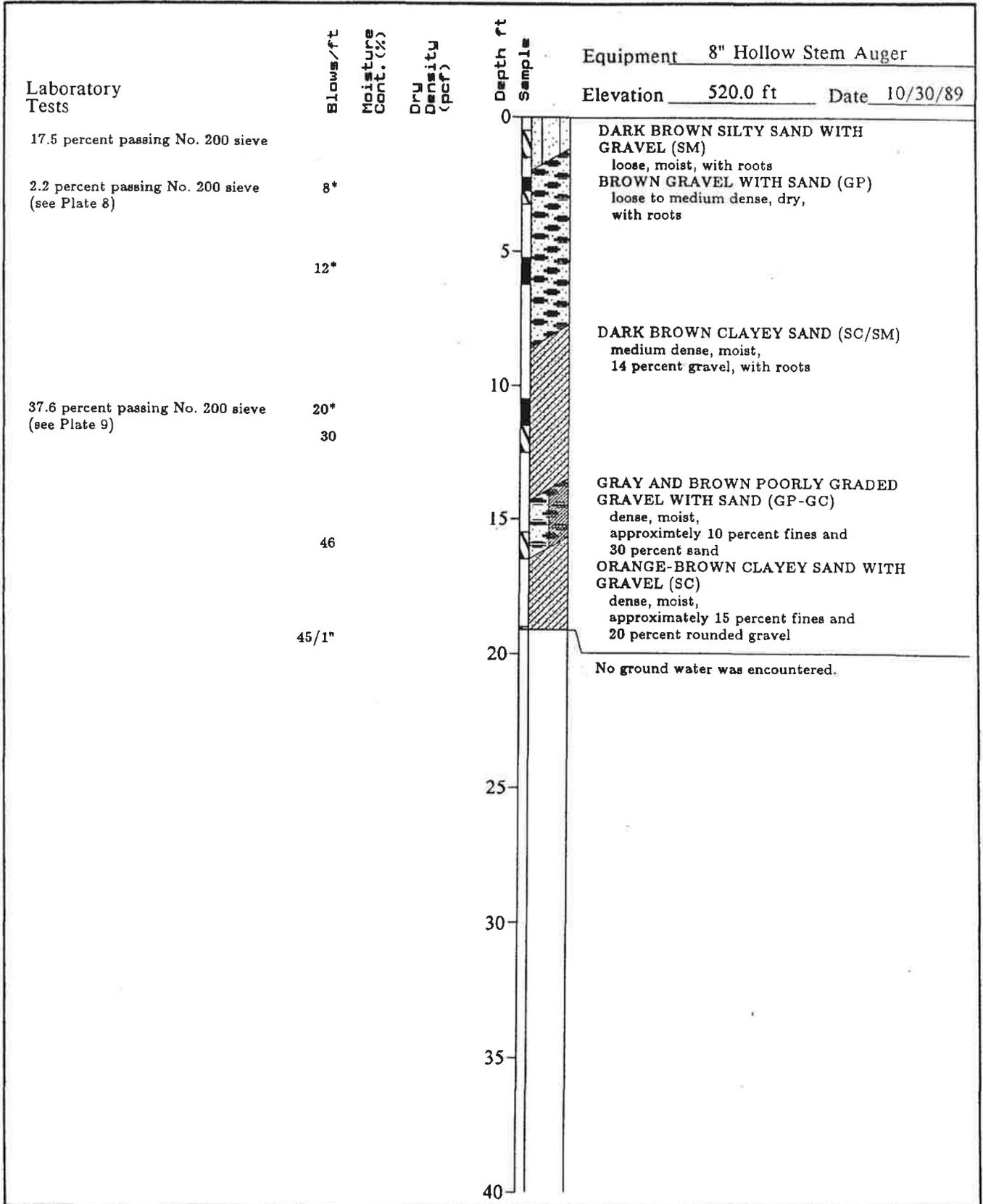
JOB NUMBER
19640,001.04

APPROVED

HLA

DATE
1/90

REVISED DATE



Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring B-2
Conroe Residence
Palo Alto, California

(sheet 1 of 1)

PLATE

3

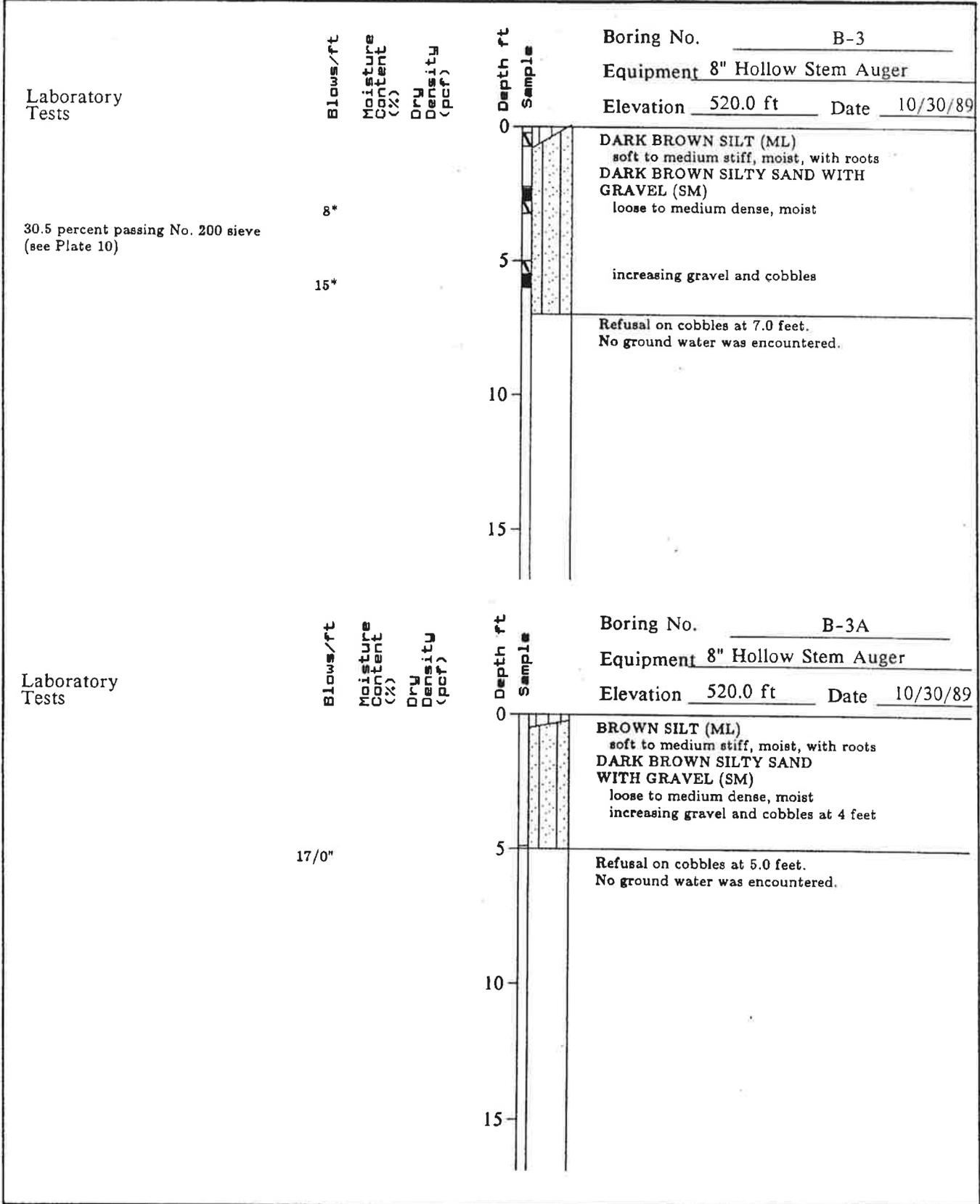
DRAWN
B4740-G5

JOB NUMBER
19640,001.04

APPROVED
WALA

DATE
1/90

REVISED DATE



Harding Lawson Associates
 Engineering and Environmental Services

Logs of Borings B-3 and B-3A
 Conroe Residence
 Palo Alto, California

PLATE

4

DRAWN B4740-G5

JOB NUMBER 19640,001.04

APPROVED

DATE 1/90

REVISED DATE

Laboratory Tests

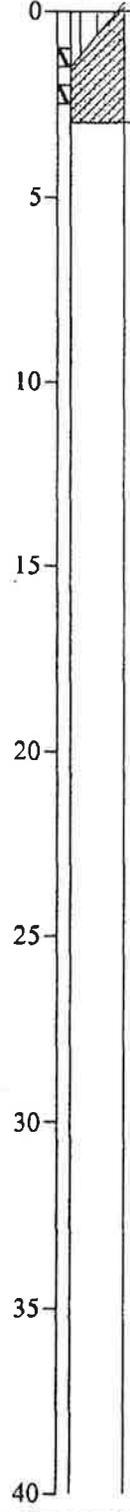
Blows/ft
Moisture Cont. (%)
Dry Density (pcf)

30/5**

Depth ft
Sample

Equipment 8" Hollow Stem Auger

Elevation 529.0 ft Date 10/30/89



BLACK SILT (ML)
soft to medium stiff, moist,
with roots
BROWN CLAYEY SAND WITH GRAVEL
(SC/GC)
dry, with cobbles

Refusal on cobbles at 3.0 feet.
No ground water was encountered.



Harding Lawson Associates
Engineering and
Environmental Services

Log of Boring B-4
Conroe Residence
Palo Alto, California

(sheet 1 of 1)

PLATE

5

DRAWN
B4740-G5

JOB NUMBER
19640,001.04

APPROVED
WLA

DATE
11/89

REVISED DATE

APPENDIX B

Logs of Test Borings
Earth Systems Pacific
2021



LOGGED BY: P. Penrose

PAGE 1 OF 2

DRILL RIG: Mobile B-53

JOB NO.: 304309-001

AUGER TYPE: 8" Hollow Stem

DATE: February 23, 2021

DEPTH (feet)	USCS CLASS	SYMBOL	Proposed Residence 575 Los Trancos Road Palo Alto, California	SAMPLE DATA						
				INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
SOIL DESCRIPTION										
0 - 1 - 2 - 3 - 4 - 5	SW		Well graded SAND with GRAVEL; medium dense, dark gray brown, very moist, fine to coarse sand, fine to coarse gravel	1.0-2.5	1-1		110.6	4.9	8 9 16	
5 - 6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 - 15 - 16 - 17 - 18	SC		CLAYEY SAND with GRAVEL; medium dense, gray brown, very moist, fine to coarse sand, fine to coarse gravel - cobbles, dense	3.5-5.0	1-2		113.4	7.3	6 9 9	
18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26	SC		CLAYEY SAND; loose, brown, wet, mostly fine to medium sand, trace gravel [% passing #200 = 18%] - very dense, less clay, more gravel	13.5-15.0	1-3				24 21 22	
			▼	18.5-20.0	1-4				16 40 17	
			☼	23.5-24.0	1-5				9 6 8	
					1-6				50/5"	

LEGEND: 2.5" Mod Cal Sample 2.0" Cal Sample SPT Bulk Sample Groundwater

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.



LOGGED BY: P. Penrose

PAGE 2 OF 2

DRILL RIG: Mobile B-53

JOB NO.: 304309-001

AUGER TYPE: 8" Hollow Stem

DATE: February 23, 2021

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA						
				INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
26 - 27 - 28 - 29 - 30 - 31 - 32 - 33 - 34	SC		CLAYEY SAND with GRAVEL (same as above) - blue gray	28.5-29.0	1-7	●			50/4"	
34 - 35 - 36 - 37 - 38 - 39 - 40 - 41 - 42 - 43 - 44 - 45 - 46 - 47 - 48 - 49 - 50 - 51 - 52 -			Bottom of boring at 34' bgs No Groundwater encountered	33.5-34.0	1-8	●			50/5"	

LEGEND: 2.5" Mod Cal Sample 2.0" Cal Sample SPT Bulk Sample Groundwater

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.



LOGGED BY: P. Penrose

DRILL RIG: Mobile B-53

AUGER TYPE: 8" Hollow Stem

JOB NO.: 304309-001

DATE: February 23, 2021

DEPTH (feet)	USCS CLASS	SYMBOL	Proposed Residence 575 Los Trancos Road Palo Alto, California SOIL DESCRIPTION	SAMPLE DATA					
				INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
0	SC		CLAYEY SAND with GRAVEL; loose, gray brown, moist, fine to coarse sand, fine to coarse gravel						
1									
2									
3									
4									
5									
6									
7									
8			- medium dense						
9									
10			[% passing #200 = 21%]						
11									
12									
13			- very dense, gray, very moist						
14									
15									
16									
17									
18	SW-SC		Well graded SAND with CLAY and GRAVEL; medium dense, gray brown, wet, fine to coarse sand, fine to coarse gravel						
19									
20			[% passing #200 = 9%]						
21									
22									
23									
24	SC		CLAYEY SAND with GRAVEL; medium dense, gray brown, wet, fine to coarse sand, fine gravel						
25			[% passing #200 = 31%]						
26									

LEGEND: 2.5" Mod Cal Sample 2.0" Cal Sample SPT Bulk Sample Groundwater

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.



LOGGED BY: P. Penrose

PAGE 2 OF 2

DRILL RIG: Mobile B-53

JOB NO.: 304309-001

AUGER TYPE: 8" Hollow Stem

DATE: February 23, 2021

DEPTH (feet)	USCS CLASS	SYMBOL	Proposed Residence 575 Los Trancos Road Palo Alto, California SOIL DESCRIPTION	SAMPLE DATA					
				INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.
26 - 27	SC		CLAYEY SAND with GRAVEL (same as above)						
28 - 29 - 30 - 31 - 32 - 33	SW- SC		Well graded SAND with CLAY and GRAVEL; dense, gray brown, wet, fine to coarse sand, fine to coarse gravel	28.5-29.0	2-7	●			9 11 30
34 - 35 - 36 - 37 - 38 - 39 - 40 - 41 - 42 - 43 - 44 - 45 - 46 - 47 - 48 - 49 - 50 - 51 - 52 -			Bottom of boring at 34' bgs Groundwater encountered at 17' bgs	33.5-34.0	2-8	●			50/6"

LEGEND: 2.5" Mod Cal Sample 2.0" Cal Sample ● SPT ○ Bulk Sample ▽ Groundwater

NOTE: This log of subsurface conditions is a simplification of actual conditions encountered. It applies at the location and time of drilling. Subsurface conditions may differ at other locations and times.

APPENDIX C

Summary of Laboratory Test Results



575 Los Trancos Road

304309-001

BULK DENSITY TEST RESULTS

ASTM D 2937-17 (modified for ring liners)

March 4, 2021

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
1-1	2.0 - 2.5	4.9	116.0	110.6
1-2	4.5 - 5.0	7.3	121.7	113.4
2-1	2.0 - 2.5	12.9	116.7	103.4
2-2	4.5 - 5.0	11.1	113.4	102.1
2-4	14.5 - 15.0	18.4	137.0	115.7



575 Los Trancos Road

304309-001

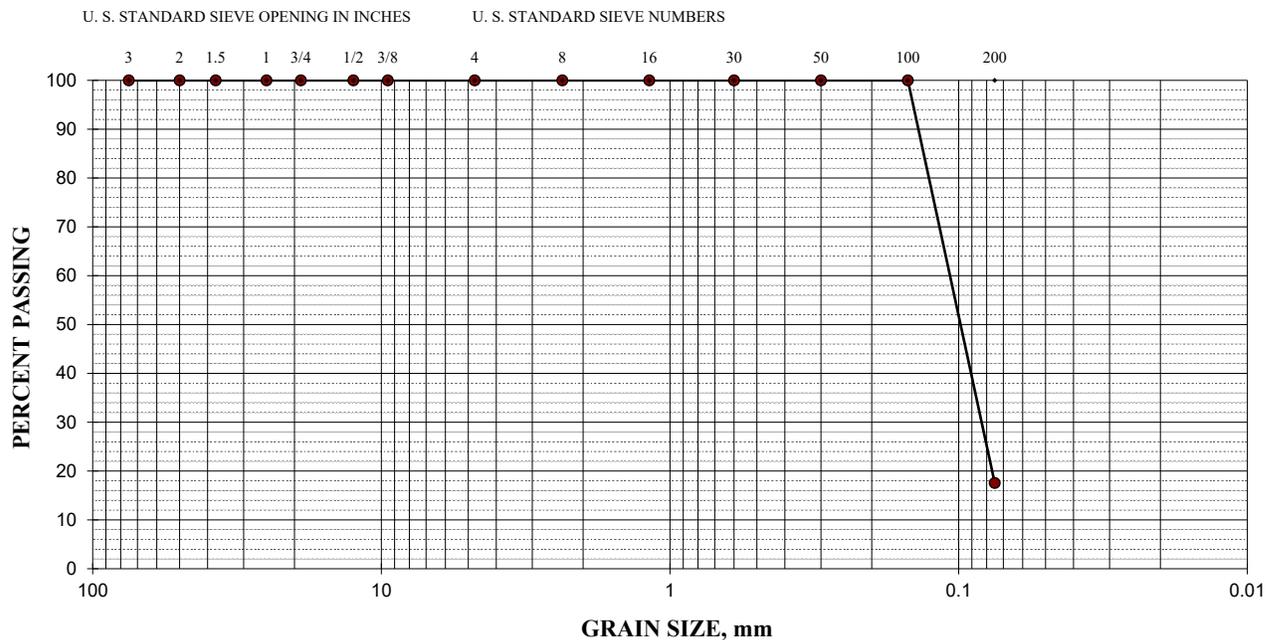
PARTICLE SIZE ANALYSIS

ASTM D 422-63/07; D 1140-17

Boring #1 @ 18.5 - 20.0'

March 4, 2021

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600- μ m)	0	100
#50 (300- μ m)	0	100
#100 (150- μ m)	0	100
#200 (75- μ m)	82	18





575 Los Trancos Road

304309-001

PARTICLE SIZE ANALYSIS

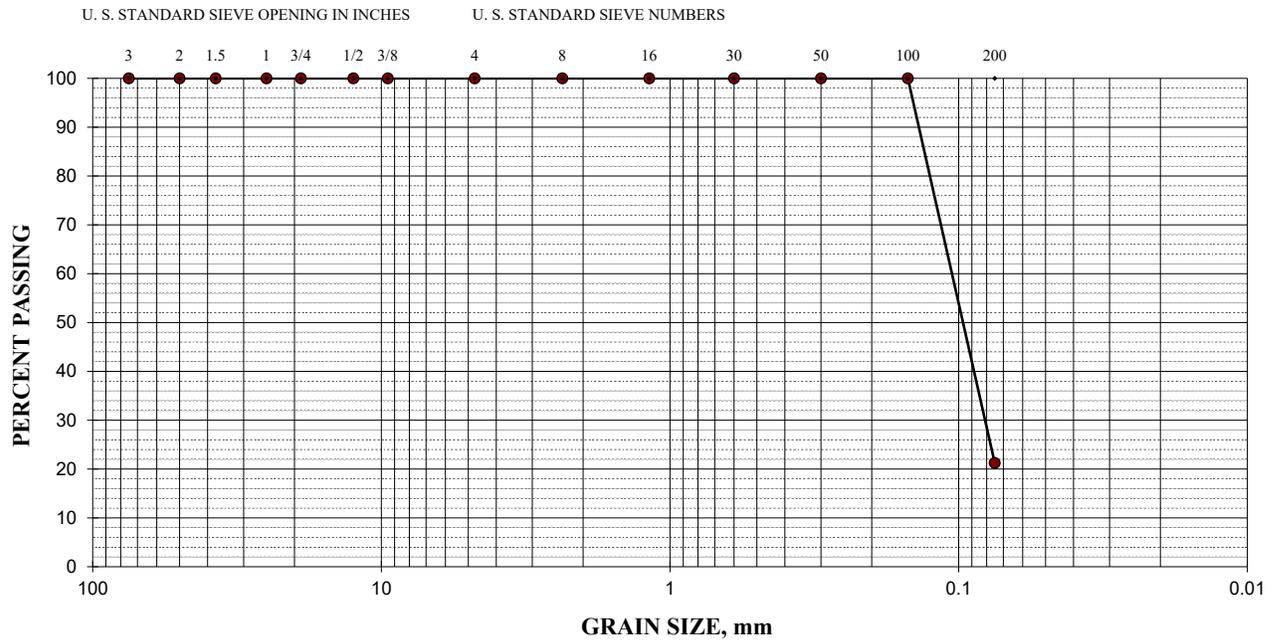
ASTM D 422-63/07; D 1140-14

Boring #2 @ 8.5 - 10.0'

March 4, 2021

Dark Brown Well Graded Sand with Clay and Gravel (SW-SC)

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600- μ m)	0	100
#50 (300- μ m)	0	100
#100 (150- μ m)	0	100
#200 (75- μ m)	79	21





575 Los Trancos Road

304309-001

PARTICLE SIZE ANALYSIS

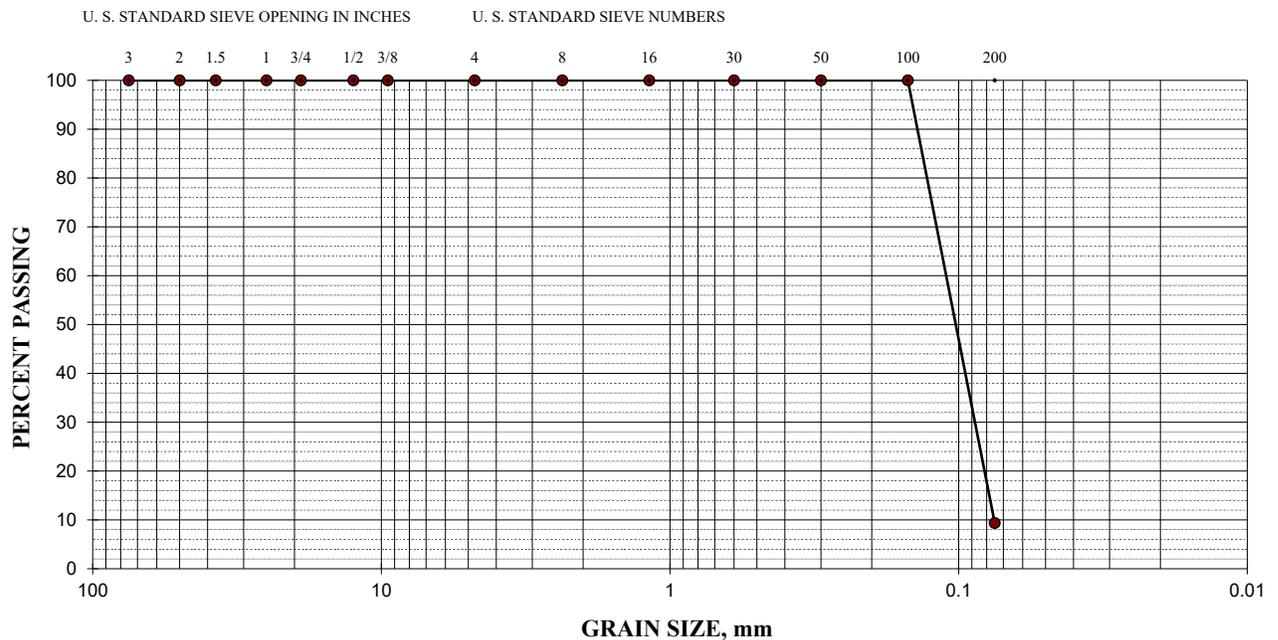
ASTM D 422-63/07; D 1140-17

Boring #2 @ 18.5 - 20.0'

March 4, 2021

Dark Yellowish Brown Clayey Sand with Gravel (SC)

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600- μ m)	0	100
#50 (300- μ m)	0	100
#100 (150- μ m)	0	100
#200 (75- μ m)	91	9





575 Los Trancos Road

304309-001

PARTICLE SIZE ANALYSIS

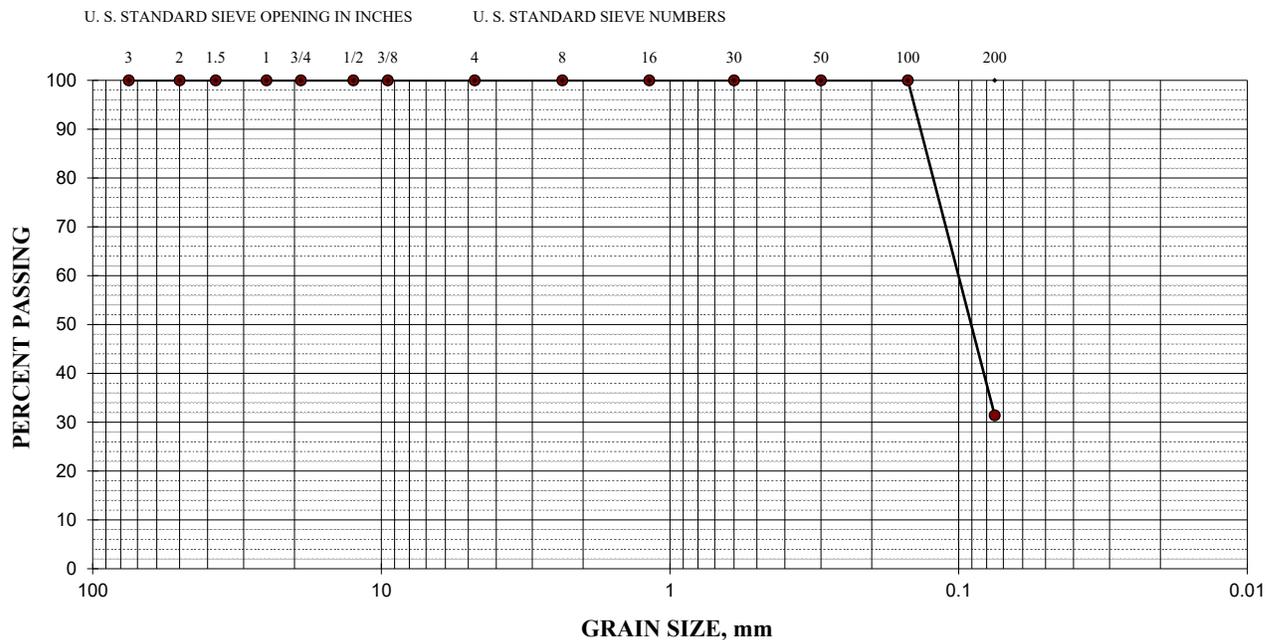
ASTM D 422-63/07; D 1140-17

Boring #2 @ 23.5 - 25.0'

March 4, 2021

Dark Yellowish Brown Clayey Sand with Gravel (SC)

Sieve size	% Retained	% Passing
3" (75-mm)	0	100
2" (50-mm)	0	100
1.5" (37.5-mm)	0	100
1" (25-mm)	0	100
3/4" (19-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#8 (2.36-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600- μ m)	0	100
#50 (300- μ m)	0	100
#100 (150- μ m)	0	100
#200 (75- μ m)	69	31



APPENDIX D

Liquefaction Analysis
Dry Sand Settlement

SPT BASED LIQUEFACTION ANALYSIS REPORT

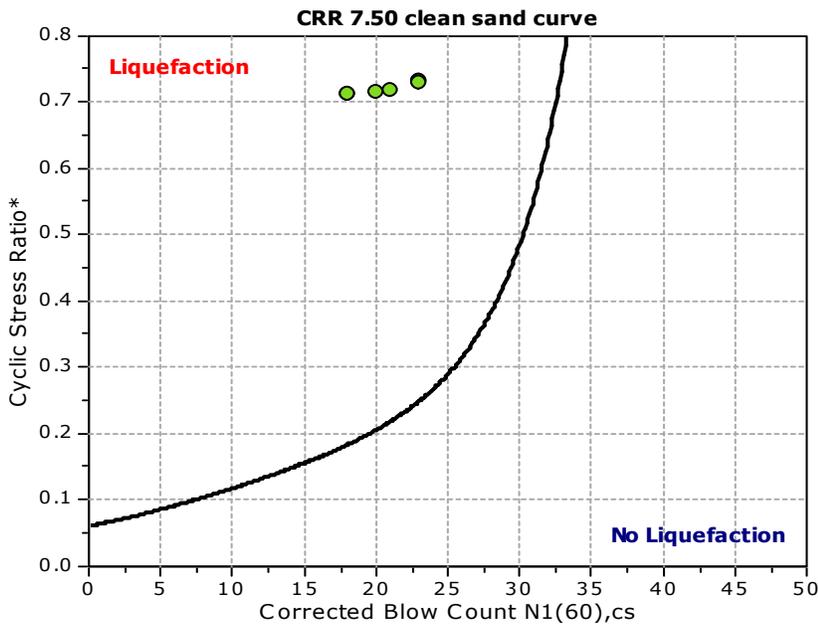
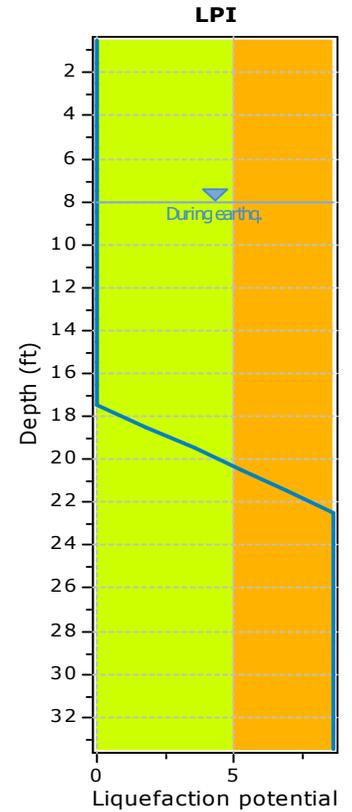
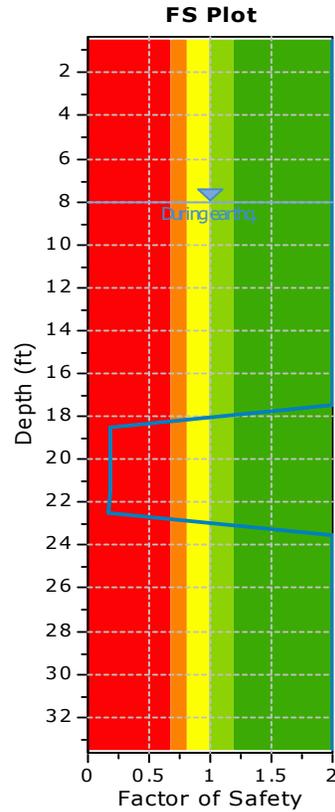
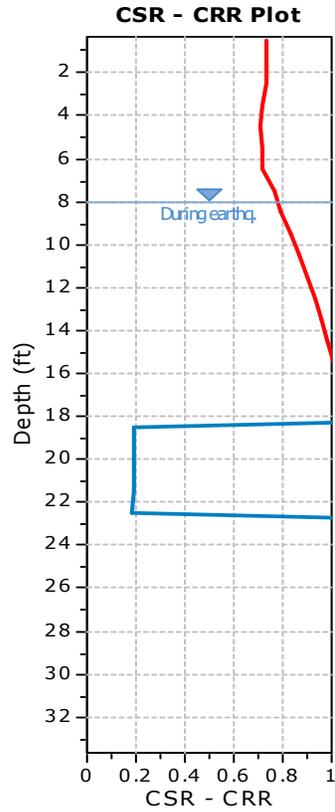
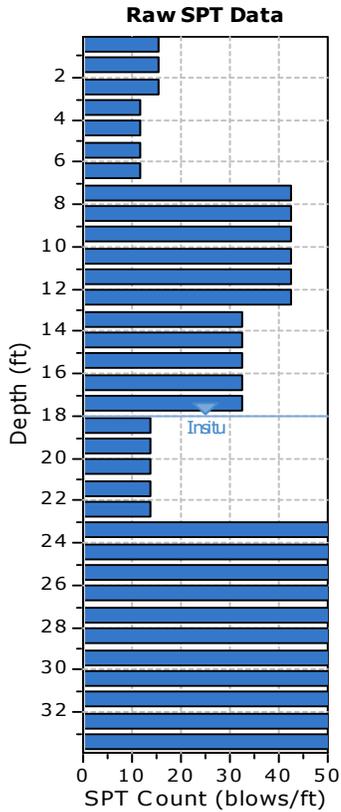
Project title : 575 Los Trancos Road Residence

SPT Name: B-1

Location : Palo Alto, California

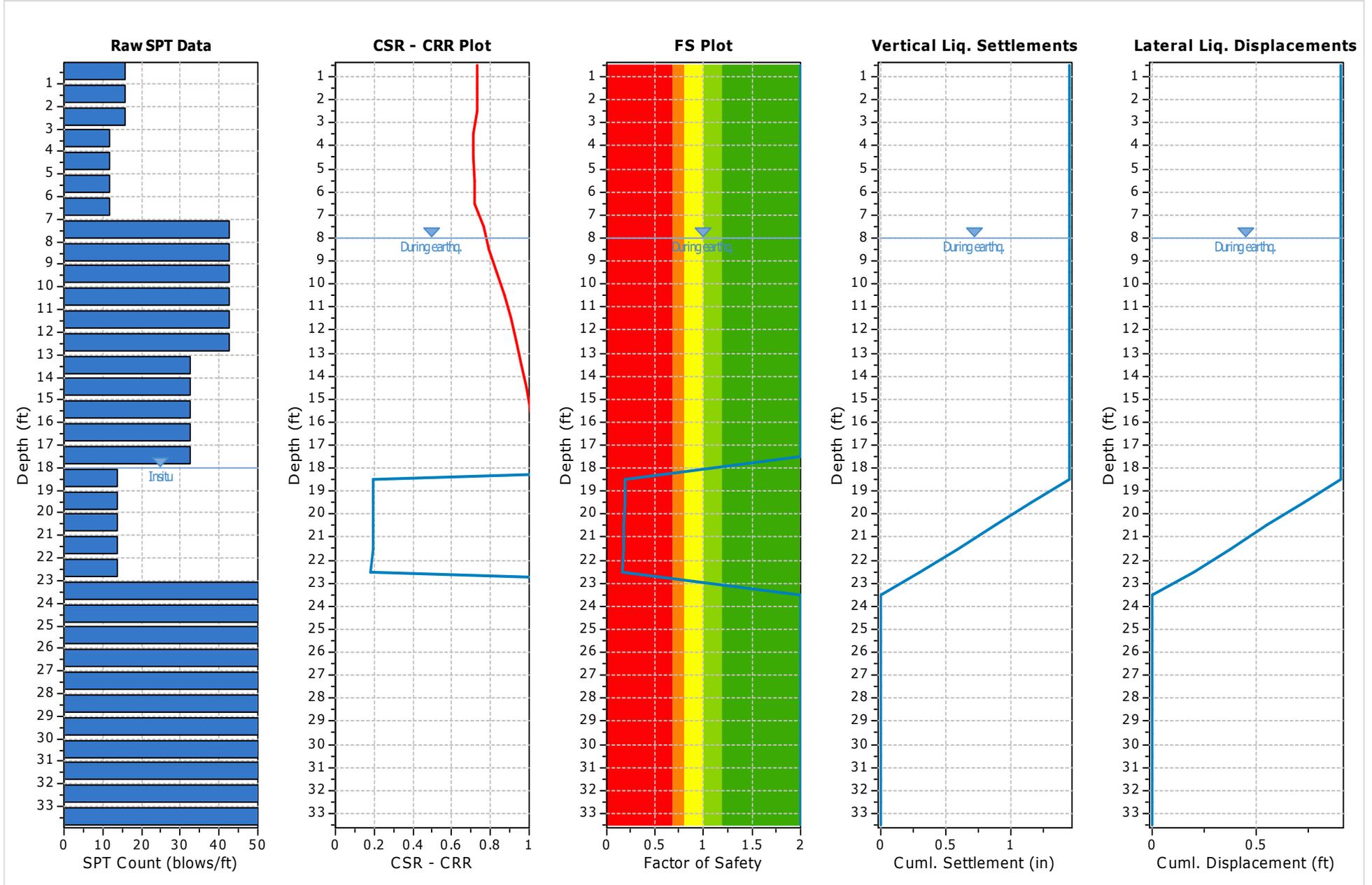
:: Input parameters and analysis properties ::

Analysis method:	Boulanger & Idriss, 2014	G.W.T. (in-situ):	18.00 ft
Fines correction method:	Boulanger & Idriss, 2014	G.W.T. (earthq.):	8.00 ft
Sampling method:	Standard Sampler	Earthquake magnitude M_w :	7.80
Borehole diameter:	200mm	Peak ground acceleration:	1.16 g
Rod length:	3.30 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.00		



- F.S. color scheme**
- Red: Almost certain it will liquefy
 - Orange: Very likely to liquefy
 - Yellow: Liquefaction and no liq. are equally likely
 - Light Green: Unlike to liquefy
 - Dark Green: Almost certain it will not liquefy
- LPI color scheme**
- Red: Very high risk
 - Orange: High risk
 - Yellow: Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::					
Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
0.50	16	5.00	116.00	1.00	Yes
1.50	16	5.00	116.00	1.00	Yes
2.50	16	5.00	116.00	1.00	Yes
3.50	12	5.00	122.00	1.00	Yes
4.50	12	5.00	122.00	1.00	Yes
5.50	12	18.00	122.00	1.00	Yes
6.50	12	18.00	122.00	1.00	Yes
7.50	43	18.00	120.00	1.00	Yes
8.50	43	18.00	120.00	1.00	Yes
9.50	43	18.00	120.00	1.00	Yes
10.50	43	18.00	120.00	1.00	Yes
11.50	43	18.00	120.00	1.00	Yes
12.50	43	18.00	120.00	1.00	Yes
13.50	33	18.00	120.00	1.00	Yes
14.50	33	18.00	120.00	1.00	Yes
15.50	33	18.00	120.00	1.00	Yes
16.50	33	18.00	120.00	1.00	Yes
17.50	33	18.00	120.00	1.00	Yes
18.50	14	18.00	120.00	1.00	Yes
19.50	14	18.00	120.00	1.00	Yes
20.50	14	18.00	120.00	1.00	Yes
21.50	14	18.00	120.00	1.00	Yes
22.50	14	18.00	120.00	1.00	Yes
23.50	100	18.00	120.00	1.00	Yes
24.50	100	18.00	120.00	1.00	Yes
25.50	100	18.00	120.00	1.00	Yes
26.50	100	18.00	120.00	1.00	Yes
27.50	100	18.00	120.00	1.00	Yes
28.50	100	18.00	120.00	1.00	Yes
29.50	100	18.00	120.00	1.00	Yes
30.50	100	18.00	120.00	1.00	Yes
31.50	100	18.00	120.00	1.00	Yes
32.50	100	18.00	120.00	1.00	Yes
33.50	100	18.00	120.00	1.00	Yes

Abbreviations

- Depth: Depth at which test was performed (ft)
- SPT Field Value: Number of blows per foot
- Fines Content: Fines content at test depth (%)
- Unit Weight: Unit weight at test depth (pcf)
- Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
- Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::																
Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_0 (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_t)_{60}$	FC (%)	$\Delta(N_t)_{60}$	$(N_t)_{60cs}$	CRR _{7.5}
0.50	16	116.00	0.03	0.00	0.03	0.41	1.70	1.00	1.15	0.75	1.00	23	5.00	0.00	23	4.000
1.50	16	116.00	0.09	0.00	0.09	0.41	1.70	1.00	1.15	0.75	1.00	23	5.00	0.00	23	4.000
2.50	16	116.00	0.15	0.00	0.15	0.41	1.70	1.00	1.15	0.75	1.00	23	5.00	0.00	23	4.000

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	CRR _{7.5}
3.50	12	122.00	0.21	0.00	0.21	0.46	1.70	1.00	1.15	0.75	1.00	18	5.00	0.00	18	4.000
4.50	12	122.00	0.27	0.00	0.27	0.46	1.70	1.00	1.15	0.75	1.00	18	5.00	0.00	18	4.000
5.50	12	122.00	0.33	0.00	0.33	0.41	1.62	1.00	1.15	0.75	1.00	17	18.00	4.09	21	4.000
6.50	12	122.00	0.39	0.00	0.39	0.42	1.53	1.00	1.15	0.75	1.00	16	18.00	4.09	20	4.000
7.50	43	120.00	0.45	0.00	0.45	0.26	1.25	1.00	1.15	0.80	1.00	50	18.00	4.09	54	4.000
8.50	43	120.00	0.51	0.00	0.51	0.26	1.21	1.00	1.15	0.80	1.00	48	18.00	4.09	52	4.000
9.50	43	120.00	0.57	0.00	0.57	0.26	1.18	1.00	1.15	0.80	1.00	47	18.00	4.09	51	4.000
10.50	43	120.00	0.63	0.00	0.63	0.26	1.15	1.00	1.15	0.85	1.00	48	18.00	4.09	52	4.000
11.50	43	120.00	0.69	0.00	0.69	0.26	1.12	1.00	1.15	0.85	1.00	47	18.00	4.09	51	4.000
12.50	43	120.00	0.75	0.00	0.75	0.26	1.10	1.00	1.15	0.85	1.00	46	18.00	4.09	50	4.000
13.50	33	120.00	0.81	0.00	0.81	0.30	1.08	1.00	1.15	0.85	1.00	35	18.00	4.09	39	4.000
14.50	33	120.00	0.87	0.00	0.87	0.31	1.06	1.00	1.15	0.85	1.00	34	18.00	4.09	38	4.000
15.50	33	120.00	0.93	0.00	0.93	0.31	1.04	1.00	1.15	0.85	1.00	34	18.00	4.09	38	4.000
16.50	33	120.00	0.99	0.00	0.99	0.29	1.02	1.00	1.15	0.95	1.00	37	18.00	4.09	41	4.000
17.50	33	120.00	1.05	0.00	1.05	0.30	1.00	1.00	1.15	0.95	1.00	36	18.00	4.09	40	4.000
18.50	14	120.00	1.11	0.02	1.09	0.45	0.99	1.00	1.15	0.95	1.00	15	18.00	4.09	19	0.194
19.50	14	120.00	1.17	0.05	1.12	0.45	0.97	1.00	1.15	0.95	1.00	15	18.00	4.09	19	0.194
20.50	14	120.00	1.23	0.08	1.15	0.45	0.96	1.00	1.15	0.95	1.00	15	18.00	4.09	19	0.194
21.50	14	120.00	1.29	0.11	1.18	0.45	0.95	1.00	1.15	0.95	1.00	15	18.00	4.09	19	0.194
22.50	14	120.00	1.35	0.14	1.21	0.46	0.94	1.00	1.15	0.95	1.00	14	18.00	4.09	18	0.184
23.50	100	120.00	1.41	0.17	1.24	0.26	0.96	1.00	1.15	0.95	1.00	105	18.00	4.09	109	4.000
24.50	100	120.00	1.47	0.20	1.27	0.26	0.95	1.00	1.15	0.95	1.00	104	18.00	4.09	108	4.000
25.50	100	120.00	1.53	0.23	1.30	0.26	0.95	1.00	1.15	0.95	1.00	104	18.00	4.09	108	4.000
26.50	100	120.00	1.59	0.27	1.32	0.26	0.94	1.00	1.15	0.95	1.00	103	18.00	4.09	107	4.000
27.50	100	120.00	1.65	0.30	1.35	0.26	0.94	1.00	1.15	0.95	1.00	102	18.00	4.09	106	4.000
28.50	100	120.00	1.71	0.33	1.38	0.26	0.93	1.00	1.15	0.95	1.00	102	18.00	4.09	106	4.000
29.50	100	120.00	1.77	0.36	1.41	0.26	0.93	1.00	1.15	0.95	1.00	101	18.00	4.09	105	4.000
30.50	100	120.00	1.83	0.39	1.44	0.26	0.92	1.00	1.15	1.00	1.00	106	18.00	4.09	110	4.000
31.50	100	120.00	1.89	0.42	1.47	0.26	0.92	1.00	1.15	1.00	1.00	106	18.00	4.09	110	4.000
32.50	100	120.00	1.95	0.45	1.50	0.26	0.91	1.00	1.15	1.00	1.00	105	18.00	4.09	109	4.000
33.50	100	120.00	2.01	0.48	1.53	0.26	0.91	1.00	1.15	1.00	1.00	104	18.00	4.09	108	4.000

Abbreviations

- σ_v : Total stress during SPT test (tsf)
- u_o : Water pore pressure during SPT test (tsf)
- σ'_{vo} : Effective overburden pressure during SPT test (tsf)
- m: Stress exponent normalization factor
- C_N : Overburden correction factor
- C_E : Energy correction factor
- C_B : Borehole diameter correction factor
- C_R : Rod length correction factor
- C_S : Liner correction factor
- $N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
- $\Delta(N_1)_{60}$: Equivalent clean sand adjustment
- $N_{1(60)cs}$: Corrected $N_{1(60)}$ value for fines content
- CRR_{7.5}: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::

Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{v,eq}$ (tsf)	r_d	α	CSR	MSF _{max}	$(N_1)_{60cs}$	MSF	CSR _{eq,M=7.5}	K _{sigma}	CSR*	FS
0.50	116.00	0.03	0.00	0.03	1.01	1.00	0.758	1.62	23	0.94	0.806	1.10	0.733	2.000 ●

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::															
Depth (ft)	Unit Weight (pcf)	$\alpha_{v,eq}$ (tsf)	$u_{b,eq}$ (tsf)	$\sigma'_{v,eq}$ (tsf)	r_d	α	CSR	MSF _{max}	(N ₁) _{60cs}	MSF	CSR _{eq,M=7.5}	K _{sigma}	CSR*	FS	
1.50	116.00	0.09	0.00	0.09	1.00	1.00	0.757	1.62	23	0.94	0.805	1.10	0.731	2.000	●
2.50	116.00	0.15	0.00	0.15	1.00	1.00	0.755	1.62	23	0.94	0.803	1.10	0.730	2.000	●
3.50	122.00	0.21	0.00	0.21	1.00	1.00	0.754	1.42	18	0.96	0.785	1.10	0.714	2.000	●
4.50	122.00	0.27	0.00	0.27	1.00	1.00	0.752	1.42	18	0.96	0.784	1.10	0.712	2.000	●
5.50	122.00	0.33	0.00	0.33	1.00	1.00	0.751	1.53	21	0.95	0.791	1.10	0.719	2.000	●
6.50	122.00	0.39	0.00	0.39	0.99	1.00	0.749	1.49	20	0.95	0.787	1.10	0.715	2.000	●
7.50	120.00	0.45	0.00	0.45	0.99	1.00	0.748	2.20	54	0.89	0.845	1.10	0.768	2.000	●
8.50	120.00	0.51	0.02	0.49	0.99	1.00	0.770	2.20	52	0.89	0.870	1.10	0.791	2.000	●
9.50	120.00	0.57	0.05	0.52	0.99	1.00	0.811	2.20	51	0.89	0.916	1.10	0.833	2.000	●
10.50	120.00	0.63	0.08	0.55	0.98	1.00	0.848	2.20	52	0.89	0.958	1.10	0.871	2.000	●
11.50	120.00	0.69	0.11	0.58	0.98	1.00	0.880	2.20	51	0.89	0.995	1.10	0.904	2.000	●
12.50	120.00	0.75	0.14	0.61	0.98	1.00	0.909	2.20	50	0.89	1.027	1.10	0.934	2.000	●
13.50	120.00	0.81	0.17	0.64	0.98	1.00	0.935	2.20	39	0.89	1.057	1.10	0.961	2.000	●
14.50	120.00	0.87	0.20	0.67	0.97	1.00	0.959	2.20	38	0.89	1.083	1.10	0.985	2.000	●
15.50	120.00	0.93	0.23	0.70	0.97	1.00	0.980	2.20	38	0.89	1.107	1.10	1.006	2.000	●
16.50	120.00	0.99	0.27	0.72	0.97	1.00	0.999	2.20	41	0.89	1.128	1.10	1.026	2.000	●
17.50	120.00	1.05	0.30	0.75	0.97	1.00	1.016	2.20	40	0.89	1.148	1.10	1.043	2.000	●
18.50	120.00	1.11	0.33	0.78	0.96	1.00	1.031	1.45	19	0.96	1.078	1.04	1.038	0.187	●
19.50	120.00	1.17	0.36	0.81	0.96	1.00	1.045	1.45	19	0.96	1.093	1.03	1.056	0.184	●
20.50	120.00	1.23	0.39	0.84	0.96	1.00	1.058	1.45	19	0.96	1.106	1.03	1.074	0.181	●
21.50	120.00	1.29	0.42	0.87	0.95	1.00	1.069	1.45	19	0.96	1.118	1.03	1.090	0.178	●
22.50	120.00	1.35	0.45	0.90	0.95	1.00	1.079	1.42	18	0.96	1.124	1.02	1.102	0.167	●
23.50	120.00	1.41	0.48	0.93	0.95	1.00	1.089	2.20	109	0.89	1.230	1.04	1.183	2.000	●
24.50	120.00	1.47	0.51	0.95	0.95	1.00	1.097	2.20	108	0.89	1.240	1.03	1.203	2.000	●
25.50	120.00	1.53	0.55	0.98	0.94	1.00	1.105	2.20	108	0.89	1.248	1.02	1.222	2.000	●
26.50	120.00	1.59	0.58	1.01	0.94	1.00	1.111	2.20	107	0.89	1.256	1.01	1.239	2.000	●
27.50	120.00	1.65	0.61	1.04	0.94	1.00	1.118	2.20	106	0.89	1.263	1.00	1.256	2.000	●
28.50	120.00	1.71	0.64	1.07	0.93	1.00	1.123	2.20	106	0.89	1.269	1.00	1.273	2.000	●
29.50	120.00	1.77	0.67	1.10	0.93	1.00	1.128	2.20	105	0.89	1.274	0.99	1.288	2.000	●
30.50	120.00	1.83	0.70	1.13	0.93	1.00	1.132	2.20	110	0.89	1.279	0.98	1.303	2.000	●
31.50	120.00	1.89	0.73	1.16	0.92	1.00	1.136	2.20	110	0.89	1.283	0.97	1.317	2.000	●
32.50	120.00	1.95	0.76	1.18	0.92	1.00	1.139	2.20	109	0.89	1.287	0.97	1.331	2.000	●
33.50	120.00	2.01	0.80	1.21	0.91	1.00	1.141	2.20	108	0.89	1.290	0.96	1.344	2.000	●

Abbreviations

- $\alpha_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
- $u_{b,eq}$: Water pressure at test point, during earthquake (tsf)
- $\sigma'_{v,eq}$: Effective overburden pressure, during earthquake (tsf)
- r_d : Nonlinear shear mass factor
- α : Improvement factor due to stone columns
- CSR : Cyclic Stress Ratio
- MSF : Magnitude Scaling Factor
- CSR_{eq,M=7.5}: CSR adjusted for M=7.5
- K_{sigma}: Effective overburden stress factor
- CSR*: CSR fully adjusted (user FS applied)***
- FS: Calculated factor of safety against soil liquefaction

*** User FS: 1.00

:: Liquefaction potential according to Iwasaki ::					
Depth (ft)	FS	F	wz	Thickness (ft)	I _L

:: Liquefaction potential according to Iwasaki ::					
Depth (ft)	FS	F	wz	Thickness (ft)	I_L
0.50	2.000	0.00	9.92	1.00	0.00
1.50	2.000	0.00	9.77	1.00	0.00
2.50	2.000	0.00	9.62	1.00	0.00
3.50	2.000	0.00	9.47	1.00	0.00
4.50	2.000	0.00	9.31	1.00	0.00
5.50	2.000	0.00	9.16	1.00	0.00
6.50	2.000	0.00	9.01	1.00	0.00
7.50	2.000	0.00	8.86	1.00	0.00
8.50	2.000	0.00	8.70	1.00	0.00
9.50	2.000	0.00	8.55	1.00	0.00
10.50	2.000	0.00	8.40	1.00	0.00
11.50	2.000	0.00	8.25	1.00	0.00
12.50	2.000	0.00	8.10	1.00	0.00
13.50	2.000	0.00	7.94	1.00	0.00
14.50	2.000	0.00	7.79	1.00	0.00
15.50	2.000	0.00	7.64	1.00	0.00
16.50	2.000	0.00	7.49	1.00	0.00
17.50	2.000	0.00	7.33	1.00	0.00
18.50	0.187	0.81	7.18	1.00	1.78
19.50	0.184	0.82	7.03	1.00	1.75
20.50	0.181	0.82	6.88	1.00	1.72
21.50	0.178	0.82	6.72	1.00	1.68
22.50	0.167	0.83	6.57	1.00	1.67
23.50	2.000	0.00	6.42	1.00	0.00
24.50	2.000	0.00	6.27	1.00	0.00
25.50	2.000	0.00	6.11	1.00	0.00
26.50	2.000	0.00	5.96	1.00	0.00
27.50	2.000	0.00	5.81	1.00	0.00
28.50	2.000	0.00	5.66	1.00	0.00
29.50	2.000	0.00	5.50	1.00	0.00
30.50	2.000	0.00	5.35	1.00	0.00
31.50	2.000	0.00	5.20	1.00	0.00
32.50	2.000	0.00	5.05	1.00	0.00
33.50	2.000	0.00	4.89	1.00	0.00

Overall potential I_L : 8.60

I_L = 0.00 - No liquefaction
 I_L between 0.00 and 5 - Liquefaction not probable
 I_L between 5 and 15 - Liquefaction probable
 I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::												
Depth (ft)	(N₁)₆₀	τ_{av}	p	G_{max} (tsf)	α	b	γ	ε₁₅	N_c	ε_{Nc} (%)	Δh (ft)	ΔS (in)
0.50	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
1.50	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
2.50	23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
3.50	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000

:: Vertical settlements estimation for dry sands ::

Depth (ft)	(N ₁) ₆₀	T _{av}	p	G _{max} (tsf)	a	b	γ	ε ₁₅	N _c	ε _{Nc} (%)	Δh (ft)	ΔS (in)
4.50	18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
5.50	17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
6.50	16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
7.50	50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000

Cumulative settlements: 0.000

Abbreviations

- T_{av}: Average cyclic shear stress
- p: Average stress
- G_{max}: Maximum shear modulus (tsf)
- a, b: Shear strain formula variables
- γ: Average shear strain
- ε₁₅: Volumetric strain after 15 cycles
- N_c: Number of cycles
- ε_{Nc}: Volumetric strain for number of cycles N_c (%)
- Δh: Thickness of soil layer (in)
- ΔS: Settlement of soil layer (in)

:: Vertical & Lateral displacements estimation for saturated sands ::

Depth (ft)	(N ₁) _{60cs}	Y _{lim} (%)	F _a	FS _{liq}	Y _{max} (%)	e _v (%)	dz (ft)	S _{v-1D} (in)	LDI (ft)
8.50	52	0.01	-1.75	2.000	0.00	0.00	1.00	0.000	0.00
9.50	51	0.02	-1.67	2.000	0.00	0.00	1.00	0.000	0.00
10.50	52	0.01	-1.75	2.000	0.00	0.00	1.00	0.000	0.00
11.50	51	0.02	-1.67	2.000	0.00	0.00	1.00	0.000	0.00
12.50	50	0.04	-1.59	2.000	0.00	0.00	1.00	0.000	0.00
13.50	39	1.07	-0.73	2.000	0.00	0.00	1.00	0.000	0.00
14.50	38	1.30	-0.65	2.000	0.00	0.00	1.00	0.000	0.00
15.50	38	1.30	-0.65	2.000	0.00	0.00	1.00	0.000	0.00
16.50	41	0.70	-0.88	2.000	0.00	0.00	1.00	0.000	0.00
17.50	40	0.87	-0.80	2.000	0.00	0.00	1.00	0.000	0.00
18.50	19	17.78	0.57	0.187	17.78	2.40	1.00	0.288	0.18
19.50	19	17.78	0.57	0.184	17.78	2.40	1.00	0.288	0.18
20.50	19	17.78	0.57	0.181	17.78	2.40	1.00	0.288	0.18
21.50	19	17.78	0.57	0.178	17.78	2.40	1.00	0.288	0.18
22.50	18	19.85	0.62	0.167	19.85	2.51	1.00	0.301	0.20
23.50	109	0.00	-6.93	2.000	0.00	0.00	1.00	0.000	0.00
24.50	108	0.00	-6.84	2.000	0.00	0.00	1.00	0.000	0.00
25.50	108	0.00	-6.84	2.000	0.00	0.00	1.00	0.000	0.00
26.50	107	0.00	-6.74	2.000	0.00	0.00	1.00	0.000	0.00
27.50	106	0.00	-6.64	2.000	0.00	0.00	1.00	0.000	0.00
28.50	106	0.00	-6.64	2.000	0.00	0.00	1.00	0.000	0.00
29.50	105	0.00	-6.55	2.000	0.00	0.00	1.00	0.000	0.00
30.50	110	0.00	-7.03	2.000	0.00	0.00	1.00	0.000	0.00
31.50	110	0.00	-7.03	2.000	0.00	0.00	1.00	0.000	0.00
32.50	109	0.00	-6.93	2.000	0.00	0.00	1.00	0.000	0.00
33.50	108	0.00	-6.84	2.000	0.00	0.00	1.00	0.000	0.00

:: Vertical & Lateral displacements estimation for saturated sands ::

Depth (ft)	(N₁)_{60cs}	γ_{lim} (%)	F_a	FS_{liq}	γ_{max} (%)	e_v (%)	dz (ft)	S_{v-1D} (in)	LDI (ft)
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Cumulative settlements: 1.454 0.91

Abbreviations

- γ_{lim}: Limiting shear strain (%)
- F_a/N: Maximum shear strain factor
- γ_{max}: Maximum shear strain (%)
- e_v: Post liquefaction volumetric strain (%)
- S_{v-1D}: Estimated vertical settlement (in)
- LDI: Estimated lateral displacement (ft)

SPT BASED LIQUEFACTION ANALYSIS REPORT

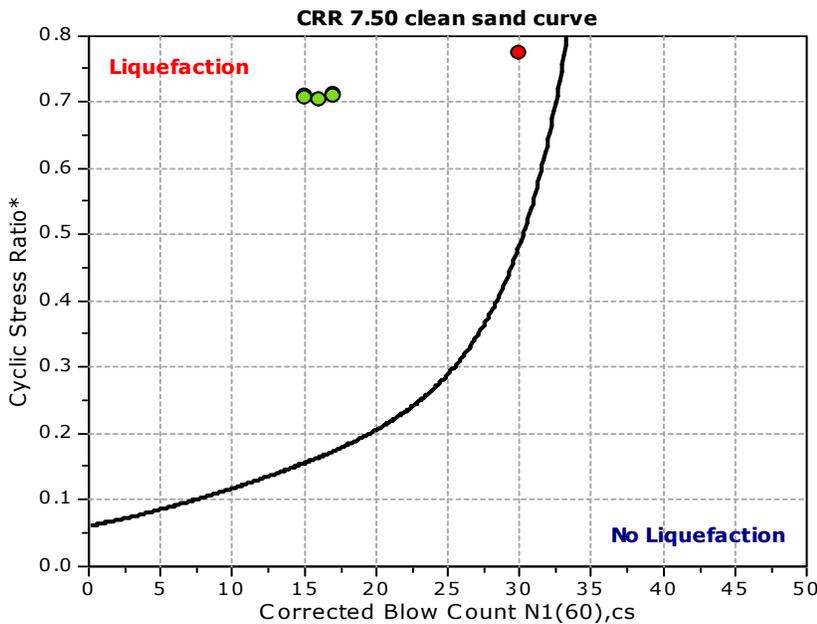
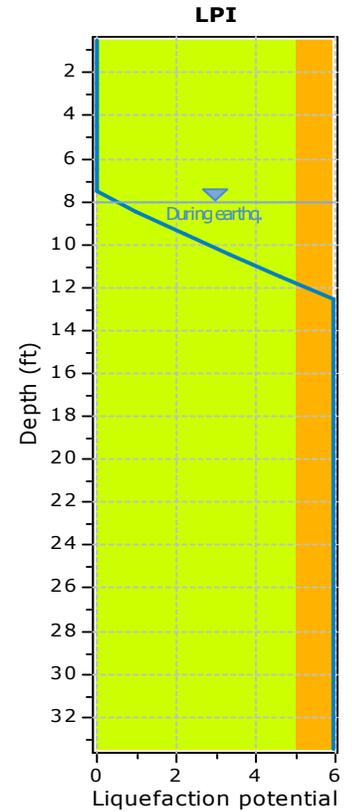
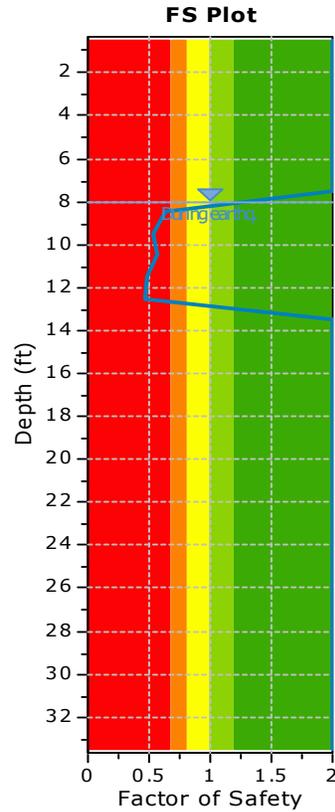
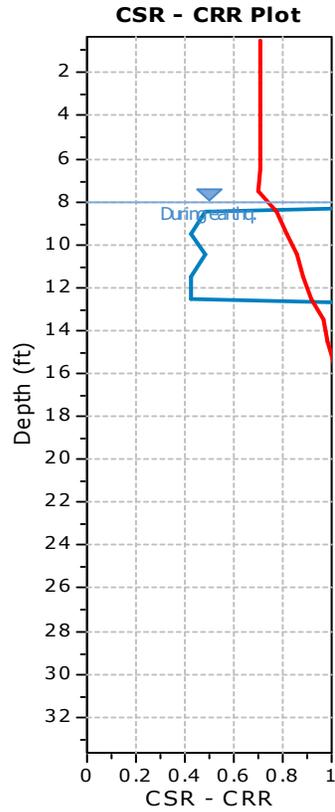
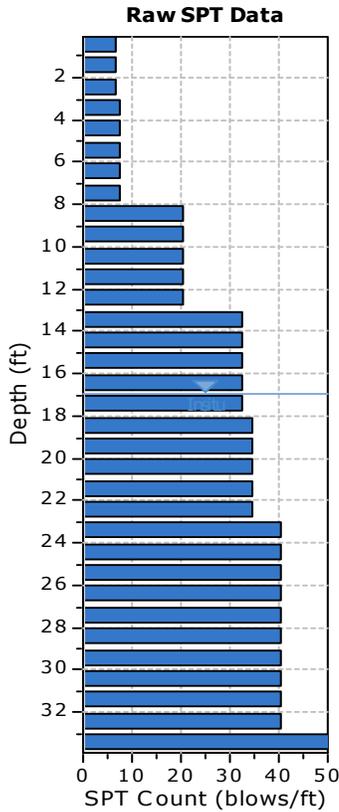
Project title : 575 Los Trancos Road Residence

SPT Name: B-2

Location : Palo Alto, California

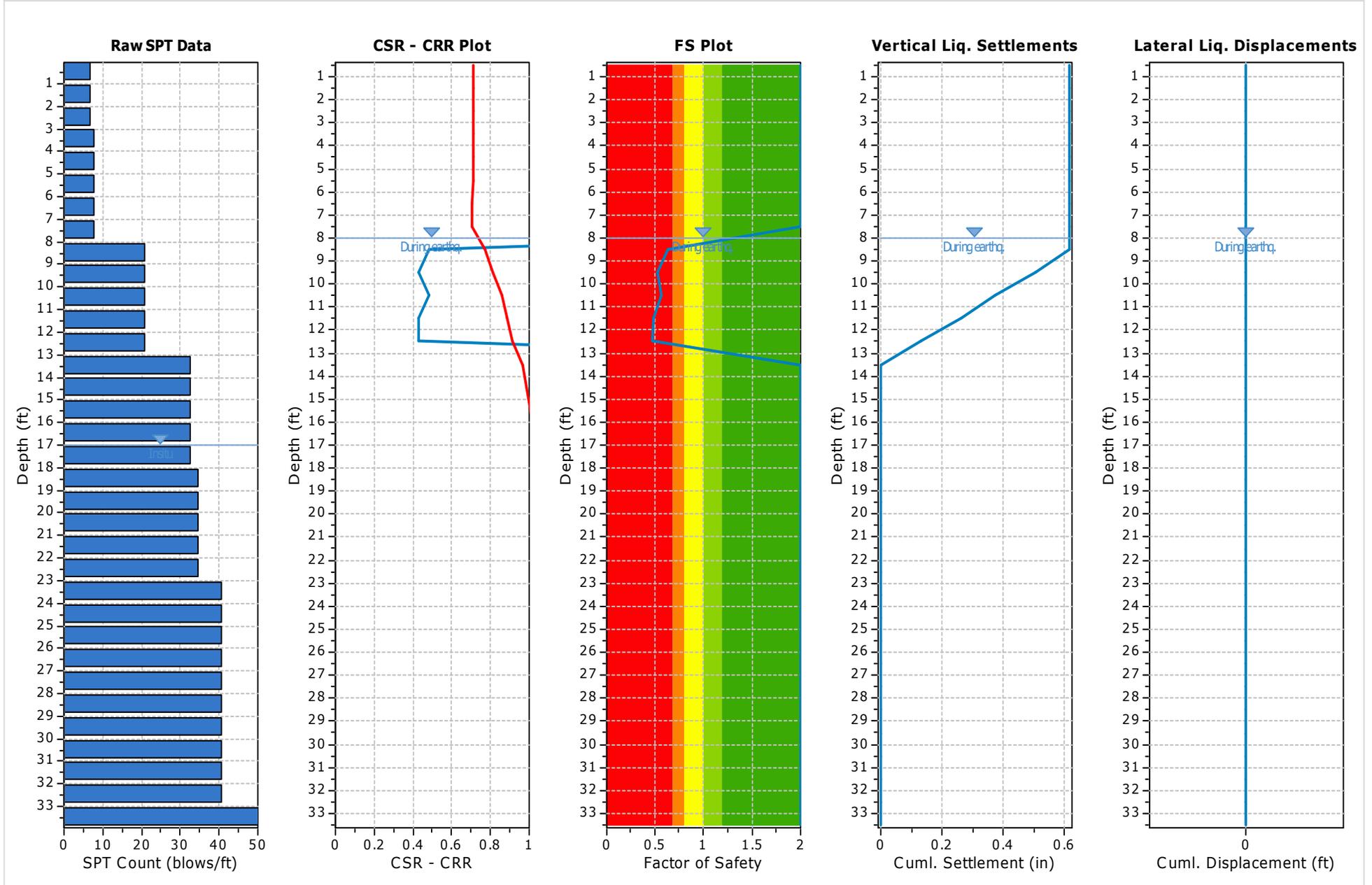
:: Input parameters and analysis properties ::

Analysis method:	Boulanger & Idriss, 2014	G.W.T. (in-situ):	17.00 ft
Fines correction method:	Boulanger & Idriss, 2014	G.W.T. (earthq.):	8.00 ft
Sampling method:	Standard Sampler	Earthquake magnitude M_w :	7.80
Borehole diameter:	200mm	Peak ground acceleration:	1.16 g
Rod length:	3.30 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.00		



- F.S. color scheme**
- Red: Almost certain it will liquefy
 - Orange: Very likely to liquefy
 - Yellow: Liquefaction and no liq. are equally likely
 - Light Green: Unlike to liquefy
 - Dark Green: Almost certain it will not liquefy
- LPI color scheme**
- Red: Very high risk
 - Orange: High risk
 - Yellow: Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::					
Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
0.50	7	21.00	117.00	1.00	Yes
1.50	7	21.00	117.00	1.00	Yes
2.50	7	21.00	117.00	1.00	Yes
3.50	8	21.00	113.00	1.00	Yes
4.50	8	21.00	113.00	1.00	Yes
5.50	8	21.00	113.00	1.00	Yes
6.50	8	21.00	113.00	1.00	Yes
7.50	8	21.00	113.00	1.00	Yes
8.50	21	21.00	120.00	1.00	Yes
9.50	21	21.00	120.00	1.00	Yes
10.50	21	21.00	120.00	1.00	Yes
11.50	21	21.00	120.00	1.00	Yes
12.50	21	21.00	120.00	1.00	Yes
13.50	33	21.00	137.00	1.00	Yes
14.50	33	21.00	137.00	1.00	Yes
15.50	33	21.00	137.00	1.00	Yes
16.50	33	21.00	137.00	1.00	Yes
17.50	33	9.00	120.00	1.00	Yes
18.50	35	9.00	120.00	1.00	Yes
19.50	35	9.00	120.00	1.00	Yes
20.50	35	9.00	120.00	1.00	Yes
21.50	35	9.00	120.00	1.00	Yes
22.50	35	9.00	120.00	1.00	Yes
23.50	41	31.00	120.00	1.00	Yes
24.50	41	31.00	120.00	1.00	Yes
25.50	41	31.00	120.00	1.00	Yes
26.50	41	31.00	120.00	1.00	Yes
27.50	41	31.00	120.00	1.00	Yes
28.50	41	9.00	120.00	1.00	Yes
29.50	41	9.00	120.00	1.00	Yes
30.50	41	9.00	120.00	1.00	Yes
31.50	41	9.00	120.00	1.00	Yes
32.50	41	9.00	120.00	1.00	Yes
33.50	100	9.00	120.00	1.00	Yes

Abbreviations

- Depth: Depth at which test was performed (ft)
- SPT Field Value: Number of blows per foot
- Fines Content: Fines content at test depth (%)
- Unit Weight: Unit weight at test depth (pcf)
- Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
- Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::																
Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_0 (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	CRR _{7.5}
0.50	7	117.00	0.03	0.00	0.03	0.46	1.70	1.00	1.15	0.75	1.00	10	21.00	4.63	15	4.000
1.50	7	117.00	0.09	0.00	0.09	0.46	1.70	1.00	1.15	0.75	1.00	10	21.00	4.63	15	4.000
2.50	7	117.00	0.15	0.00	0.15	0.46	1.70	1.00	1.15	0.75	1.00	10	21.00	4.63	15	4.000

:: Cyclic Resistance Ratio (CRR) calculation data ::

Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	CRR _{7.5}
3.50	8	113.00	0.20	0.00	0.20	0.44	1.70	1.00	1.15	0.75	1.00	12	21.00	4.63	17	4.000
4.50	8	113.00	0.26	0.00	0.26	0.44	1.70	1.00	1.15	0.75	1.00	12	21.00	4.63	17	4.000
5.50	8	113.00	0.32	0.00	0.32	0.44	1.70	1.00	1.15	0.75	1.00	12	21.00	4.63	17	4.000
6.50	8	113.00	0.37	0.00	0.37	0.45	1.61	1.00	1.15	0.75	1.00	11	21.00	4.63	16	4.000
7.50	8	113.00	0.43	0.00	0.43	0.46	1.51	1.00	1.15	0.80	1.00	11	21.00	4.63	16	4.000
8.50	21	120.00	0.49	0.00	0.49	0.35	1.31	1.00	1.15	0.80	1.00	25	21.00	4.63	30	0.485
9.50	21	120.00	0.55	0.00	0.55	0.36	1.27	1.00	1.15	0.80	1.00	24	21.00	4.63	29	0.429
10.50	21	120.00	0.61	0.00	0.61	0.36	1.22	1.00	1.15	0.85	1.00	25	21.00	4.63	30	0.485
11.50	21	120.00	0.67	0.00	0.67	0.36	1.18	1.00	1.15	0.85	1.00	24	21.00	4.63	29	0.429
12.50	21	120.00	0.73	0.00	0.73	0.37	1.15	1.00	1.15	0.85	1.00	24	21.00	4.63	29	0.429
13.50	33	137.00	0.80	0.00	0.80	0.30	1.09	1.00	1.15	0.85	1.00	35	21.00	4.63	40	4.000
14.50	33	137.00	0.87	0.00	0.87	0.30	1.06	1.00	1.15	0.85	1.00	34	21.00	4.63	39	4.000
15.50	33	137.00	0.93	0.00	0.93	0.31	1.04	1.00	1.15	0.85	1.00	34	21.00	4.63	39	4.000
16.50	33	137.00	1.00	0.00	1.00	0.29	1.02	1.00	1.15	0.95	1.00	37	21.00	4.63	42	4.000
17.50	33	120.00	1.06	0.02	1.05	0.32	1.00	1.00	1.15	0.95	1.00	36	9.00	0.72	37	4.000
18.50	35	120.00	1.12	0.05	1.08	0.31	0.99	1.00	1.15	0.95	1.00	38	9.00	0.72	39	4.000
19.50	35	120.00	1.18	0.08	1.10	0.31	0.99	1.00	1.15	0.95	1.00	38	9.00	0.72	39	4.000
20.50	35	120.00	1.24	0.11	1.13	0.31	0.98	1.00	1.15	0.95	1.00	37	9.00	0.72	38	4.000
21.50	35	120.00	1.30	0.14	1.16	0.31	0.97	1.00	1.15	0.95	1.00	37	9.00	0.72	38	4.000
22.50	35	120.00	1.36	0.17	1.19	0.31	0.96	1.00	1.15	0.95	1.00	37	9.00	0.72	38	4.000
23.50	41	120.00	1.42	0.20	1.22	0.26	0.96	1.00	1.15	0.95	1.00	43	31.00	5.40	48	4.000
24.50	41	120.00	1.48	0.23	1.25	0.26	0.96	1.00	1.15	0.95	1.00	43	31.00	5.40	48	4.000
25.50	41	120.00	1.54	0.27	1.28	0.26	0.95	1.00	1.15	0.95	1.00	43	31.00	5.40	48	4.000
26.50	41	120.00	1.60	0.30	1.31	0.26	0.95	1.00	1.15	0.95	1.00	42	31.00	5.40	47	4.000
27.50	41	120.00	1.66	0.33	1.34	0.26	0.94	1.00	1.15	0.95	1.00	42	31.00	5.40	47	4.000
28.50	41	120.00	1.72	0.36	1.36	0.28	0.93	1.00	1.15	0.95	1.00	42	9.00	0.72	43	4.000
29.50	41	120.00	1.78	0.39	1.39	0.29	0.92	1.00	1.15	0.95	1.00	41	9.00	0.72	42	4.000
30.50	41	120.00	1.84	0.42	1.42	0.27	0.92	1.00	1.15	1.00	1.00	43	9.00	0.72	44	4.000
31.50	41	120.00	1.90	0.45	1.45	0.28	0.92	1.00	1.15	1.00	1.00	43	9.00	0.72	44	4.000
32.50	41	120.00	1.96	0.48	1.48	0.28	0.91	1.00	1.15	1.00	1.00	43	9.00	0.72	44	4.000
33.50	100	120.00	2.02	0.51	1.51	0.26	0.91	1.00	1.15	1.00	1.00	105	9.00	0.72	106	4.000

Abbreviations

- σ_v : Total stress during SPT test (tsf)
- u_o : Water pore pressure during SPT test (tsf)
- σ'_{vo} : Effective overburden pressure during SPT test (tsf)
- m: Stress exponent normalization factor
- C_N : Overburden correction factor
- C_E : Energy correction factor
- C_B : Borehole diameter correction factor
- C_R : Rod length correction factor
- C_S : Liner correction factor
- $N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
- $\Delta(N_1)_{60}$: Equivalent clean sand adjustment
- $N_{1(60)cs}$: Corrected $N_{1(60)}$ value for fines content
- CRR_{7.5}: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::

Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{v,eq}$ (tsf)	r_d	α	CSR	MSF _{max}	$(N_1)_{60cs}$	MSF	CSR _{eq,M=7.5}	K _{sigma}	CSR*	FS
0.50	117.00	0.03	0.00	0.03	1.01	1.00	0.758	1.32	15	0.97	0.782	1.10	0.711	2.000 ●

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::															
Depth (ft)	Unit Weight (pcf)	$\alpha_{v,eq}$ (tsf)	$u_{b,eq}$ (tsf)	$\sigma'_{v,eq}$ (tsf)	r_d	α	CSR	MSF _{max}	(N ₁) _{60cs}	MSF	CSR _{eq,M=7.5}	K _{sigma}	CSR*	FS	
1.50	117.00	0.09	0.00	0.09	1.00	1.00	0.757	1.32	15	0.97	0.780	1.10	0.709	2.000	●
2.50	117.00	0.15	0.00	0.15	1.00	1.00	0.755	1.32	15	0.97	0.779	1.10	0.708	2.000	●
3.50	113.00	0.20	0.00	0.20	1.00	1.00	0.754	1.38	17	0.96	0.782	1.10	0.711	2.000	●
4.50	113.00	0.26	0.00	0.26	1.00	1.00	0.752	1.38	17	0.96	0.781	1.10	0.710	2.000	●
5.50	113.00	0.32	0.00	0.32	1.00	1.00	0.751	1.38	17	0.96	0.779	1.10	0.709	2.000	●
6.50	113.00	0.37	0.00	0.37	0.99	1.00	0.749	1.35	16	0.97	0.775	1.10	0.705	2.000	●
7.50	113.00	0.43	0.00	0.43	0.99	1.00	0.748	1.35	16	0.97	0.774	1.10	0.703	2.000	●
8.50	120.00	0.49	0.02	0.47	0.99	1.00	0.771	2.00	30	0.90	0.852	1.10	0.775	0.626	●
9.50	120.00	0.55	0.05	0.50	0.99	1.00	0.814	1.94	29	0.91	0.894	1.10	0.813	0.528	●
10.50	120.00	0.61	0.08	0.53	0.98	1.00	0.852	2.00	30	0.90	0.942	1.10	0.856	0.566	●
11.50	120.00	0.67	0.11	0.56	0.98	1.00	0.885	1.94	29	0.91	0.973	1.10	0.884	0.485	●
12.50	120.00	0.73	0.14	0.59	0.98	1.00	0.915	1.94	29	0.91	1.005	1.10	0.914	0.469	●
13.50	137.00	0.80	0.17	0.63	0.98	1.00	0.939	2.20	40	0.89	1.061	1.10	0.965	2.000	●
14.50	137.00	0.87	0.20	0.66	0.97	1.00	0.960	2.20	39	0.89	1.084	1.10	0.986	2.000	●
15.50	137.00	0.93	0.23	0.70	0.97	1.00	0.978	2.20	39	0.89	1.105	1.10	1.004	2.000	●
16.50	137.00	1.00	0.27	0.74	0.97	1.00	0.994	2.20	42	0.89	1.123	1.10	1.021	2.000	●
17.50	120.00	1.06	0.30	0.77	0.97	1.00	1.011	2.20	37	0.89	1.142	1.10	1.043	2.000	●
18.50	120.00	1.12	0.33	0.80	0.96	1.00	1.026	2.20	39	0.89	1.159	1.08	1.069	2.000	●
19.50	120.00	1.18	0.36	0.82	0.96	1.00	1.040	2.20	39	0.89	1.175	1.07	1.094	2.000	●
20.50	120.00	1.24	0.39	0.85	0.96	1.00	1.052	2.20	38	0.89	1.189	1.06	1.118	2.000	●
21.50	120.00	1.30	0.42	0.88	0.95	1.00	1.064	2.20	38	0.89	1.202	1.05	1.140	2.000	●
22.50	120.00	1.36	0.45	0.91	0.95	1.00	1.074	2.20	38	0.89	1.213	1.04	1.162	2.000	●
23.50	120.00	1.42	0.48	0.94	0.95	1.00	1.083	2.20	48	0.89	1.224	1.04	1.182	2.000	●
24.50	120.00	1.48	0.51	0.97	0.95	1.00	1.092	2.20	48	0.89	1.233	1.03	1.202	2.000	●
25.50	120.00	1.54	0.55	1.00	0.94	1.00	1.099	2.20	48	0.89	1.242	1.02	1.220	2.000	●
26.50	120.00	1.60	0.58	1.03	0.94	1.00	1.106	2.20	47	0.89	1.250	1.01	1.238	2.000	●
27.50	120.00	1.66	0.61	1.05	0.94	1.00	1.112	2.20	47	0.89	1.257	1.00	1.255	2.000	●
28.50	120.00	1.72	0.64	1.08	0.93	1.00	1.118	2.20	43	0.89	1.263	0.99	1.271	2.000	●
29.50	120.00	1.78	0.67	1.11	0.93	1.00	1.122	2.20	42	0.89	1.268	0.99	1.287	2.000	●
30.50	120.00	1.84	0.70	1.14	0.93	1.00	1.127	2.20	44	0.89	1.273	0.98	1.302	2.000	●
31.50	120.00	1.90	0.73	1.17	0.92	1.00	1.130	2.20	44	0.89	1.277	0.97	1.316	2.000	●
32.50	120.00	1.96	0.76	1.20	0.92	1.00	1.134	2.20	44	0.89	1.281	0.96	1.330	2.000	●
33.50	120.00	2.02	0.80	1.23	0.91	1.00	1.136	2.20	106	0.89	1.284	0.96	1.343	2.000	●

Abbreviations

- $\alpha_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
- $u_{b,eq}$: Water pressure at test point, during earthquake (tsf)
- $\sigma'_{v,eq}$: Effective overburden pressure, during earthquake (tsf)
- r_d : Nonlinear shear mass factor
- α : Improvement factor due to stone columns
- CSR : Cyclic Stress Ratio
- MSF : Magnitude Scaling Factor
- CSR_{eq,M=7.5}: CSR adjusted for M=7.5
- K_{sigma}: Effective overburden stress factor
- CSR*: CSR fully adjusted (user FS applied)***
- FS: Calculated factor of safety against soil liquefaction

*** User FS: 1.00

:: Liquefaction potential according to Iwasaki ::					
Depth (ft)	FS	F	wz	Thickness (ft)	I _L

:: Liquefaction potential according to Iwasaki ::					
Depth (ft)	FS	F	wz	Thickness (ft)	I _L
0.50	2.000	0.00	9.92	1.00	0.00
1.50	2.000	0.00	9.77	1.00	0.00
2.50	2.000	0.00	9.62	1.00	0.00
3.50	2.000	0.00	9.47	1.00	0.00
4.50	2.000	0.00	9.31	1.00	0.00
5.50	2.000	0.00	9.16	1.00	0.00
6.50	2.000	0.00	9.01	1.00	0.00
7.50	2.000	0.00	8.86	1.00	0.00
8.50	0.626	0.37	8.70	1.00	0.99
9.50	0.528	0.47	8.55	1.00	1.23
10.50	0.566	0.43	8.40	1.00	1.11
11.50	0.485	0.51	8.25	1.00	1.29
12.50	0.469	0.53	8.10	1.00	1.31
13.50	2.000	0.00	7.94	1.00	0.00
14.50	2.000	0.00	7.79	1.00	0.00
15.50	2.000	0.00	7.64	1.00	0.00
16.50	2.000	0.00	7.49	1.00	0.00
17.50	2.000	0.00	7.33	1.00	0.00
18.50	2.000	0.00	7.18	1.00	0.00
19.50	2.000	0.00	7.03	1.00	0.00
20.50	2.000	0.00	6.88	1.00	0.00
21.50	2.000	0.00	6.72	1.00	0.00
22.50	2.000	0.00	6.57	1.00	0.00
23.50	2.000	0.00	6.42	1.00	0.00
24.50	2.000	0.00	6.27	1.00	0.00
25.50	2.000	0.00	6.11	1.00	0.00
26.50	2.000	0.00	5.96	1.00	0.00
27.50	2.000	0.00	5.81	1.00	0.00
28.50	2.000	0.00	5.66	1.00	0.00
29.50	2.000	0.00	5.50	1.00	0.00
30.50	2.000	0.00	5.35	1.00	0.00
31.50	2.000	0.00	5.20	1.00	0.00
32.50	2.000	0.00	5.05	1.00	0.00
33.50	2.000	0.00	4.89	1.00	0.00

Overall potential I_L : 5.94

I_L = 0.00 - No liquefaction
 I_L between 0.00 and 5 - Liquefaction not probable
 I_L between 5 and 15 - Liquefaction probable
 I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::												
Depth (ft)	(N ₁) ₆₀	τ _{av}	p	G _{max} (tsf)	α	b	γ	ε ₁₅	N _c	ε _{Nc} (%)	Δh (ft)	ΔS (in)
0.50	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
1.50	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
2.50	10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
3.50	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000

:: Vertical settlements estimation for dry sands ::

Depth (ft)	(N ₁) ₆₀	T _{av}	p	G _{max} (tsf)	a	b	γ	ε ₁₅	N _c	ε _{Nc} (%)	Δh (ft)	ΔS (in)
4.50	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
5.50	12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
6.50	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000
7.50	11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.000

Cumulative settlements: 0.000

Abbreviations

- T_{av}: Average cyclic shear stress
- p: Average stress
- G_{max}: Maximum shear modulus (tsf)
- a, b: Shear strain formula variables
- γ: Average shear strain
- ε₁₅: Volumetric strain after 15 cycles
- N_c: Number of cycles
- ε_{Nc}: Volumetric strain for number of cycles N_c (%)
- Δh: Thickness of soil layer (in)
- ΔS: Settlement of soil layer (in)

:: Vertical & Lateral displacements estimation for saturated sands ::

Depth (ft)	(N ₁) _{60cs}	Y _{lim} (%)	F _α	FS _{liq}	Y _{max} (%)	e _v (%)	dz (ft)	S _{v-1D} (in)	LDI (ft)
8.50	30	4.65	-0.09	0.626	4.65	0.92	1.00	0.111	0.00
9.50	29	5.33	-0.02	0.528	5.33	1.10	1.00	0.131	0.00
10.50	30	4.65	-0.09	0.566	4.65	0.92	1.00	0.111	0.00
11.50	29	5.33	-0.02	0.485	5.33	1.10	1.00	0.131	0.00
12.50	29	5.33	-0.02	0.469	5.33	1.10	1.00	0.131	0.00
13.50	40	0.87	-0.80	2.000	0.00	0.00	1.00	0.000	0.00
14.50	39	1.07	-0.73	2.000	0.00	0.00	1.00	0.000	0.00
15.50	39	1.07	-0.73	2.000	0.00	0.00	1.00	0.000	0.00
16.50	42	0.56	-0.96	2.000	0.00	0.00	1.00	0.000	0.00
17.50	37	1.56	-0.58	2.000	0.00	0.00	1.00	0.000	0.00
18.50	39	1.07	-0.73	2.000	0.00	0.00	1.00	0.000	0.00
19.50	39	1.07	-0.73	2.000	0.00	0.00	1.00	0.000	0.00
20.50	38	1.30	-0.65	2.000	0.00	0.00	1.00	0.000	0.00
21.50	38	1.30	-0.65	2.000	0.00	0.00	1.00	0.000	0.00
22.50	38	1.30	-0.65	2.000	0.00	0.00	1.00	0.000	0.00
23.50	48	0.09	-1.43	2.000	0.00	0.00	1.00	0.000	0.00
24.50	48	0.09	-1.43	2.000	0.00	0.00	1.00	0.000	0.00
25.50	48	0.09	-1.43	2.000	0.00	0.00	1.00	0.000	0.00
26.50	47	0.13	-1.35	2.000	0.00	0.00	1.00	0.000	0.00
27.50	47	0.13	-1.35	2.000	0.00	0.00	1.00	0.000	0.00
28.50	43	0.44	-1.03	2.000	0.00	0.00	1.00	0.000	0.00
29.50	42	0.56	-0.96	2.000	0.00	0.00	1.00	0.000	0.00
30.50	44	0.34	-1.11	2.000	0.00	0.00	1.00	0.000	0.00
31.50	44	0.34	-1.11	2.000	0.00	0.00	1.00	0.000	0.00
32.50	44	0.34	-1.11	2.000	0.00	0.00	1.00	0.000	0.00
33.50	106	0.00	-6.64	2.000	0.00	0.00	1.00	0.000	0.00

:: Vertical & Lateral displacements estimation for saturated sands ::									
Depth (ft)	(N ₁) _{60cs}	γ _{lim} (%)	F _a	FS _{liq}	γ _{max} (%)	e _v (%)	dz (ft)	S _{v-1D} (in)	LDI (ft)

Cumulative settlements: 0.616 0.00

Abbreviations

- γ_{lim}: Limiting shear strain (%)
- F_a/N: Maximum shear strain factor
- γ_{max}: Maximum shear strain (%)
- e_v: Post liquefaction volumetric strain (%)
- S_{v-1D}: Estimated vertical settlement (in)
- LDI: Estimated lateral displacement (ft)

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SPT BASED LIQUEFACTION ANALYSIS REPORT

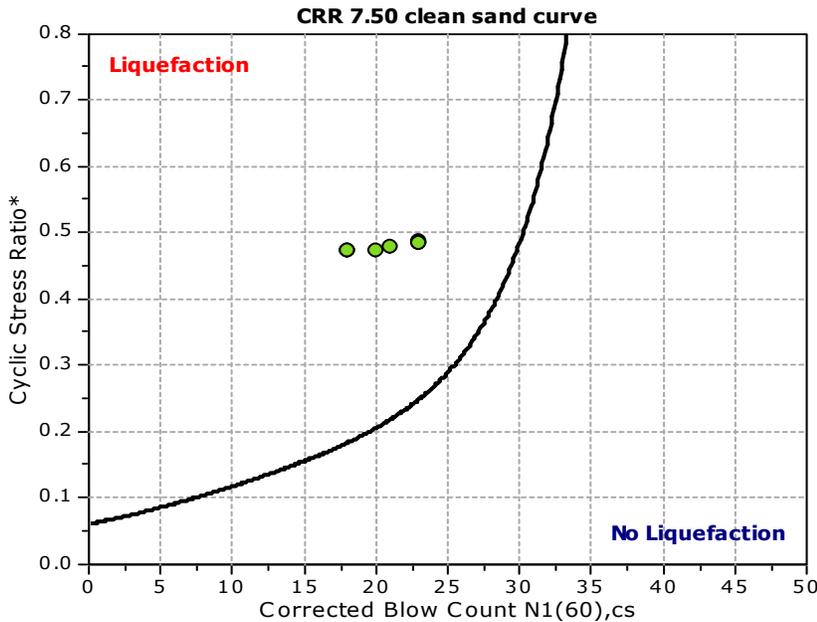
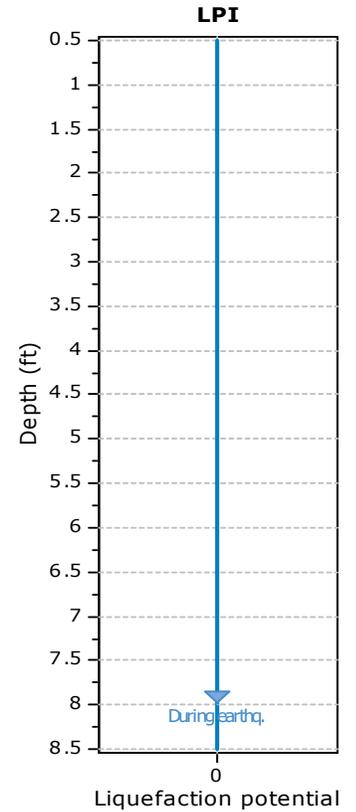
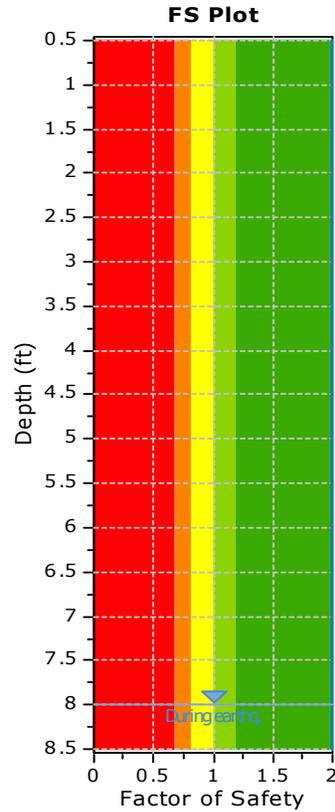
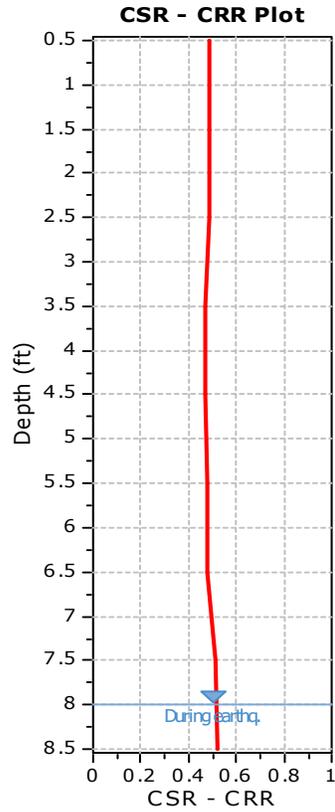
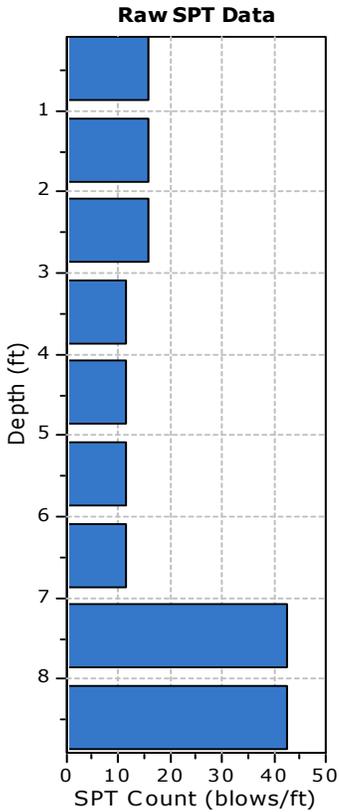
Project title : 575 Los Trancos Road Residence, Dry Sand

SPT Name: B-1

Location : Palo Alto, California

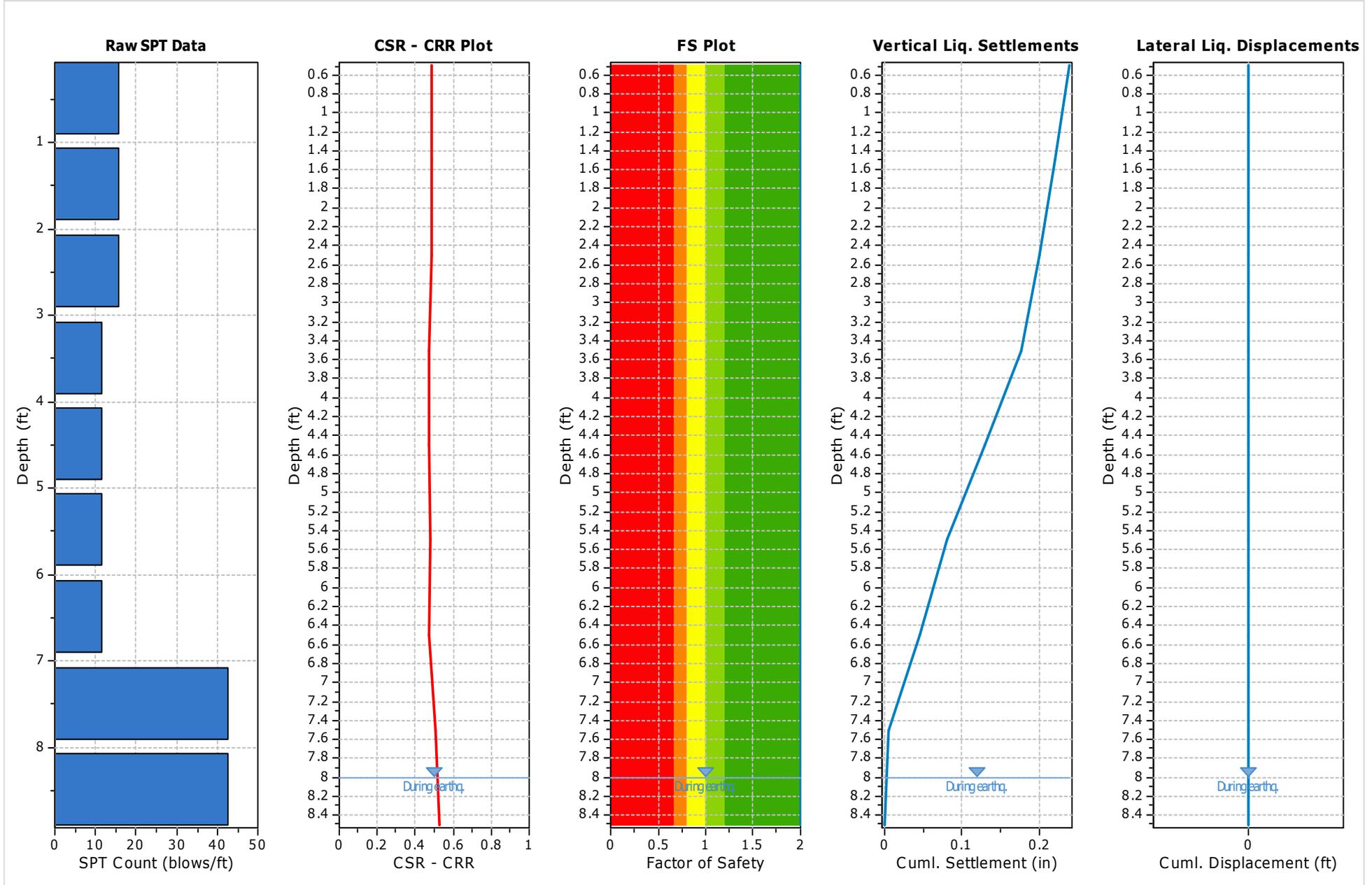
:: Input parameters and analysis properties ::

Analysis method:	Boulanger & Idriss, 2014	G.W.T. (in-situ):	18.00 ft
Fines correction method:	Boulanger & Idriss, 2014	G.W.T. (earthq.):	8.00 ft
Sampling method:	Standard Sampler	Earthquake magnitude M_w :	7.80
Borehole diameter:	200mm	Peak ground acceleration:	0.77 g
Rod length:	3.30 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.00		



- F.S. color scheme**
- Red: Almost certain it will liquefy
 - Orange: Very likely to liquefy
 - Yellow: Liquefaction and no liq. are equally likely
 - Light Green: Unlike to liquefy
 - Dark Green: Almost certain it will not liquefy
- LPI color scheme**
- Red: Very high risk
 - Orange: High risk
 - Yellow: Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::					
Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
0.50	16	5.00	116.00	1.00	Yes
1.50	16	5.00	116.00	1.00	Yes
2.50	16	5.00	116.00	1.00	Yes
3.50	12	5.00	122.00	1.00	Yes
4.50	12	5.00	122.00	1.00	Yes
5.50	12	18.00	122.00	1.00	Yes
6.50	12	18.00	122.00	1.00	Yes
7.50	43	18.00	120.00	1.00	No
8.50	43	18.00	120.00	1.00	No

Abbreviations

Depth: Depth at which test was performed (ft)
 SPT Field Value: Number of blows per foot
 Fines Content: Fines content at test depth (%)
 Unit Weight: Unit weight at test depth (pcf)
 Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
 Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::																
Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	CRR _{7.5}
0.50	16	116.00	0.03	0.00	0.03	0.41	1.70	1.00	1.15	0.75	1.00	23	5.00	0.00	23	4.000
1.50	16	116.00	0.09	0.00	0.09	0.41	1.70	1.00	1.15	0.75	1.00	23	5.00	0.00	23	4.000
2.50	16	116.00	0.15	0.00	0.15	0.41	1.70	1.00	1.15	0.75	1.00	23	5.00	0.00	23	4.000
3.50	12	122.00	0.21	0.00	0.21	0.46	1.70	1.00	1.15	0.75	1.00	18	5.00	0.00	18	4.000
4.50	12	122.00	0.27	0.00	0.27	0.46	1.70	1.00	1.15	0.75	1.00	18	5.00	0.00	18	4.000
5.50	12	122.00	0.33	0.00	0.33	0.41	1.62	1.00	1.15	0.75	1.00	17	18.00	4.09	21	4.000
6.50	12	122.00	0.39	0.00	0.39	0.42	1.53	1.00	1.15	0.75	1.00	16	18.00	4.09	20	4.000
7.50	43	120.00	0.45	0.00	0.45	0.26	1.25	1.00	1.15	0.80	1.00	50	18.00	4.09	54	4.000
8.50	43	120.00	0.51	0.00	0.51	0.26	1.21	1.00	1.15	0.80	1.00	48	18.00	4.09	52	4.000

Abbreviations

σ_v : Total stress during SPT test (tsf)
 u_o : Water pore pressure during SPT test (tsf)
 σ'_{vo} : Effective overburden pressure during SPT test (tsf)
 m: Stress exponent normalization factor
 C_N : Overburden correction factor
 C_E : Energy correction factor
 C_B : Borehole diameter correction factor
 C_R : Rod length correction factor
 C_S : Liner correction factor
 $N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
 $\Delta(N_1)_{60}$: Equivalent clean sand adjustment
 $N_{1(60)cs}$: Corrected $N_{1(60)}$ value for fines content
 CRR_{7.5}: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::															
Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{v_o,eq}$ (tsf)	r_d	α	CSR	MSF _{max}	$(N_1)_{60cs}$	MSF	CSR _{eq,M=7.5}	K_{sigma}	CSR*	FS	
0.50	116.00	0.03	0.00	0.03	1.01	1.00	0.503	1.62	23	0.94	0.535	1.10	0.486	2.000 ●	
1.50	116.00	0.09	0.00	0.09	1.00	1.00	0.502	1.62	23	0.94	0.534	1.10	0.486	2.000 ●	
2.50	116.00	0.15	0.00	0.15	1.00	1.00	0.501	1.62	23	0.94	0.533	1.10	0.485	2.000 ●	

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::														
Depth (ft)	Unit Weight (pcf)	$\alpha_{v,eq}$ (tsf)	$u_{b,eq}$ (tsf)	$\sigma'_{vo,eq}$ (tsf)	r_d	α	CSR	MSF _{max}	(N ₁) _{60cs}	MSF	CSR _{eq,M=7.5}	K _{sigma}	CSR*	FS
3.50	122.00	0.21	0.00	0.21	1.00	1.00	0.500	1.42	18	0.96	0.521	1.10	0.474	2.000
4.50	122.00	0.27	0.00	0.27	1.00	1.00	0.499	1.42	18	0.96	0.520	1.10	0.473	2.000
5.50	122.00	0.33	0.00	0.33	1.00	1.00	0.498	1.53	21	0.95	0.525	1.10	0.478	2.000
6.50	122.00	0.39	0.00	0.39	0.99	1.00	0.497	1.49	20	0.95	0.522	1.10	0.475	2.000
7.50	120.00	0.45	0.00	0.45	0.99	1.00	0.496	2.20	54	0.89	0.561	1.10	0.510	2.000
8.50	120.00	0.51	0.02	0.49	0.99	1.00	0.511	2.20	52	0.89	0.577	1.10	0.525	2.000

Abbreviations

- $\alpha_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
- $u_{b,eq}$: Water pressure at test point, during earthquake (tsf)
- $\sigma'_{vo,eq}$: Effective overburden pressure, during earthquake (tsf)
- r_d : Nonlinear shear mass factor
- α : Improvement factor due to stone columns
- CSR : Cyclic Stress Ratio
- MSF : Magnitude Scaling Factor
- CSR_{eq,M=7.5}: CSR adjusted for M=7.5
- K_{sigma}: Effective overburden stress factor
- CSR*: CSR fully adjusted (user FS applied)***
- FS: Calculated factor of safety against soil liquefaction

*** User FS: 1.00

:: Liquefaction potential according to Iwasaki ::					
Depth (ft)	FS	F	wz	Thickness (ft)	I _L
0.50	2.000	0.00	9.92	1.00	0.00
1.50	2.000	0.00	9.77	1.00	0.00
2.50	2.000	0.00	9.62	1.00	0.00
3.50	2.000	0.00	9.47	1.00	0.00
4.50	2.000	0.00	9.31	1.00	0.00
5.50	2.000	0.00	9.16	1.00	0.00
6.50	2.000	0.00	9.01	1.00	0.00
7.50	2.000	0.00	8.86	1.00	0.00
8.50	2.000	0.00	8.70	1.00	0.00

Overall potential I_L : 0.00

- I_L = 0.00 - No liquefaction
- I_L between 0.00 and 5 - Liquefaction not probable
- I_L between 5 and 15 - Liquefaction probable
- I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::												
Depth (ft)	(N ₁) ₆₀	τ_{av}	p	G _{max} (tsf)	α	b	γ	ϵ_{15}	N _c	ϵ_{Nc} (%)	Δh (ft)	ΔS (in)
0.50	23	0.01	0.02	0.18	0.13	53547.74	0.00	0.00	18.12	0.08	1.00	0.018
1.50	23	0.04	0.06	0.31	0.13	27699.28	0.00	0.00	18.12	0.09	1.00	0.021
2.50	23	0.07	0.10	0.40	0.13	20387.27	0.00	0.00	18.12	0.10	1.00	0.023
3.50	18	0.10	0.14	0.44	0.13	16514.28	0.00	0.00	18.12	0.20	1.00	0.047
4.50	18	0.13	0.18	0.50	0.13	14134.26	0.00	0.00	18.12	0.21	1.00	0.049
5.50	17	0.16	0.22	0.58	0.14	12492.68	0.00	0.00	18.12	0.15	1.00	0.035
6.50	16	0.19	0.26	0.62	0.14	11277.43	0.00	0.00	18.12	0.17	1.00	0.041
7.50	50	0.22	0.30	0.93	0.14	10347.42	0.00	0.00	18.12	0.02	1.00	0.005

:: Vertical settlements estimation for dry sands ::												
Depth (ft)	(N ₁) ₆₀	T _{av}	p	G _{max} (tsf)	a	b	γ	ε ₁₅	N _c	ε _{Nc} (%)	Δh (ft)	ΔS (in)

Cumulative settlements: 0.239

Abbreviations

- T_{av}: Average cyclic shear stress
- p: Average stress
- G_{max}: Maximum shear modulus (tsf)
- a, b: Shear strain formula variables
- γ: Average shear strain
- ε₁₅: Volumetric strain after 15 cycles
- N_c: Number of cycles
- ε_{Nc}: Volumetric strain for number of cycles N_c (%)
- Δh: Thickness of soil layer (in)
- ΔS: Settlement of soil layer (in)

:: Vertical & Lateral displacements estimation for saturated sands ::									
Depth (ft)	(N ₁) _{60cs}	γ _{lim} (%)	F _a	FS _{liq}	γ _{max} (%)	e _v (%)	dz (ft)	S _{v-1D} (in)	LDI (ft)
8.50	52	0.00	0.00	2.000	0.00	0.00	1.00	0.000	0.00

Cumulative settlements: 0.000 0.00

Abbreviations

- γ_{lim}: Limiting shear strain (%)
- F_a/N: Maximum shear strain factor
- γ_{max}: Maximum shear strain (%)
- e_v: Post liquefaction volumetric strain (%)
- S_{v-1D}: Estimated vertical settlement (in)
- LDI: Estimated lateral displacement (ft)

SPT BASED LIQUEFACTION ANALYSIS REPORT

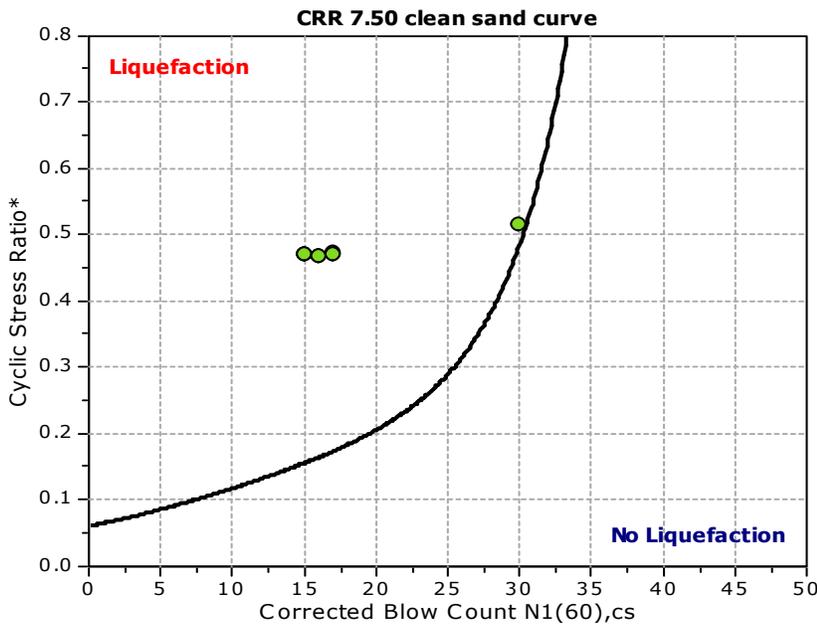
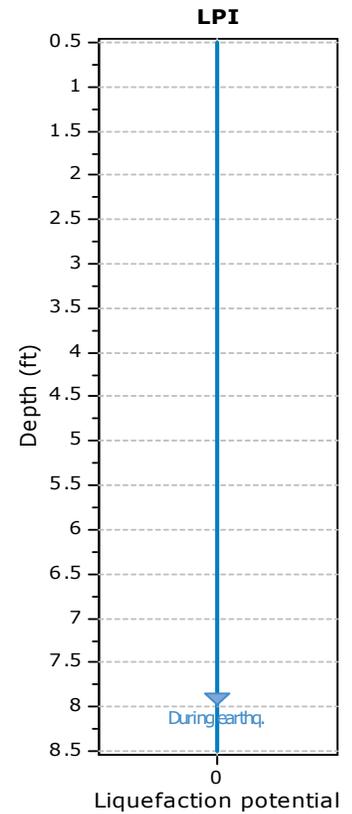
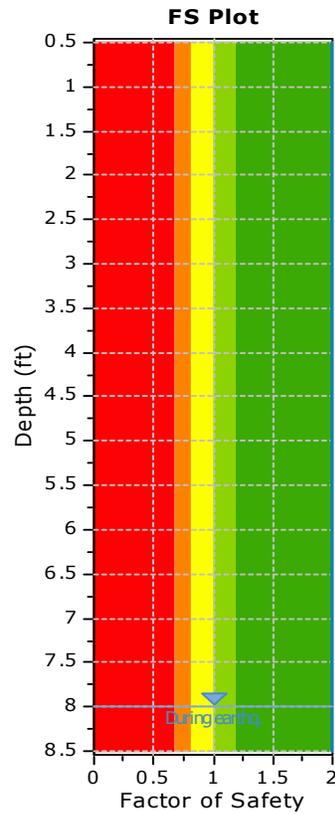
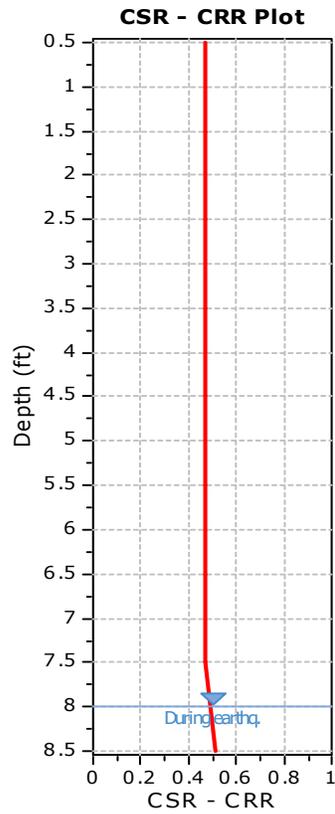
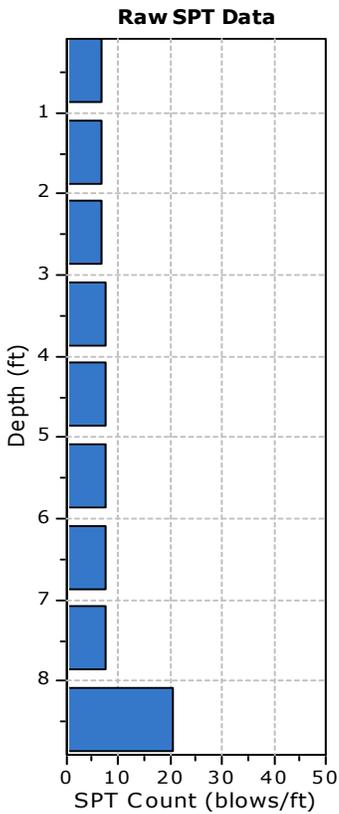
Project title : 575 Los Trancos Road Residence, Dry Sand

SPT Name: B-2

Location : Palo Alto, California

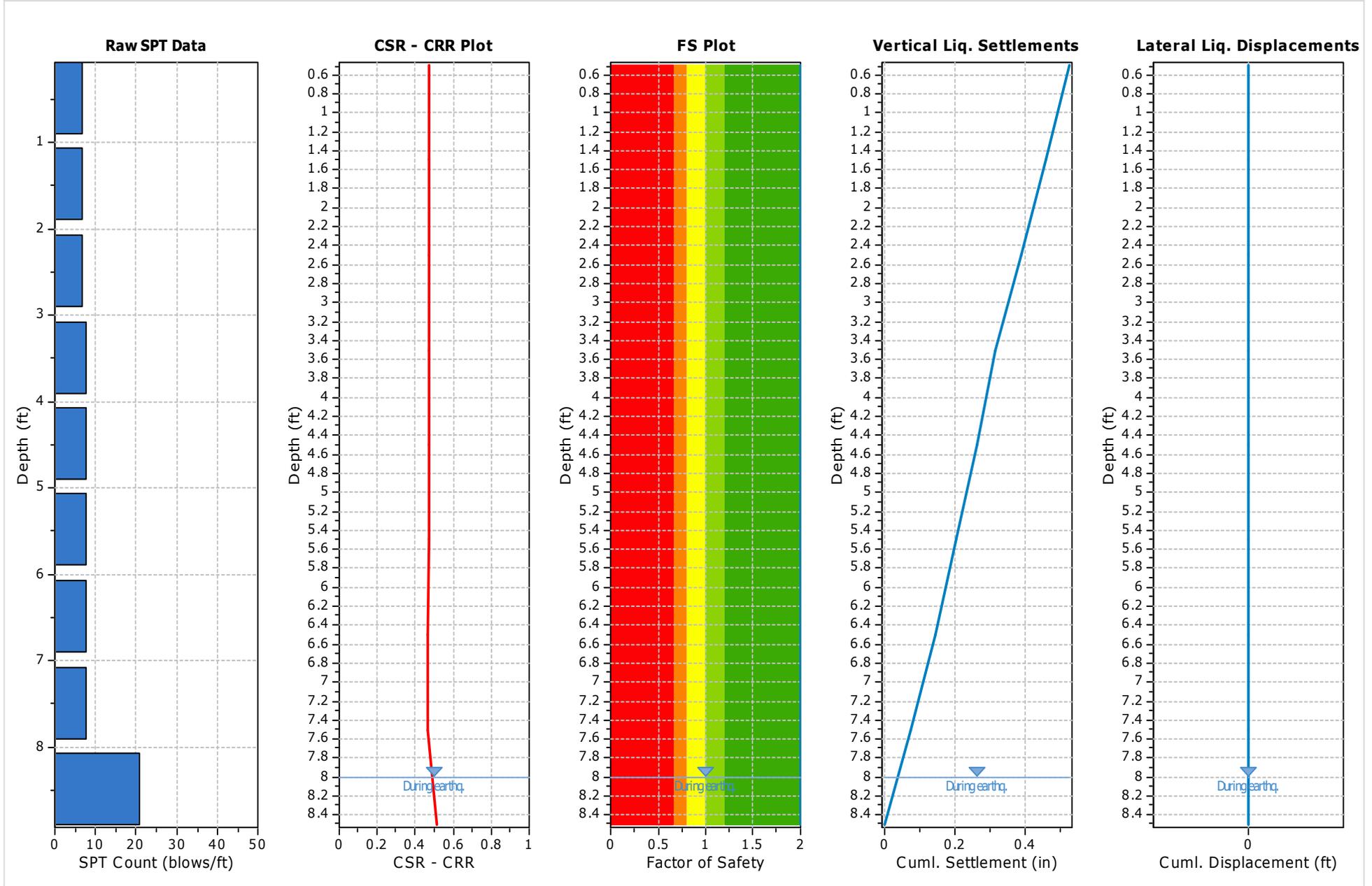
:: Input parameters and analysis properties ::

Analysis method:	Boulanger & Idriss, 2014	G.W.T. (in-situ):	17.00 ft
Fines correction method:	Boulanger & Idriss, 2014	G.W.T. (earthq.):	8.00 ft
Sampling method:	Standard Sampler	Earthquake magnitude M_w :	7.80
Borehole diameter:	200mm	Peak ground acceleration:	0.77 g
Rod length:	3.30 ft	Eq. external load:	0.00 tsf
Hammer energy ratio:	1.00		



- F.S. color scheme**
- Red: Almost certain it will liquefy
 - Orange: Very likely to liquefy
 - Yellow: Liquefaction and no liq. are equally likely
 - Light Green: Unlike to liquefy
 - Dark Green: Almost certain it will not liquefy
- LPI color scheme**
- Red: Very high risk
 - Orange: High risk
 - Yellow: Low risk

:: Overall Liquefaction Assessment Analysis Plots ::



:: Field input data ::					
Test Depth (ft)	SPT Field Value (blows)	Fines Content (%)	Unit Weight (pcf)	Infl. Thickness (ft)	Can Liquefy
0.50	7	21.00	117.00	1.00	Yes
1.50	7	21.00	117.00	1.00	Yes
2.50	7	21.00	117.00	1.00	Yes
3.50	8	21.00	113.00	1.00	Yes
4.50	8	21.00	113.00	1.00	Yes
5.50	8	21.00	113.00	1.00	Yes
6.50	8	21.00	113.00	1.00	Yes
7.50	8	21.00	113.00	1.00	No
8.50	21	21.00	120.00	1.00	No

Abbreviations

Depth: Depth at which test was performed (ft)
 SPT Field Value: Number of blows per foot
 Fines Content: Fines content at test depth (%)
 Unit Weight: Unit weight at test depth (pcf)
 Infl. Thickness: Thickness of the soil layer to be considered in settlements analysis (ft)
 Can Liquefy: User defined switch for excluding/including test depth from the analysis procedure

:: Cyclic Resistance Ratio (CRR) calculation data ::																
Depth (ft)	SPT Field Value	Unit Weight (pcf)	σ_v (tsf)	u_o (tsf)	σ'_{vo} (tsf)	m	C_N	C_E	C_B	C_R	C_S	$(N_1)_{60}$	FC (%)	$\Delta(N_1)_{60}$	$(N_1)_{60cs}$	CRR _{7.5}
0.50	7	117.00	0.03	0.00	0.03	0.46	1.70	1.00	1.15	0.75	1.00	10	21.00	4.63	15	4.000
1.50	7	117.00	0.09	0.00	0.09	0.46	1.70	1.00	1.15	0.75	1.00	10	21.00	4.63	15	4.000
2.50	7	117.00	0.15	0.00	0.15	0.46	1.70	1.00	1.15	0.75	1.00	10	21.00	4.63	15	4.000
3.50	8	113.00	0.20	0.00	0.20	0.44	1.70	1.00	1.15	0.75	1.00	12	21.00	4.63	17	4.000
4.50	8	113.00	0.26	0.00	0.26	0.44	1.70	1.00	1.15	0.75	1.00	12	21.00	4.63	17	4.000
5.50	8	113.00	0.32	0.00	0.32	0.44	1.70	1.00	1.15	0.75	1.00	12	21.00	4.63	17	4.000
6.50	8	113.00	0.37	0.00	0.37	0.45	1.61	1.00	1.15	0.75	1.00	11	21.00	4.63	16	4.000
7.50	8	113.00	0.43	0.00	0.43	0.46	1.51	1.00	1.15	0.80	1.00	11	21.00	4.63	16	4.000
8.50	21	120.00	0.49	0.00	0.49	0.35	1.31	1.00	1.15	0.80	1.00	25	21.00	4.63	30	4.000

Abbreviations

σ_v : Total stress during SPT test (tsf)
 u_o : Water pore pressure during SPT test (tsf)
 σ'_{vo} : Effective overburden pressure during SPT test (tsf)
 m: Stress exponent normalization factor
 C_N : Overburden correction factor
 C_E : Energy correction factor
 C_B : Borehole diameter correction factor
 C_R : Rod length correction factor
 C_S : Liner correction factor
 $N_{1(60)}$: Corrected N_{SPT} to a 60% energy ratio
 $\Delta(N_1)_{60}$: Equivalent clean sand adjustment
 $N_{1(60)cs}$: Corrected $N_{1(60)}$ value for fines content
 CRR_{7.5}: Cyclic resistance ratio for M=7.5

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::															
Depth (ft)	Unit Weight (pcf)	$\sigma_{v,eq}$ (tsf)	$u_{o,eq}$ (tsf)	$\sigma'_{v o,eq}$ (tsf)	r_d	α	CSR	MSF _{max}	$(N_1)_{60cs}$	MSF	CSR _{eq,M=7.5}	K_{sigma}	CSR*	FS	
0.50	117.00	0.03	0.00	0.03	1.01	1.00	0.503	1.32	15	0.97	0.519	1.10	0.472	2.000 ●	
1.50	117.00	0.09	0.00	0.09	1.00	1.00	0.502	1.32	15	0.97	0.518	1.10	0.471	2.000 ●	
2.50	117.00	0.15	0.00	0.15	1.00	1.00	0.501	1.32	15	0.97	0.517	1.10	0.470	2.000 ●	

:: Cyclic Stress Ratio calculation (CSR fully adjusted and normalized) ::															
Depth (ft)	Unit Weight (pcf)	$\alpha_{v,eq}$ (tsf)	$u_{b,eq}$ (tsf)	$\sigma'_{vo,eq}$ (tsf)	r_d	α	CSR	MSF _{max}	(N ₁) _{60cs}	MSF	CSR _{eq,M=7.5}	K _{sigma}	CSR*	FS	
3.50	113.00	0.20	0.00	0.20	1.00	1.00	0.500	1.38	17	0.96	0.519	1.10	0.472	2.000	●
4.50	113.00	0.26	0.00	0.26	1.00	1.00	0.499	1.38	17	0.96	0.518	1.10	0.471	2.000	●
5.50	113.00	0.32	0.00	0.32	1.00	1.00	0.498	1.38	17	0.96	0.517	1.10	0.470	2.000	●
6.50	113.00	0.37	0.00	0.37	0.99	1.00	0.497	1.35	16	0.97	0.515	1.10	0.468	2.000	●
7.50	113.00	0.43	0.00	0.43	0.99	1.00	0.496	1.35	16	0.97	0.513	1.10	0.467	2.000	●
8.50	120.00	0.49	0.02	0.47	0.99	1.00	0.512	2.00	30	0.90	0.566	1.10	0.514	2.000	●

Abbreviations

- $\alpha_{v,eq}$: Total overburden pressure at test point, during earthquake (tsf)
- $u_{b,eq}$: Water pressure at test point, during earthquake (tsf)
- $\sigma'_{vo,eq}$: Effective overburden pressure, during earthquake (tsf)
- r_d : Nonlinear shear mass factor
- α : Improvement factor due to stone columns
- CSR : Cyclic Stress Ratio
- MSF : Magnitude Scaling Factor
- CSR_{eq,M=7.5}: CSR adjusted for M=7.5
- K_{sigma}: Effective overburden stress factor
- CSR*: CSR fully adjusted (user FS applied)***
- FS: Calculated factor of safety against soil liquefaction

*** User FS: 1.00

:: Liquefaction potential according to Iwasaki ::					
Depth (ft)	FS	F	wz	Thickness (ft)	I _L
0.50	2.000	0.00	9.92	1.00	0.00
1.50	2.000	0.00	9.77	1.00	0.00
2.50	2.000	0.00	9.62	1.00	0.00
3.50	2.000	0.00	9.47	1.00	0.00
4.50	2.000	0.00	9.31	1.00	0.00
5.50	2.000	0.00	9.16	1.00	0.00
6.50	2.000	0.00	9.01	1.00	0.00
7.50	2.000	0.00	8.86	1.00	0.00
8.50	2.000	0.00	8.70	1.00	0.00

Overall potential I_L : 0.00

- I_L = 0.00 - No liquefaction
- I_L between 0.00 and 5 - Liquefaction not probable
- I_L between 5 and 15 - Liquefaction probable
- I_L > 15 - Liquefaction certain

:: Vertical settlements estimation for dry sands ::												
Depth (ft)	(N ₁) ₆₀	τ_{av}	p	G _{max} (tsf)	α	b	γ	ϵ_{15}	N _c	ϵ_{Nc} (%)	Δh (ft)	ΔS (in)
0.50	10	0.01	0.02	0.15	0.13	53272.67	0.00	0.00	18.12	0.28	1.00	0.066
1.50	10	0.04	0.06	0.27	0.13	27556.98	0.00	0.00	18.12	0.29	1.00	0.070
2.50	10	0.07	0.10	0.35	0.13	20282.55	0.00	0.00	18.12	0.31	1.00	0.074
3.50	12	0.10	0.14	0.42	0.13	16672.60	0.00	0.00	18.12	0.23	1.00	0.055
4.50	12	0.13	0.17	0.48	0.13	14386.29	0.00	0.00	18.12	0.24	1.00	0.057
5.50	12	0.16	0.21	0.53	0.14	12781.27	0.00	0.00	18.12	0.25	1.00	0.059
6.50	11	0.19	0.25	0.56	0.14	11579.22	0.00	0.00	18.12	0.30	1.00	0.072
7.50	11	0.21	0.29	0.60	0.14	10637.94	0.00	0.00	18.12	0.31	1.00	0.074

:: Vertical settlements estimation for dry sands ::												
Depth (ft)	(N ₁) ₆₀	T _{av}	p	G _{max} (tsf)	a	b	γ	ε ₁₅	N _c	ε _{Nc} (%)	Δh (ft)	ΔS (in)

Cumulative settlements: 0.527

Abbreviations

- T_{av}: Average cyclic shear stress
- p: Average stress
- G_{max}: Maximum shear modulus (tsf)
- a, b: Shear strain formula variables
- γ: Average shear strain
- ε₁₅: Volumetric strain after 15 cycles
- N_c: Number of cycles
- ε_{Nc}: Volumetric strain for number of cycles N_c (%)
- Δh: Thickness of soil layer (in)
- ΔS: Settlement of soil layer (in)

:: Vertical & Lateral displacements estimation for saturated sands ::									
Depth (ft)	(N ₁) _{60cs}	γ _{lim} (%)	F _a	FS _{liq}	γ _{max} (%)	e _v (%)	dz (ft)	S _{v-1D} (in)	LDI (ft)
8.50	30	0.00	0.00	2.000	0.00	0.00	1.00	0.000	0.00

Cumulative settlements: 0.000 0.00

Abbreviations

- γ_{lim}: Limiting shear strain (%)
- F_a/N: Maximum shear strain factor
- γ_{max}: Maximum shear strain (%)
- e_v: Post liquefaction volumetric strain (%)
- S_{v-1D}: Estimated vertical settlement (in)
- LDI: Estimated lateral displacement (ft)

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Appendix D

Roadway Construction Noise Model and Vibration Noise Calculations

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: #####

Case Description: 575 Los Trancos Road

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single Family Residential		65	60	55

		Equipment					
Description	Impact	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No		40		77.6	230	0
Compactor (ground)	No		20		83.2	230	0
Tractor	No		40	84		230	0
Dozer	No		40		81.7	230	0
Dump Truck	No		40		76.5	230	0
Excavator	No		40		80.7	230	0
Grader	No		40	85		230	0
Front End Loader	No		40		79.1	230	0
All Other Equipment >	No		50	85		230	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day	Evening			Night
			Lmax	Leq	Lmax	Leq	Lmax
Backhoe	64.3	60.3	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	70	63	N/A	N/A	N/A	N/A	N/A
Tractor	70.7	66.8	N/A	N/A	N/A	N/A	N/A
Dozer	68.4	64.4	N/A	N/A	N/A	N/A	N/A
Dump Truck	63.2	59.2	N/A	N/A	N/A	N/A	N/A
Excavator	67.5	63.5	N/A	N/A	N/A	N/A	N/A
Grader	71.7	67.8	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.9	61.9	N/A	N/A	N/A	N/A	N/A
All Other Equipment >	71.7	68.7	N/A	N/A	N/A	N/A	N/A
Total	71.7	74.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single Family Residential		65	60	55

		Equipment					
Description	Impact	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)

Description	Impact	Usage(%)	Lmax	Lmax	Distance	Shielding
	Device		(dBA)	(dBA)	(feet)	(dBA)
Backhoe	No	40		77.6	250	0
Compactor (ground)	No	20		83.2	250	0
Tractor	No	40	84		250	0
Dozer	No	40		81.7	250	0
Dump Truck	No	40		76.5	250	0
Excavator	No	40		80.7	250	0
Grader	No	40	85		250	0
Front End Loader	No	40		79.1	250	0
All Other Equipment >	No	50	85		250	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day	Leq	Evening		Night
			Lmax		Lmax	Leq	Lmax
Backhoe	63.6	59.6	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	69.3	62.3	N/A	N/A	N/A	N/A	N/A
Tractor	70	66	N/A	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.5	58.5	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A
Grader	71	67	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A
All Other Equipment >	71	68	N/A	N/A	N/A	N/A	N/A
Total	71	73.8	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: #####

Case Description: 575 Los Trancos Road - Grading

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single Fami	Residential	65	60	55

		Equipment					
Description	Impact	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No		40		77.6	230	0
Compactor (ground)	No		20		83.2	230	0
Dozer	No		40		81.7	230	0
Excavator	No		40		80.7	230	0
Grader	No		40	85		230	0
Front End Loader	No		40		79.1	230	0
All Other Equipment >	No		50	85		230	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax
Backhoe	64.3	60.3	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	70	63	N/A	N/A	N/A	N/A	N/A
Dozer	68.4	64.4	N/A	N/A	N/A	N/A	N/A
Excavator	67.5	63.5	N/A	N/A	N/A	N/A	N/A
Grader	71.7	67.8	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.9	61.9	N/A	N/A	N/A	N/A	N/A
All Other Equipment >	71.7	68.7	N/A	N/A	N/A	N/A	N/A
Total	71.7	73.6	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single Fami	Residential	65	60	55

		Equipment					
Description	Impact	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No		40		77.6	250	0
Compactor (ground)	No		20		83.2	250	0

Dozer	No	40		81.7	250	0
Excavator	No	40		80.7	250	0
Grader	No	40	85		250	0
Front End Loader	No	40		79.1	250	0
All Other Equipment >	No	50	85		250	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day	Leq	Evening		Night
			Lmax		Lmax	Leq	
Backhoe	63.6	59.6	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	69.3	62.3	N/A	N/A	N/A	N/A	N/A
Dozer	67.7	63.7	N/A	N/A	N/A	N/A	N/A
Excavator	66.7	62.8	N/A	N/A	N/A	N/A	N/A
Grader	71	67	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A
All Other Equipment >	71	68	N/A	N/A	N/A	N/A	N/A
Total	71	72.9	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: #####

Case Description: 575 Los Trancos Road - Building Construction

---- Receptor #1 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single Fami	Residential	65	60	55

		Equipment					
Description	Impact	Device	Usage(%)	Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Man Lift	No		20		74.7	230	0
Concrete Mixer Truck	No		40		78.8	230	0
Concrete Saw	No		20		89.6	230	0
Compactor (ground)	No		20		83.2	230	0
Compressor (air)	No		40		77.7	230	0
Crane	No		16		80.6	230	0
Dump Truck	No		40		76.5	230	0
Generator	No		50		80.6	230	0
Pumps	No		50		80.9	230	0
All Other Equipment >	No		50	85		230	0

Results

Equipment	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax
Man Lift	61.4	54.5	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	65.5	61.6	N/A	N/A	N/A	N/A	N/A
Concrete Saw	76.3	69.3	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	70	63	N/A	N/A	N/A	N/A	N/A
Compressor (air)	64.4	60.4	N/A	N/A	N/A	N/A	N/A
Crane	67.3	59.3	N/A	N/A	N/A	N/A	N/A
Dump Truck	63.2	59.2	N/A	N/A	N/A	N/A	N/A
Generator	67.4	64.4	N/A	N/A	N/A	N/A	N/A
Pumps	67.7	64.7	N/A	N/A	N/A	N/A	N/A
All Other Equipment >	71.7	68.7	N/A	N/A	N/A	N/A	N/A
Total	76.3	74.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

		Baselines (dBA)		
Description	Land Use	Daytime	Evening	Night
Single Fami	Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment			
			Spec	Actual	Receptor	Estimated
			Lmax (dBA)	Lmax (dBA)	Distance (feet)	Shielding (dBA)
Man Lift	No	20		74.7	250	0
Concrete Mixer Truck	No	40		78.8	250	0
Concrete Saw	No	20		89.6	250	0
Compactor (ground)	No	20		83.2	250	0
Compressor (air)	No	40		77.7	250	0
Crane	No	16		80.6	250	0
Dump Truck	No	40		76.5	250	0
Generator	No	50		80.6	250	0
Pumps	No	50		80.9	250	0
All Other Equipment >	No	50	85		250	0

Equipment	Results						
	Calculated (dBA)			Noise Limits (dBA)			
	*Lmax	Leq	Day Lmax	Leq	Evening Lmax	Leq	Night Lmax
Man Lift	60.7	53.7	N/A	N/A	N/A	N/A	N/A
Concrete Mixer Truck	64.8	60.8	N/A	N/A	N/A	N/A	N/A
Concrete Saw	75.6	68.6	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	69.3	62.3	N/A	N/A	N/A	N/A	N/A
Compressor (air)	63.7	59.7	N/A	N/A	N/A	N/A	N/A
Crane	66.6	58.6	N/A	N/A	N/A	N/A	N/A
Dump Truck	62.5	58.5	N/A	N/A	N/A	N/A	N/A
Generator	66.7	63.6	N/A	N/A	N/A	N/A	N/A
Pumps	67	64	N/A	N/A	N/A	N/A	N/A
All Other Equipment >	71	68	N/A	N/A	N/A	N/A	N/A
Total	75.6	73.8	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: #####

Case Description: 575 Los Trancos Road - Paving

---- Receptor #1 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Single Fami Residential		65	60	55

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Backhoe	No	40		77.6	230	0
Concrete Saw	No	20		89.6	230	0
Compactor (ground)	No	20		83.2	230	0
Tractor	No	40	84		230	0
Grader	No	40	85		230	0
Front End Loader	No	40		79.1	230	0
Paver	No	50		77.2	230	0
Roller	No	20		80	230	0
All Other Equipment >	No	50	85		230	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)				
	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Backhoe	64.3	60.3	N/A	N/A	N/A	N/A	N/A
Concrete Saw	76.3	69.3	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	70	63	N/A	N/A	N/A	N/A	N/A
Tractor	70.7	66.8	N/A	N/A	N/A	N/A	N/A
Grader	71.7	67.8	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.9	61.9	N/A	N/A	N/A	N/A	N/A
Paver	64	61	N/A	N/A	N/A	N/A	N/A
Roller	66.7	59.8	N/A	N/A	N/A	N/A	N/A
All Other Equipment >	71.7	68.7	N/A	N/A	N/A	N/A	N/A
Total	76.3	75.3	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Single Fami Residential		65	60	55

Equipment			
Spec	Actual	Receptor	Estimated

Description	Impact	Usage(%)	Lmax	Lmax	Distance	Shielding
	Device		(dBA)	(dBA)	(feet)	(dBA)
Backhoe	No	40		77.6	250	0
Concrete Saw	No	20		89.6	250	0
Compactor (ground)	No	20		83.2	250	0
Tractor	No	40	84		250	0
Grader	No	40	85		250	0
Front End Loader	No	40		79.1	250	0
Paver	No	50		77.2	250	0
Roller	No	20		80	250	0
All Other Equipment >	No	50	85		250	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)				
	*Lmax	Leq	Day		Evening		Night
			Lmax	Leq	Lmax	Leq	Lmax
Backhoe	63.6	59.6	N/A	N/A	N/A	N/A	N/A
Concrete Saw	75.6	68.6	N/A	N/A	N/A	N/A	N/A
Compactor (ground)	69.3	62.3	N/A	N/A	N/A	N/A	N/A
Tractor	70	66	N/A	N/A	N/A	N/A	N/A
Grader	71	67	N/A	N/A	N/A	N/A	N/A
Front End Loader	65.1	61.2	N/A	N/A	N/A	N/A	N/A
Paver	63.2	60.2	N/A	N/A	N/A	N/A	N/A
Roller	66	59	N/A	N/A	N/A	N/A	N/A
All Other Equipment >	71	68	N/A	N/A	N/A	N/A	N/A
Total	75.6	74.5	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: #####

Case Description: 575 Los Trancos Road - Architectural Coating

---- Receptor #1 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Single Fami Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	230	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)				
	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Compressor (air)	64.4	60.4	N/A	N/A	N/A	N/A	N/A
Total	64.4	60.4	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

---- Receptor #2 ----

Description Land Use	Baselines (dBA)		
	Daytime	Evening	Night
Single Fami Residential	65	60	55

Description	Impact Device	Usage(%)	Equipment			
			Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Compressor (air)	No	40		77.7	250	0

Results

Equipment	Calculated (dBA)		Noise Limits (dBA)				
	*Lmax	Leq	Day Lmax	Day Leq	Evening Lmax	Evening Leq	Night Lmax
Compressor (air)	63.7	59.7	N/A	N/A	N/A	N/A	N/A
Total	63.7	59.7	N/A	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

Groundborne Noise and Vibration Modeling

Notes

The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure.

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Vibratory Roller	35	0.1450	91	0.035
Hoe Ram	35	0.0615	84	0.015
Large bulldozer	35	0.0615	84	0.015
Caisson drilling	35	0.0615	84	0.015
Loaded trucks	35	0.0525	80	0.010
Jack hammer	35	0.0242	76	0.006
Small bulldozer	35	0.0021	55	0.001

Equipment	Vibration Contours		
	Distance to (feet)		
	0.200 PPV	72.0 VdB	0.0080 RMS
Vibratory Roller	26	250	133
Hoe Ram	12	120	64
Large bulldozer	12	120	64
Caisson drilling	12	120	64
Loaded trucks	10	79	42
Jack hammer	5	52	28
Small bulldozer	1	6	3

Source

California Department of Transportation (Caltrans). 2013. Transportation and Construction
Last Updated: 4/11/2019

Groundborne Noise and Vibration Modeling

Notes

The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure.

Equipment	Reference Level Inputs			
	PPV _{ref} (in/sec)	Lv _{ref} (VdB)	RMS _{ref} (in/sec)	Reference Distance
Vibratory Roller	0.21	94	0.050	25
Hoe Ram	0.089	87	0.022	25
Large bulldozer	0.089	87	0.022	25
Caisson drilling	0.089	87	0.022	25
Loaded trucks	0.076	83	0.014	25
Jack hammer	0.035	79	0.009	25
Small bulldozer	0.003	58	0.001	25

Equipment	Vibration Level at Receiver			
	Distance (feet)	PPV _x (in/sec)	Lv _x (VdB)	RMS _x (in/sec)
Vibratory Roller	50	0.0980	87	0.023
Hoe Ram	50	0.0415	80	0.010
Large bulldozer	50	0.0415	80	0.010
Caisson drilling	50	0.0415	80	0.010
Loaded trucks	50	0.0355	76	0.007
Jack hammer	50	0.0163	72	0.004
Small bulldozer	50	0.0014	51	0.000

Equipment	Vibration Contours		
	Distance to (feet)		
	0.200 PPV	72.0 VdB	0.0080 RMS
Vibratory Roller	26	250	133
Hoe Ram	12	120	64
Large bulldozer	12	120	64
Caisson drilling	12	120	64
Loaded trucks	10	79	42
Jack hammer	5	52	28
Small bulldozer	1	6	3

Source

California Department of Transportation (Caltrans). 2013. Transportation and Construction
Last Updated: 4/11/2019

Appendix E

California Water Service and West Bay Sanitary District Will Serve Letter



CALIFORNIA WATER SERVICE

Bear Gulch District 3525 Alameda De Las Pulgas, Suite A
Menlo Park, CA 94025 *Tel:* (650) 561-9709

August 19, 2021

Will Serve Letter

Address: 575 Los Trancos Road, Palo Alto CA 94034

To Whom It May Concern:

As a regulated utility, California Water Service Company Bear Gulch District ("Cal Water") has an obligation to provide water service in accordance with the rules and regulations of the California Public Utility Commission (CPUC). Assuming you receive all required permits from City of Palo Alto, Cal Water will provide water service to the above referenced project. Cal Water agrees to operate the water system and provide service in accordance with the rules and regulations of the California Public Utilities Commission (CPUC) and the company's approved tariffs on file with the CPUC. This will serve letter shall remain valid for **two years** from the date of this letter. If construction of the project has not commenced within this **two year** time frame, Cal Water will be under no further obligation to serve the project unless the developer receives an updated letter from Cal Water reconfirming our commitment to serve the above mentioned project. Additionally, Cal Water reserves the right to rescind this letter at any time in the event its water supply is severely reduced by legislative, regulatory or environmental actions.

Cal Water will provide such potable¹ water at such pressure as may be available from time to time as a result of its normal operations per the company's tariffs on file with the CPUC. Installation of facilities through developer funding shall be made in accordance with the current rules and regulations of the CPUC including, among others, Tariff Rules 15 and 16 and General Order 103-A. In order for us to provide adequate water for domestic use as well as fire service protection, it may be necessary for the developer to fund the cost of special facilities, such as, but not limited to, booster pumps, storage tanks and/or water wells,² in addition to the cost of mains and services. Cal Water will provide more specific information regarding special facilities and fees after you provide us with your improvement plans, fire department requirements, and engineering fees for this project.

This letter shall at all times be subject to such changes or modifications by the CPUC as said Commission may, from time to time, require in the exercise of its jurisdiction.

If you have any questions regarding the above, please call me at (650) 543-3412.

Sincerely,

Celina Nance

Celina Nance
Customer Service Representative II

¹ This portion of the letter to be modified accordingly in the event the development for which this letter is being generated is to be served with potable and non-potable water.

² For the districts that collect facility fees on a per lot basis, delete the reference to wells as a special facility here and add in the following sentence, "Developer will also be required to contribute towards Cal Water's water supply by paying facilities fees on a per lot basis as described in Rule 15"

WEST BAY SANITARY DISTRICT

500 Laurel Street, Menlo Park, CA 94025
Telephone: (650) 321-0384 Fax (650) 321-4265

WILL SERVE LETTER

APN : 182-46-012

August 17, 2021

City of Palo Alto Building Department
285 Hamilton Ave # 1
Palo Alto, CA 94301

RE: 575 LOS TRANCOS RD
SANTA CLARA COUNTY
PROPERTY OWNER :
APN : 182-46-012

Dear City of Palo Alto Building Department:

This letter will serve as notice that the above-referenced address is within the West Bay Sanitary District's jurisdiction, and is entitled to receive all available services from the District, pursuant to compliance with the District's Code of General Regulations.

Should you have any questions please feel free to call the administration office at the District at (650) 321-0384. The property owners or their contractor may also feel free to contact our administration office with any questions.

Very truly yours,

WEST BAY SANITARY DISTRICT

A handwritten signature in blue ink that reads "Todd Reese". The signature is written in a cursive, flowing style.

Todd Reese
Office Manager

N-10



N-9



MITIGATION MONITORING + REPORTING PROGRAM

PROJECT NAME

575 Los Trancos Road Residential Project

APPLICATION NUMBER

21PLN-00196

APPROVED BY

Emily Foley, City of Palo Alto

APPLICANT/OWNER

Innovative Homes LLC
John Suppes
412 Olive Avenue, Palo Alto, CA 94306
john@clarum.com

The Final Initial Study Mitigated Negative Declaration (IS-MND) for the 575 Los Trancos Road Residential Project identifies the mitigation measures that must be implemented to reduce the impacts associated with the project. The California Environmental Quality Act (CEQA) was amended in 1989 to add Section 21081.6, which requires a public agency to adopt a monitoring and reporting program for assessing and ensuring compliance with any required mitigation measures applied to proposed development. As stated in section 21081.6(a)(1) of the Public Resources Code:

... the public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment.

Section 21081.6 also provides general guidelines for implementing mitigation monitoring programs and indicates that specific reporting and/or monitoring requirements, to be enforced during project implementation, shall be defined as part of adopting an IS-MND.

The mitigation monitoring table lists those mitigation measures that would be included as conditions of approval for the project. To ensure that the mitigation measures are properly implemented, a monitoring program has been devised which identifies the timing and responsibility for monitoring each measure.



MITIGATION MONITORING + REPORTING PROGRAM

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
AIR QUALITY				
AQ-1	<p>BAAQMD Basic Construction Mitigation. The property owner or their designee shall implement the following measures during project construction to reduce dust fall-out emissions:</p> <ul style="list-style-type: none"> ▪ All exposed surfaces (e.g., parking areas, staging areas, soil piles, and graded areas) shall be watered two times per day. ▪ All haul trucks transporting soil, sand, or other loose material off-site shall be covered or maintain at least 2 feet of freeboard. ▪ 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. ▪ Enclose, cover, water daily or apply non-toxic soil binders to exposed stockpiles (dirt, sand, etc.) ▪ 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. ▪ Install sandbags or other erosion control measures to prevent silt runoff to public roadways. ▪ 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 CCR Title 13, Section 2485). Clear signage shall be 	Project Applicant/verified in the field by the Development Services Department Building Division	Prior to issuance of grading permit and periodically during construction	City of Palo Alto Development Services Department Building Division

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
	<p>provided for construction workers at all access points.</p> <ul style="list-style-type: none"> All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified visible emissions evaluator. Post a publicly visible sign with the telephone number and person to contact at the City of Palo Alto or construction contractor 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. 			

BIOLOGICAL RESOURCES

BIO-1	<p>Worker Environmental Awareness Program (WEAP). Prior to initiation of construction activities (including staging and mobilization) all personnel associated with project construction shall attend a Worker Environmental Awareness Program (WEAP) training, conducted by a qualified biologist, to aid workers in recognizing special-status resources that may occur in the construction area. The specifics of this program shall include identification of the sensitive species and habitats, a description of the regulatory status and general ecological characteristics of sensitive resources, and review of the limits of construction and measures required to reduce impacts to biological resources within the work area. A qualified biologist shall prepare a fact sheet conveying this information for distribution to all contractors, their employers, and other personnel involved with construction. All employees shall sign a form provided by the trainer indicating they have attended the WEAP and understand the information presented to them. The forms from all trainings shall be available to the City upon request to document compliance.</p>	Project Applicant/verified in the field by the Development Services Department Building Division	Prior to initiation of construction activities	City of Palo Alto Development Services Department Building Division
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Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
BIO-2	<p>Special-Status Plant Species Botanical Surveys. A qualified biologist shall conduct a protocol level botanical survey, including a site visit during the blooming period of the target species in March through July. If the CRPR 1 rank plant is found, the plants shall be avoided by installing protective fencing and warning construction personnel of their presence through the WEAP training. If special-status plants species cannot be avoided, impacts shall be mitigated at a minimum ratio of 1:1 (number of acres or individuals restored to number of acres or individuals impacted). A restoration plan shall be prepared and submitted to the City for review and approval and to CDFW for review. The restoration plan shall include, at a minimum, the type and area of habitat to be established, restored, enhanced, and/or preserved; goals and objectives of the mitigation project; a monitoring plan including performance standards and success criteria; and maintenance activities to occur during monitoring. The applicant shall implement the measures prior to commencement of ground disturbance, tree removal or construction.</p>	Project Applicant/ verified by the Development Services Department Building Division	Prior to initiation of construction activities; during restoration if required	City of Palo Alto Development Services Department
BIO-3	<p>Best Management Practices for Protection of Steelhead and Aquatic Habitat. No vegetation removal, ground disturbance or construction shall occur within the creek or the 20-foot creek setback zone, which shall be demarcated with high visibility orange construction fencing to ensure avoidance of impacts to the aquatic habitat. Best management practices (BMPs) shall be developed and implemented during all grading and construction activities to prevent erosion and sedimentation into the creek and to prevent the spill of contaminants in or around the creek. The following BMPs shall be included and implemented on-site during construction to prevent any indirect impacts to aquatic habitat, as well as jurisdictional waters and wetlands:</p> <ul style="list-style-type: none"> ▪ Vehicles and equipment shall be checked at least daily for leaks and maintained in good working 	Project Applicant/ verified in the field by the Development Services Department Building Division	Prior to initiation of construction activities and periodically during construction	City of Palo Alto Development Services Department Building Division

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
	<p>order. Spill kits shall be available on-site at all times and a spill response plan shall be developed and implemented.</p> <ul style="list-style-type: none"> ▪ Sediment and erosion control measures (e.g., sand or gravel bags, hay bales, check dams) shall be implemented and maintained throughout the project site to prevent the entry of sediment and/or pollutants into any waterways or jurisdictional areas. No monofilament plastic may be used for erosion control materials. 			
BIO-4	<p>Preconstruction Surveys for California Giant Salamander, Santa Cruz Black Salamander, Western Pond Turtle, California Red-Legged Frog, and San Francisco Garter Snake. A qualified biologist shall conduct a pre-construction survey within 24 hours of the initiation of project activities. If California Giant Salamander, Santa Cruz Black Salamander, and/or Western Pond Turtle are observed the animal shall be allowed to leave the site on its own. If California Red-Legged Frog, and/or San Francisco garter snake is found, USFWS shall be notified immediately to determine the correct course of action and the proposed project shall not begin until approved by USFWS.</p> <p>Prior to ground disturbance, a temporary wildlife exclusion barrier shall be installed along the limits of disturbance. A qualified biologist shall inspect the area prior to barrier installation. The barrier shall be designed to prevent the target species from entering the project area and will remain in place until all development activities have been completed. This barrier shall be inspected daily by a qualified biologist and maintained and repaired as necessary to ensure that it is functional and is not a hazard to the target species on the outer side of the barrier.</p> <p>A qualified biologist shall be present during all grading and initial ground disturbing activities. Vegetation disturbance shall be the minimum necessary to achieve</p>	Project Applicant/verified by the Development Services Department	Prior to initiation of construction activities; during grading and initial ground disturbing activities; during construction if required	City of Palo Alto Development Services Department

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
	<p>the goals of the project. Immediately prior to initial ground disturbance and vegetation removal, a qualified biologist shall conduct a visual clearance survey. Vegetation shall be cut to 6 inches in height using hand tools (including string trimmers or chainsaw for brush). Once the ground is visible, a second visual survey for target species shall be conducted by the biologist prior to additional ground disturbance.</p> <p>Should California Giant Salamander, Santa Cruz Black Salamander, or Western Pond Turtle be observed within the project site, construction shall be halted in the vicinity until either the animal exits the site on its own or until a qualified biologist relocates the animal to suitable habitat in the immediate vicinity. Should California Red-Legged Frog, and/or San Francisco garter snake be observed within the project site, the USFWS shall be notified immediately and construction shall be halted until either the animal exits the site on its own or until a qualified biologist with the appropriate USFWS Recovery Permit relocates the animal.</p> <p>No work shall occur during a rain event over 0.25.” If a rain event occurs, a qualified biologist shall inspect the site again prior to resuming work. All holes and trenches shall be covered at the end of the day or ramped to avoid entrapment</p>			
BIO-5	<p>Focused Surveys for Special-Status Bat Species and Roosting Bat Protection Plan. Prior to tree removal, a qualified biologist shall conduct a focused survey of all trees to be removed or impacted by construction activities to determine whether active roosts of special-status bats are present on site. If tree removal is planned for the fall, it is recommended the survey be conducted in September to ensure tree removal would have adequate time to occur during seasonal periods of bat activity, as described below. If tree removal is planned for the spring, it is recommended the survey be conducted during the earliest possible time in March, to</p>	Project Applicant/ verified by the Development Services Department	Prior to tree removal and during tree removal if bats found	City of Palo Alto Development Services Department

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
	<p>allow for suitable conditions for both the detection of bats and subsequent tree removal. Trees containing suitable potential bat roost habitat features shall be clearly marked or identified.</p> <p>If day roosts are found to be potentially present, the biologist shall prepare a site-specific roosting bat protection plan to be implemented by the contractor following the City of Palo Alto's approval. The plan shall incorporate the following guidance as appropriate:</p> <ul style="list-style-type: none"> ▪ To the extent possible, trees identified as suitable roosting habitat shall be removed during seasonal periods of bat activity, including the following, but not during maternity season: <ul style="list-style-type: none"> ○ Between September 1 and about October 15, or before evening temperatures fall below 45 degrees Fahrenheit and/or more than 0.5 inch of rainfall within 24 hours occurs. ○ Between March 1 and April 15, or after evening temperatures rise above 45 degrees Fahrenheit and/or no more than 0.5 inch of rainfall within 24 hours occurs. ▪ If a tree must be removed during the maternity/breeding season and is identified as potentially containing a colonial maternity roost, then a qualified biologist shall conduct acoustic emergence surveys or implement other appropriate methods to further evaluate if the roost is an active maternity roost. Under the biologist's guidance, the contractor shall implement measures similar to or better than the following: <ul style="list-style-type: none"> ○ If it is determined that the roost is not an active maternity roost, then the roost may be removed in accordance with the other requirements of this recommendation. ○ If it is found that an active maternity roost of a colonial roosting species is present, the 			

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
	<p>roost shall not be disturbed during the breeding season (April 15 to August 31).</p> <ul style="list-style-type: none"> Potential colonial hibernation roosts may only be removed during seasonal periods of bat activity. Potential non-colonial roosts that cannot be avoided shall be removed on warm days in late morning to afternoon when any bats present are likely to be warm and able to fly. Appropriate methods shall be used to minimize the potential harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on day one. The noise and vibration disturbance, together with the visible alteration of the tree, is very effective in causing bats that emerge nightly to feed to not return to the roost that night. The remainder of the tree is removed on day two. 			
BIO-6	<p>Preconstruction Surveys for San Francisco Dusky-Footed Woodrat. A qualified biologist shall conduct a pre-construction survey for woodrats no more than 14 days prior to construction. Nests within 50 feet of project activity that would not be directly impacted by project activity shall be demarcated with a 10-foot avoidance buffer and left intact. If a nest(s) that cannot be avoided are found during the pre-construction survey, an approved biologist shall dismantle the nest and relocate it to suitable habitat outside the work area no more than 50 feet away with the goal of ensuring the individuals are allowed to leave the work area(s) unharmed before on site activities begin. Nest relocation shall occur within 48 hours of construction activities to ensure that nests are not reestablished.</p>	Project Applicant/verified by the Development Services Department	No more than 14 days prior to initiation of construction activities	City of Palo Alto Development Services Department
BIO-7	<p>Preconstruction Surveys for Nesting Birds. A general pre-construction nesting bird survey shall be conducted</p>	Project Applicant/verified by the	Within 14 days prior to the	City of Palo Alto Development

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
	<p>by a qualified biologist within 14 days prior to the initiation of construction activities. If construction is stopped for more than 14 days during the nesting season, a pre-construction survey shall be conducted prior to the re-start of construction activities. Surveys shall include the disturbance area plus a 50-foot buffer for passerine species, and a 500-foot buffer for raptors. If active nests are located, an appropriate avoidance buffer shall be established within which no work activity would be allowed that would impact these nests. The avoidance buffer shall be established by the qualified biologist on a case-by-case basis based on the species and site conditions. Larger buffers may be required depending upon the status of the nest and the construction activities occurring in the vicinity of the nest. The buffer area(s) shall be closed to all construction personnel and equipment until juveniles have fledged and/or the nest is inactive. A qualified biologist shall confirm that breeding/nesting is complete, and the nest is no longer active prior to removal of the buffer. If work within a buffer area cannot be avoided, then a qualified biologist shall be present to monitor all project activities that occur within the buffer. The biological monitor shall evaluate the nesting avian species for signs of disturbance and shall have the ability to stop work.</p>	Development Services Department	initiation of construction activities	Services Department
BIO-8	<p>Protection of Retained Trees. The project applicant shall adhere to recommendations as described in the arborist report prepared by Kielty Arborist Services (Kielty Arborist Services 2021) regarding protection of retained trees. Recommendations include landscape buffers, tree pruning, root cutting, trenching and excavation, irrigation, grading, and inspections.</p>	Project Applicant/ verified by the Development Services Department	Prior to issuance of grading permit and during site preparation	City of Palo Alto Development Services Department
CULTURAL RESOURCES				
CR-1	<p>Worker’s Environmental Awareness Program (WEAP). Prior to project ground disturbance, all construction personnel and contractors responsible for overseeing and operating ground-disturbing activities shall be</p>	Project Applicant/ verified by the Development	Prior to ground disturbance	City of Palo Alto Development

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
	<p>required to receive cultural awareness and sensitivity training. The purpose of this training is to educate construction personnel regarding the legal obligations of the project, the types of archaeological deposits that may be encountered during construction, and the appropriate procedures required in the event of a discovery of archaeological resources, paleontological resources, or human remains. The WEAP shall also provide cultural sensitivity training to ensure respectful and appropriate behaviors in the vicinity of archaeological deposits and human remains. The WEAP shall be implemented by a qualified archaeologist that meets or exceeds the Secretary of the Interior’s Professional Qualifications Standards in archaeology.</p>	<p>Services Department</p>		<p>Services Department</p>
<p>CR-2</p>	<p>Archaeological and Native American Monitoring. A qualified archaeologist shall conduct archaeological monitoring for all project-related ground disturbing activities. Archaeological monitoring shall be performed under the direction of an archaeologist meeting the Secretary of the Interior’s Professional Qualification Standards for archaeology (National Park Service 1983). Locally affiliated Native American tribes shall be given the opportunity to conduct Native American monitoring. In the event that Native American monitoring occurs, a locally affiliated tribal member shall monitor all project-related ground disturbing activities. The monitor(s) will have the authority to halt and redirect work should any archaeological resources be identified during monitoring. If archaeological resources are encountered during ground-disturbing activities, work in the immediate area must halt and the find evaluated for listing in the CRHR. Archaeological monitoring may be reduced to spot-checking or eliminated at the discretion of the monitors, in consultation with the lead agency, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, or negative findings during the first 60 percent of rough grading. If monitoring is reduced to spot-checking, spot-checking shall occur</p>	<p>Project Applicant/ verified by the Development Services Department</p>	<p>During ground disturbing activities</p>	<p>City of Palo Alto Development Services Department</p>

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
CR-3	<p>when ground-disturbance moves to a new location within the project area and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).</p> <p>Unanticipated Discovery of Cultural or Tribal Cultural Resources. In the event that archaeological resources are unexpectedly encountered during ground-disturbing activities, work in the immediate area shall be halted and an archaeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for archeology (National Park Service 1983) shall be contacted immediately to evaluate the find. If the find is Native American in origin, then a Native American representative shall also be contacted to participate in the evaluation of the find. The qualified archaeologist, and, if applicable, the Native American representative, shall examine the find and make appropriate recommendations regarding additional work necessary to evaluate the significance of the find and the appropriate treatment of the resource. All cultural resources identified shall be evaluated for CRHR eligibility and local listing. Additional work may be necessary to evaluate the resource for inclusion in the CRHR or local listing. Recommendations could include, but are not limited to, invasive or non-invasive testing, sampling, laboratory analysis, preservation in place, or data recovery. A report of findings documenting any data recovered during monitoring shall be prepared by a qualified archaeologist and submitted to the Director of Planning. If the discovery is determined to be Native American in nature, the on-site Native American monitor, if applicable, shall be consulted to determine the appropriate treatment of the resource. In the event that no Native American monitor is contracted, locally affiliated Native American tribes shall be invited to consult regarding the appropriate treatment of any Native American resources identified during project construction.</p>	Project Applicant/ verified by the Development Services Department	During ground disturbing activities	City of Palo Alto Development Services Department

Environmental Impact	Mitigation Measure	Responsible for Implementation	Timing of Compliance	Oversight of Implementation
GEOLOGY/SOILS				
GEO-1	<p>Geotechnical Design Considerations. The project plans submitted for building permit approval shall incorporate the design recommendations outlined in the Geotechnical Study prepared by Earth Systems on April 9, 2021, or any other design feature or measure shown to equivalently reduce impacts associated with geology and soils to the satisfaction of the Director of Public Works. These include recommendations under the categories of:</p> <ul style="list-style-type: none"> ▪ General site preparation ▪ Compaction ▪ Fill ▪ Mat slab foundations ▪ Post-tensioned slab foundations ▪ Interior slab-on-grade construction ▪ Exterior flatwork ▪ Swimming pool ▪ Utility trench backfills ▪ Management of site drainage and finish improvements ▪ Geotechnical observation and testing <p>Refer to the Geotechnical Study for full detail recommendations for each of the abovementioned categories.</p>	Project Applicant/ verified by the Development Services Department Building Division	Prior to issuance of building permit	City of Palo Alto Development Services Department
GEO-2	<p>Discovery of Previously Unidentified Paleontological Resources. In the event a fossil is uncovered during Project construction, all work shall cease until a certified paleontologist can investigate the finds and make appropriate recommendations. Any artifacts uncovered shall be recorded and removed for storage at a location to be determined by the monitor.</p>	Project Applicant/ verified by the Development Services Department	During construction activities	City of Palo Alto Development Services Department



RESPONSES TO COMMENTS ON THE DRAFT IS-MND



575 Los Trancos Road Residential Project

PREPARED BY

City of Palo Alto
250 Hamilton Avenue
Palo Alto, California 94301
Contact: Emily Foley, AICP, Associate Planner

**PREPARED WITH
THE ASSISTANCE OF**

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

REPORT DATE

January 2023

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RESPONSES TO COMMENTS ON THE DRAFT IS-MND

This document includes comments received during the circulation of the Draft Initial Study – Mitigated Negative Declaration (IS-MND) prepared for the 575 Los Trancos Road Residential Project (Project).

The Draft IS-MND was circulated for a 30-day public review period that began on August 17, 2022 and ended on September 16, 2022. The City of Palo Alto received three comment letters on the Draft IS-MND. The commenters and the page number on which each commenter’s letter appears are listed below.

Letter No. and Commenter	Page No.
1 Jane F. Mark, AICP, Planning Manager, Midpeninsula Regional Open Space District	2
2 Shani Kleinhaus, Ph.D., Santa Clara Valley Audubon Society, and Gladwyn D’Souza, Sierra Club Loma Prieta Chapter	28
3 Steve Henry	43

The comment letters and responses follow. The comment letters have been numbered sequentially and each separate issue raised by the commenter, if more than one, has been assigned a number. The responses to each comment identify first the number of the comment letter, and then the number assigned to each issue (Response 1.1, for example, indicates that the response is for the first issue raised in comment Letter 1).

In certain instances, the text of the Final IS-MND has been modified in response to comments received or to clarify information. Corrections or additional text are reflected in the text of the Final IS-MND.

In no case did any of the changes made identify new significant impacts or new, avoidable significant effects compared to the impacts identified in the Draft IS-MND. Because none of the revisions to the IS-MND are “substantial” as defined in CEQA Guidelines Section 15073.5(b) and the information added merely clarifies and amplifies the information previously provided in the analysis, recirculation of the IS-MND is not required.

Letter 1

September 19, 2022

City of Palo Alto Planning and Development Services Department
City Hall
250 Hamilton Ave
Palo Alto, CA 94301

SENT VIA E-MAIL TO: emily.foley@cityofpaloalto.org and jodie.gerhardt@cityofpaloalto.org

Subject: 21PLN-00196, 575 Los Trancos Road (APN 18246012) Draft Initial Study and Mitigated Negative Declaration

Dear Ms. Foley,

On behalf of the Midpeninsula Regional Open Space District (Midpen), we respectfully submit the following comments regarding the Draft Initial Study and Mitigated Negative Declaration (ISMND) for the proposed residential development at 575 Los Trancos Road in the City of Palo Alto. As the owner of an adjacent parcel (APNs 079-080-050, -080, and -090), Midpen appreciates the opportunity to comment on this development and the time extension to submit our agency's comments to September 19th at 5 pm.

Comprised of over 65,000 acres of acquired and protected open space on the San Francisco Peninsula, Midpen is one of the largest regional open space districts in California. Our mission is to acquire and preserve a regional greenbelt of open space land in perpetuity, protect and restore the natural environment, and provide opportunities for ecologically sensitive public enjoyment and education.

While much of Midpen's open space lands are along the ridge of the Santa Cruz Mountains, Midpen owns and manages Windy Hill Open Space Preserve (Preserve), including the Hawthorns Area, which is located in the Town of Portola Valley and is located within a ¼ mile to the project site. Based on the project's proximity to the Hawthorns Area, we would like to share specific concerns regarding Biological Resources (BIO) that should be considered as part of the environmental analysis for the ISMND as well as for the design and approval of the project.

Biological Resources

Riparian Habitat

Based on the project plans, it appears the development is adhering to the City's Stream Corridor Ordinance's minimum creek setback of 20-ft from Los Trancos Creek. To improve the

clarity of the project plans and environmental review and to show the proposed structure's proximity to the creek, please provide a figure that includes the proposed building's footprint as shown on Figure 2 with the creek and property lines as shown on Figure 5.

1.1

According to the ISMND, "No vegetation removal, ground disturbance or construction shall occur within the creek or the 20-foot creek setback zone." Los Trancos Creek supports critical habitat for steelhead, central California coast (CCC) distinct population segment (steelhead) (*Oncorhynchus mykiss irideus*) and other aquatic species, where building the structure within close proximity to the creek could result in significant impacts to the aquatic species. In addition, the Project may need to modify riparian vegetation that are critical to supporting these aquatic species in order to maintain adequate defensible space for the newly constructed structures (which is usually requested to be 30-100 feet surrounding each structure). As such, the homeowner would need to encroach upon the creek setback area to remove additional vegetation to provide adequate defensible space in the future. This long-term management action would result in the need to remove/trim riparian vegetation. Additional permitting approval would be needed from regulatory agencies who may not be supportive of or approve vegetation modification for these purposes to ensure adequate protection of the creek and associated riparian vegetation. These actions would result in additional impacts on the riparian corridor, steelhead critical habitat and other aquatic species, which the ISMND has not fully analyzed and addressed in the BIO mitigation measures. In addition, please confirm that the City of Palo Alto Fire Department has reviewed the project plans to ensure that adequate defensible space can be provided for the new home and accessory structure located with only a 20-foot setback from the creek without impacting the riparian vegetation.

1.2

Wildlife Species and Habitat

The proposed swimming pool's placement in close proximity to the creek could result in the entrapment of semiaquatic species such as California Giant Salamander, Santa Cruz Black Salamander, Western Pond Turtle, California Red Legged Frog (CRLF), and San Francisco Garter Snake (SFGS) that may travel across the landscape. These potential additional impacts of entrapment and drowning which could result in the taking of these species should be analyzed and addressed in the BIO mitigation measures with consideration to include wildlife barriers and/or escape ramps installed to prevent entrapment.

1.3

The proposed Project is located in mountain lion habitat and wildlife corridor. The footprint of the new structure appears to be at least a 300-foot long (or greater) north to south barrier to wildlife passage parallel to Los Trancos Creek. This Project could cause wildlife such as deer and mountain lion to circumnavigate the structure in order to travel between open space areas located to the east and west of the proposed project resulting in additional fragmentation of the local habitat. The potential impacts to wildlife movement and fragmentation should be analyzed and addressed in the BIO mitigation measures.

1.4

Phytophthora / Sudden Oak Death

The area surrounding the proposed project has been heavily impacted by *Phytophthora*-caused plant diseases, including Sudden Oak Death (SOD), which was detected within close proximity to the project site in 2019¹. SOD has been responsible for the death of over one million oak and tanoak trees in California alone. Mortality rates are greater than 50 percent in some areas and continue to increase. Due to the known presence of SOD within the vicinity of the Preserve and the project site, attention is needed to protect the genetic integrity of native oak trees and reduce the potential risk of spreading SOD and related *Phytophthora* pathogens.

Should the project move forward, Midpen requests that the City incorporate appropriate protocols as part of the Conditions of Approval for the Resource Management Permit to minimize the spread of *Phytophthora spp.*, including disinfecting tools and removing soil from heavy equipment before entering and when leaving the project site. At a minimum, replacement trees should be noninvasive (according to the California Invasive Plant Council), native and ideally native oaks. For replacement oak trees, Midpen requests that the project applicant use acorns sourced from within the watershed rather than nursery stock. Trees grown in nurseries have been known to carry *Phytophthora spp.* and spread the pathogen where planted. Notably, current research suggests that larger healthy trees in SOD infested areas may carry a genetic resistance to the pathogen. Midpen would be pleased to issue a free permit for acorn collection at Windy Hill, Thornewood, or Teague Hill Open Space Open Space Preserves. For additional resources, please see the four attached best management practice documents for conducting vegetation work in areas with potential *Phytophthora* infection.

1.5

Midpen did not receive project notification for review of the ISMND, such that we request Jane Mark, Planning Manager (jmark@openspace.org), be added to the City’s future notifications for 575 Los Trancos Road project and other development projects located within the vicinity of the Hawthorns Area of Windy Hill Open Space Preserve. We appreciate the opportunity to comment on this development and the time extension of the public comment period to September 19th at 5 pm. Should you have any questions about this letter, please contact me at (650) 625-6563 or via email.

1.6

¹ Vollmar Natural Lands Consulting (2019). Botanical Resources Survey Report: Hawthorns Property, Windy Hill Open Space Preserve.

Sincerely,

A handwritten signature in black ink, appearing to read 'Jane F. Mark', with a long horizontal flourish extending to the right.

Jane F. Mark, AICP

Planning Manager

Attachment 1: Guidelines to Minimize Phytophthora Contamination

Attachment 2: Midpen Phytophthora Sterilization Guidelines

Attachment 3: Sudden Oak Death Precautions and Acorn Planting Protocols

Attachment 4: Guidelines to Minimize Phytophthora Pathogens in Restoration Nurseries

CC: Ana Ruiz, General Manager

Susanna Chan, Assistant General Manager

Guidelines to Minimize *Phytophthora* Contamination in Restoration Projects

These guidelines aim to avoid contamination of restoration sites with exotic pathogenic *Phytophthora* species or other plant pathogens during planting and related activities.

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Definitions:

- **Holding facility or nursery:** A facility where nursery stock is maintained for a short to extended period of time prior to planting. Plant maintenance activities may include irrigation, fertilization or light pruning, as necessary. Nurseries involved in most other activities, including propagation or repotting are considered production nurseries.
- **Job site:** The job site includes areas for planting, soil stockpiling, parking, and access roads within and leading to the site.
- **Nursery stock:** All types of nursery grown plants.
- **Planting area:** Area being planted for habitat restoration, erosion control, or other purposes.
- **Planting site:** An individual planting basin or other spot, typically no larger than one square yard, where an individual plant or several grouped plants will be installed.
- **Sanitize:** Clean and treat with a sanitizing agent or via a lethal heat exposure to kill plant pathogens present as external contamination.
- **Sanitizing agent:** Materials such as bleach (sodium hypochlorite solutions), alcohol, quaternary ammonium compounds, and peroxides that can directly kill exposed propagules of *Phytophthora* or other plant pathogens when used properly. Most sanitizing agents can also kill a wide variety of bacteria and deactivate many viruses. Note that most materials referred to as fungicides are applied to plants to suppress disease but may not kill the pathogens and are not sanitizing agents.

I. Construction projects

In an effort to minimize the spread of plant pathogens the exterior and interior of all equipment and tools must be clean and free of debris, soil and mud (including tires, treads, wheel wells and undercarriage) prior to arrival at a new job site.

General guidance – suggested standard operating procedures:

- a. Vehicles need to stay on established roads unless infeasible.
- b. In general, vehicles and equipment need to be maintained clean – interior and exterior free of mud, debris and soil especially during the wet season.
- c. In general, work shoes need to be kept clean- inspect shoe soles and knock mud, debris and soil off treads before moving to a new job site.
- d. To minimize the potential for spreading potentially contaminated soil and time required for decontamination, if possible, avoid vehicle traffic and field work when soils are wet enough to stick readily to shoes, tools, equipment and tires.

II. Planting at Field Sites

Overview: Three general routes for the spread of *Phytophthora* and other soilborne plant pathogens are addressed in these guidelines. These routes are (1) contamination of planting material, including clean nursery stock, and other materials installed at the site, (2) inadvertent introduction of pathogens to a job site from other outside sources (e.g., via contaminated equipment), and (3) potential movement of undetected contamination within the planting area.

These guidelines assume that all nursery stock was originally grown under phytosanitary conditions and tested as remaining free from disease in the nursery (refer to nursery guidelines). These guidelines address how to protect the planting area from subsequent contamination during the delivery, storage onsite, and installation of planting stock and materials.

1. Prevent contamination of clean nursery stock or other clean plant materials

Planting stock shall be protected from potential contamination from the point that it leaves the production nursery or collection site until planting. Note that nursery stock has a high risk of infection by *Phytophthora* species if exposed to these pathogens. Excluding these pathogens provides the only viable option for maintaining outplanted nursery stock free of *Phytophthora*.

1.1. Maintaining nursery stock in a holding facility

When holding stock for an extended period (after delivery from production nursery and before planting), the following practices need to be followed to prevent contamination of the nursery stock with *Phytophthora*.

- 1.1.1. Delivered nursery plants that will be held before planting shall be transferred to cleaned and sanitized raised benches and maintained as described in “Guidelines to Minimize *Phytophthora* Pathogens for holding (non-production) nurseries at restoration sites, Section 3.”

1.2. Handling and transporting nursery plants at the job site

- 1.2.1. Nursery plants shall be transported on or in vehicles or equipment that have been cleaned before loading the stock. Truck beds, racks, or other surfaces need to be swept, blown with compressed air and/or power washed as needed so they are visibly free of soil and plant detritus. More information on sanitizing surfaces are described in the Appendix.
- 1.2.2. Keep plants in sanitized vehicles or on sanitized carts, trailers, etc. until delivered to their planting sites. (More information may be found in sections 1.3.3. and 1.3.4.)
- 1.2.3. At the job site, plants shall be handled to prevent contamination until delivered to each planting site. Nursery stock shall not be placed on the soil or other potentially contaminated surfaces until they are placed at their specific planting sites.
- 1.2.4. If it is necessary to offload plants at the job site, plants may be placed on clean waterproof plastic tarps or other clean, sanitized surfaces. If tarps are used for holding plants, one surface needs to be dedicated for contact with nursery stock and will be cleaned and sanitized to maintain phytosanitary conditions.

1.3. Other planting site inputs

- 1.3.1. Washing, soaking, or irrigation of plant material shall be conducted using clean water sources as specified in the Appendix below. Untreated surface waters should not be used for these purposes.
- 1.3.2. On-site or off-site collection of plant materials, including seed and cuttings for direct planting, shall be conducted in a phytosanitary manner (see guidelines for collection practices at www.calphytos.org).
- 1.3.3. Prior to delivery to the planting areas, mulch, compost, soil amendments, inoculants, and other organic products need to be examined and determined to be low-risk for pathogen introduction. Acceptable materials are those that are free of contamination by plant pathogens based on their composition or manufacturing conditions, or that have been exposed to an effective heat treatment to eliminate pathogens. Such materials must be handled and stored in a manner that prevents contamination. At the job site, delivered materials shall be handled to prevent contamination until delivered to each planting site in the same manner specified for nursery stock in section 1.2 above.
- 1.3.4. All other materials to be installed at the site shall be of new or sanitized material that has not been stored in contact with soil, untreated surface waters, or other potentially contaminated materials. This includes irrigation supplies (such as pipe, fittings, valves, drip line, emitters, etc.), erosion control fabrics, fencing, stakes, posts, and other planting site inputs.

2. Cleaning and sanitation required before entering planting area to prevent introducing contamination from other locations

Phytophthora contamination can be present in agricultural and landscaped areas, in commercial nursery stock, and in some infested native or restored habitat areas. Contamination can be spread via soil, plant material and debris, and water from infested areas. Arriving at the site with clean vehicles, equipment, tools, footwear, and clothing helps prevent unintentional contamination of the planting site from outside sources.

2.1. Vehicles, equipment, and tools

- 2.1.1. Equipment, vehicles and large tools must be free of soil and debris on tires, wheel wells, vehicle undercarriages, and other surfaces before arriving at the planting area. A high pressure washer and/or compressed air may be used to ensure that soil and debris are completely removed. Vehicles that only travel and park on paved roads do not require external cleaning.
- 2.1.2. The interior of equipment (cabs, etc.) should be free of mud, soil, gravel and other potentially contaminated material. Interiors should be vacuumed, washed, and/or treated with sanitizing agents as needed to eliminate pathogen propagules that could be transferred to the planting area.
- 2.1.3. Small tools and other small equipment (including hoses, quick couplers, hose nozzles, and irrigation wands) need to be washed to be free of soil or other contamination and sanitized (see Appendix).
- 2.1.4. Hoses shall be new or previously used only for clean water sources (see Appendix).

2.2. Footwear and clothing

- 2.2.1. Soles and uppers of footwear need to be visibly free of debris and soil before arriving at the planting area. (See the Appendix for more details.)
- 2.2.2. At the start of work at each new job site, worker clothing shall be free of all mud, soil or detritus. If clothing is not freshly laundered, all debris and adhered soil should be removed by brushing with a stiff brush.
- 2.2.3. Gloves and non-porous knee pads must be new (if disposable) or laundered/sanitized at the start of each work day, and/or clean coveralls must be worn. Non-disposable gloves should be made of or coated with material, such as nitrile, that can be sanitized.

3. Prevent potential spread of contamination within planting areas

Phytophthora can also be spread within plantings areas if some portions of the site are contaminated. However, it is not possible to identify every portion of a planting area that may contain *Phytophthora*. Because *Phytophthora* contamination is not visible, working practices should minimize the movement of soil within the planting area to reduce the likelihood of pathogen spread.

Note that areas with higher risk of *Phytophthora* infestation include areas adjacent to planted landscaping, areas previously planted with *Phytophthora*-infected stock, areas with existing or recently removed woody vegetation, disturbed wetlands, and areas directly along watercourses. Areas with low risk of contamination typically include upland sites with only grassy vegetation or sites where surface soils have been removed.

3.1. Worker training and site access

- 3.1.1. Before entering the job site, field workers need to receive training that includes information on *Phytophthora* pathogens and how to prevent the spread of these and other soilborne organisms by following approved phytosanitary procedures. Workers should also be informed about any site-specific phytosanitary practices before work commences.

- 3.1.2. Do not bring more vehicles into the planting area than necessary and keep vehicles on surfaced or graveled roads whenever possible to minimize potential for soil movement.
- 3.1.3. Travel off roads or on unsurfaced roads should be avoided when soil and road surfaces are wet enough that soil will stick to vehicle tires and undercarriages.
- 3.1.4. To allow for adequate decontamination of equipment, tools, gloves, and shoes, avoid planting under overly wet conditions or when soil is saturated.

3.2. Minimize unnecessary movement of soil and plant material within the planting area, especially from higher to lower risk areas

- 3.2.1 Brush off soil from tools and gloves when moving between successive planting sites to prevent repeated collection and deposition of soil across multiple sites.
- 3.2.2. Avoid contaminating clothing with soil during planting operations. Brush off soil accumulations before moving from one planting site to the next. Use nonporous knee pads that are cleaned between planting sites if kneeling is necessary.
- 3.2.3 When possible, plant nursery stock from a given block in the same local area rather than spreading it widely. If a problem is associated with a given block of plants, it will be easier to detect and deal with it if the plants are spatially grouped.
- 3.2.4. Phase work to minimize movement between areas with high and low risk of contamination. Where possible, complete work in low risk areas before moving to higher risk areas. Alternatively, assign personnel to working in either high or low risk areas exclusively to reduce the need for decontamination.
- 3.2.5. Clean soil and plant debris from large equipment and sanitize hand tools, buckets, gloves, and footwear when moving from higher risk to lower risk areas or when moving between widely separated portions of the planting area.
- 3.2.6. All non-plant materials to be installed at the site (irrigation equipment, erosion control fabric, fencing, etc.) shall be handled to prevent movement of soil within the site, especially movement from higher risk to lower risk areas. Materials should be kept free of soil contamination by maintaining them in clean vehicles or carts, trailers, etc., or stockpiling in elevated dry areas on clean tarps until used.

4. Clean water specifications

Objective: use only uncontaminated, appropriately-treated water for irrigation.

- 4.1.1. Water used for irrigating plants needs to be uncontaminated. See Appendix for specifications.

Appendix

A. Procedures for sanitizing tools, surfaces, and footwear

Surfaces and tools should be clean and sanitized before use. Tools and working surfaces (e.g., plant carts) should be smooth and nonporous to facilitate cleaning and sanitation. Wood handles on tools should be sealed with a waterproof coating to make them easier to sanitize.

Before sanitizing items, remove all soil and organic material (roots, sap, etc.) from their surfaces. If necessary, use a detergent solution and brush to scrub off surface contaminants. The sanitizing agent may also be used as a cleaning solution. Screwdrivers or similar implements may be needed to clean soil out of crevices or shoe treads. Brushes and other implements used to help remove soil must be visibly clean and sanitized after use.

After surface soil and contamination are removed, treat the surface with one of the following sanitizing agents, allowing the appropriate contact time before rinsing. If surfaces are clean and dry, wet surfaces thoroughly and allow for the appropriate contact time listed. If the sanitizer has been used to help clean the surface, use fresh sanitizer to rinse off any dirty solution and then allow the required contact time. If treated surfaces are wetted with water, the sanitizing solution will become diluted. Apply enough sanitizer to completely displace the water film and then allow the required contact time. Sanitizing agents may be applied with spray bottles to thoroughly wet the surface. Observe all appropriate safety precautions to prevent contact with eyes or skin when using these solutions.

- 70-90% ethyl or isopropyl alcohol - spray to thoroughly wet the surface and allow to air dry before use
- freshly diluted bleach solution (0.525% sodium hypochlorite, Table 1) for a minimum of 1 minute (due to corrosivity, not advised for steel or other materials damaged by bleach)
- quaternary ammonium disinfectant - use according to manufacturer recommendations, making sure that the label indicates that the product is suitable for your use situation and has activity against *Phytophthora* when used as directed. Solution should be freshly made or tested to ensure target concentration.

Table 1. Dilutions of commonly available bleach products needed to obtain approximately 0.525% sodium hypochlorite concentrations (5000 ppm available chlorine).

Percent sodium hypochlorite in bleach	Parts bleach	Parts water	Diluted bleach percent sodium hypochlorite
5.25%	1	9	0.525%
6.0%	1	10.4	0.526%
8.25%	1	14.6	0.529%
8.3%	1	14.8	0.525%

For example, adding 100 ml of 5.25% bleach to 900 ml of water will make 1000 ml of 0.525% NaOCl solution. If using 8.3% bleach, add 100 ml of bleach to 1480 ml of water to make 1580 ml of 0.525% NaOCl.

B. Clean water specifications

Surface waters, including untreated water from streams or ponds and nursery runoff, can be sources of *Phytophthora* contamination. Only uncontaminated water or water that has been effectively treated to remove or kill *Phytophthora* should be used for rinsing or irrigating plant material.

5.1. Water used for irrigation shall be from treated municipal water supplies or wells and delivered through intact pipes with backflow prevention devices. Tertiary-treated municipal recycled water is acceptable.

5.2. If well water is used, wellheads shall be protected from contamination by surface water sources.

5.3 Untreated surface waters and recycled nursery runoff shall not be used, and plants shall not be held where potential contamination from such sources is possible via splash, runoff, or inundation.

5.4. Irrigation equipment must be kept free of contamination that could be transferred to irrigation water or plants. All hoses, wands, and nozzles, and hand irrigation equipment must either be new or sanitized before use. Drip irrigation and other sprinkler parts should be new or sanitized. Hose ends, wands, or nozzles that become contaminated with soil or mud during use should be cleaned and sanitized before being used further.

Guidelines for Minimizing *Phytophthora* Contamination at Midpeninsula Regional Open Space District Preserves

The goal of these guidelines is to minimize the contamination of Midpeninsula Regional Open Space District (MROSD) preserves with *Phytophthora*, a soil pathogen that kills plants. Once a site is contaminated, this soil pathogen can spread farther into wildland areas and can be difficult to eradicate. Prevention is the lowest cost and easiest method to manage contamination.

The best way to prevent the spread of this disease is to not move soil from one location to another by cleaning tools, equipment, and footwear.

Part of the District's mission is to protect and restore the natural environment. Within the last few years, planted restoration sites have unintentionally exposed preserves to soil pathogens brought in by nursery plants that were later found to be contaminated. Testing of former restoration sites on District preserves is now underway to determine which sites are contaminated and the necessary remedial actions.

Who should use these guidelines?

These guidelines are intended for use by field staff and Natural Resource (NR) staff who pose the highest chance of spreading soil *Phytophthora* via equipment and footwear. Several methods are provided on how and when to decontaminate tools and equipment depending on the site conditions (contaminated versus clean site) and staff activities (planting, other). Guidelines for contractors, consultants, volunteers and preserve visitors are under development. Consult NR staff (Amanda Mills, amills@openspace.org or x558, or Coty Sifuentes-Winter, csifuentes@openspace.org or x560) on which guidelines are best for your project.

When to use these guidelines?

Use these guidelines for any activity that contacts soil, water or plants on a known *Phytophthora*-contaminated site, on a formerly planted site, on a site with rare plants, or when preparing or planting a new restoration site.

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1. Overview

Remember to **Arrive Clean and Leave Clean**. The best way to prevent the spread of *Phytophthora* is to leave soil at its original location in the field. Equipment and footwear should be clean and sanitized before entering a site, especially for planting events where extra precautionary steps will be taken. Before leaving a site, especially at contaminated sites, it's crucial to clean and sanitize footwear and equipment.

Definitions:

Clean - remove soil and organic debris from tools and footwear

Sanitize - Use disinfecting agent such as alcohol or chlorine bleach.

Phytosanitary - control of plant pests and diseases especially in agricultural crops

1.1 What is Phytophthora?

- 1.1.1 *Phytophthora* (Fie-tof-thora) is a group of water molds that infect plants. There are many species, mostly notably *P. ramorm* (Sudden Oak Death), *P. infestans* (potato blight/ Irish potato famine) and *P. tentaculata* (nursery root rot).
- 1.1.2 Symptoms are similar to drought, making diagnosis difficult without testing.
- 1.1.3 Symptoms include leaf spots, branch die-back, cankers, trunk bleeding and death of whole plant.
- 1.1.4 Hosts include many native and nursery plants including oaks, bay laurel, madrones, sticky monkeyflower.
- 1.1.5 Brought to California through imported camellia and rhododendron nursery plants.
- 1.1.6 Mainly spreads from contaminated nursery stock, pots and soil. Can spread by foot traffic from contaminated footwear.

1.2 General Steps:

- 1.2.1 **What** - Items to be cleaned: Anything that comes into contact with soil, water or plants. This includes tools (shovels, hand trowels, hori-horis, rakes, tree cages, plant protection tubes etc.), footwear, equipment, wheeled equipment and vehicles.
- 1.2.2 **When** - Prior to the project day, field staff will be notified what items need to be cleaned and by which method. In general, tools and equipment should be cleaned at the field office before bringing them to the field site, and soil should be removed from footwear beforehand and more thoroughly cleaned at the entrance to the field site.
- 1.2.3 **Transportation** - Cleaned equipment should be transported in a truckbed from which all soil has been washed out, or cleaned equipment can be wrapped in a clean tarp before placed in a dirty truck.

1.3 Proper Disinfectants

All recommended disinfectants are considered pesticides. Personal protective equipment required by the State of California for anyone using disinfectants is eye protection with wrap-around and brow protection and 14 mil chemical resistant gloves. You can use smaller mil gloves if handling chemicals for 15 minutes or less.

- 1.3.1 The disinfectants listed in Table 1 are recommended by standard phytosanitary guidelines.
- 1.3.2 Other disinfecting agents or methods, such as Lysol or heat treatments, must be reviewed and approved by NR staff before use.
- 1.3.3 Disinfectants are most effective when surfaces are clean of soil and user follows label instructions.

Disinfecting Agent	Active ingredient	Contact time	Product shelf life	Proper Disposal	Health Risk	Personal Protective Equipment
Granular Chlorine Bleach (Leslies Chlor Brite, EZ Chlor)	Sodium dichloroisocyanurate dihydrate	2 min	Long if undiluted	Neutralizer (Vita-D-Chlor)	High	Eyewear, gloves; do not inhale
Liquid Bleach (Clorox)*	Sodium chloride	2 min	3-5 months	TBD	High	Eyewear, gloves; do not inhale
Rubbing Alcohol	Ethanol or Isopropyl Alcohol	1 min	Long	TBD	Med	Eyewear, gloves; flammable
Quaternary ammonium compounds (Quat 128 or Phisan 20)	Dodecyl dimethyl ammonium chloride	10 min	Long if undiluted	TBD	Med	Eyewear, gloves; toxic to fish

Table 1: List of approved disinfecting agents. Always follow chemical label instructions.

*Liquid bleaches are generally not recommended as a disinfectant because they lose potency in storage.

2. Cleaning at the Field Office

Clean equipment, tools and footwear at the field office **before** arriving to the project site. This is the easiest way to prevent soil contamination. For those occasions where equipment and footwear must be cleaned at a field site, see Cleaning at Field Site (page 7).

2.1 Remove Soil from Equipment and Footwear

- 2.1.1 At the field office, scrape, brush, and wash off any soil or organic material. Take care to remove soil trapped in treads or cracks.
- 2.1.2 Pathogens can survive inside soil clods even after soaking because disinfectants may not completely penetrate large or clayey masses. Therefore, it is important to remove large clods of soil before soaking or otherwise treating with disinfectants.

2.2 Disinfect Tools With Bleach

Several disinfecting agents are available for treating Phytophthoras (Table 1). When many tools need treatment, use granular chlorine bleach at the field office. Spraying with rubbing alcohol is more appropriate for spot treatment at remote field locations.

NEVER MIX DIFFERENT DISINFECTING AGENTS.

ALWAYS FOLLOW LABEL DIRECTIONS.

FOLLOW REQUIREMENTS FOR PERSONAL PROTECTIVE EQUIPMENT WHEN USING DISINFECTING AGENTS.

List of Equipment for Disinfecting Tools:

- **Disinfectant** – most frequently, we expect to be using granular chlorine bleach such as EZ Chlor or Leslie’s Chlor Brite when cleaning multiple tools at the field office. Carefully follow the directions below when using any [?] of the bleach disinfectants.
- **Vita-D-Chlor (chlorine neutralizer)** - This neutralizing product is only required if you used chlorine bleach as a disinfectant.
- **Waterproof container** - A large [minimum size?] plastic trashcan or waterproof pop-up garden trimming container in which to mix the water-based disinfectant and soak the tools.
- **Hard bristled scrub brushes and paint scrapers** - Grill brushes with scrapper attachment are handy tools to loosen soil from both flat surfaces and narrow cracks.
- **Personal Protective Equipment** Close-toed shoes, apron or coveralls, protective eyewear, 14 mil chemical resistant gloves (not leather or cloth).
- **Clean water source** - should not be cloudy or with a lot of organic material in it. Pressure washers or nozzles are helpful to remove soil quickly and get into small cracks.

- 2.2.1 Before using the disinfectant, remove soil as described in above section.

- 2.2.2 Fill waterproof container with 10 gallons of water. Use label instructions to add the right amount of disinfecting agent. For granular bleach, use one teaspoon in 10 gallons to get the desired 0.525% dilution.
- 2.2.3 Dunk tools in solution for required soaking time (see Table 1). For granular bleach, this is 2-minutes. Just getting tools wet does not mean they will be disinfected. Think of it as chemical cooking.
- 2.2.4 If you used chlorine bleach as a disinfectant, it needs to be neutralized after soaking. This ‘rinse cycle’ will deactivate the bleach so it does not corrode metal and so that it is safer to dispose of the soak water. Equipment sprayed with alcohol does not require this neutralization step.
- 2.2.5 In addition to tools, remember to disinfect the sanitation kit, gloves, tarps, or other miscellaneous items that have come into contact with soil.
- 2.2.6 Let tools dry. The hose lay is great for drying tarps.

2.3 Disinfect Wheeled Equipment/ Vehicles

Anything with wheels, including wheel barrels, ATV’s, motorized carts that will be used at the field site needs to be cleaned and this is best done at the field office before the project. Vehicles that stay at the staging area do not have to be cleaned and sanitized. However, it is good phytosanitary practice to remove soil from wheels every time you leave a site.

- 2.3.1 Scrub down tires either by hand scrubbing or using a pressure spray wash.
- 2.3.2 Sanitize using disinfecting spray such as bleach (must be made weekly) or rubbing alcohol.

3. Cleaning at Field Site

Remember to **Arrive Clean and Leave Clean**. If equipment was cleaned and treated with a disinfectant at the field office and delivered in a clean truck, then on-site cleaning of equipment will only be required when leaving at the end of a work day. We recommend that everyone be encouraged to thoroughly clean their footwear of soil before arrival at the site, and then footwear be treated with alcohol upon arrival. Volunteers may not always be aware of this recommendation and may arrive with boots that need to be cleaned of foreign soil at the field site. Scraping all soil off equipment and footwear is required before leaving site, and sanitation of all footwear is usually recommended when leaving a site, especially for known contaminated sites. Rubbing alcohol is usually the preferred disinfectant in the field. Bleach products can be used in the field, but it is harder to mix and dispose of them properly in the field. See details below.

3.1 Cleaning at Start of Field Day

Tools:

Portable sanitation kits include the following items in a bin: 2 tarps, boot brush with scraper, 2 spray bottles of 70% isopropyl alcohol, 2 long-handled brushes, 2 paint scrapers, and instructions. On muddy days, also bring a basin and 2 jugs of water.

Alcohol 70% Ethyl alcohol (Ethanol) or 90% Isopropyl alcohol is fine. Called rubbing alcohol at drug stores.

Spray bottle - we take the nozzles from chemical resistant spray bottles and screw them directly into the rubbing alcohol bottle. Sometimes the stem needs to be trimmed. This allows you to have a spray bottle that is properly labeled with rubbing alcohol information and precautions.

- 3.1.1 Any equipment or footwear not cleaned and sanitized at the field office must be cleaned and sanitized before entering the site. Off-site soil should be considered contaminated.
- 3.1.2 Using the items in the portable sanitation kit, set up a staging area where equipment and footwear will be cleaned and sanitized. A paved parking lot or surface near the entrance to the work site is preferred.
- 3.1.3 Lay out 2 tarps, one labeled 'dirty' and one labeled 'clean'.
Remove any off-site soil from footwear and equipment onto the 'dirty' tarp. Try not to use water. If water is used, DO NOT dump potentially contaminated water onto on-site soil. Water can be dumped onto non-permeable pavement such as a road or parking lot in a low traffic area. This will UV-sterilize the dirty water (24 hr daylight cycle) as long as no clumps exist. Potentially contaminated soil in the 'dirty' tarp should be bagged in a trash bag and thrown away. DO NOT dispose of off-site soil at the new site.
- 3.1.4 Use the 'clean' tarp to sanitize soil-free footwear and equipment. Standing on the tarp, spray cleaned footwear and tools with 70% isopropyl alcohol, thoroughly wetting the surface. If the surface of your footwear or tools is already wet, spray extra alcohol to displace the water and allow the alcohol to soak the surface. Spray the footwear from the top down to avoid contamination.
- 3.1.5 Allow alcohol to evaporate (approx. 1 min) before starting work. You can stand on the tarp until your shoes are dry.
- 3.1.6 Footbath Alternative - we are investigating sanitizing mats where sanitizing only requires stepping on the mat. Gemplers.com, sanistride.com, and nelsonjameson.com sell both sponge mats and footbath mats for disinfecting shoes. Either chlorine bleach or non-evaporating disinfectants are used in these footbaths and the solution is changed weekly or as needed. Chemical strips are available to test if disinfectants are still effective. Caution should be taken if footbaths and solutions are transported to avoid spills.
- 3.1.7 Bleach alternative in the field. We are currently recommending that the bleach alternative be used at the field office and alcohol be used in the field. Bleach may be a better alternative in the field under some circumstances (large amounts of tools that must be disinfected in field), but will require special processes for safety and to properly dispose of the chlorine treatment water. Consult with the NR Department to determine best methods under these conditions.

3.2 Cleaning at End of Field Day

Tools:

Portable sanitation kits include the following items in a bin: 2 tarps, boot brush with scraper, 2 spray bottles of 70% isopropyl alcohol, 2 long-handled brushes, 2 paint scrapers, and instructions. On muddy days, also bring a basin & 2 jugs of water.

- 3.2.1 Sanitation of equipment and shoes is important for known or suspected contaminated sites. More leniency can be given for 'clean' sites.
- 3.2.2 Remove all soil and organic material from footwear and equipment. Leave soil onsite. Use the boot scraper, paint scraper and a stiff brush to remove any soil and plant material on both the top and bottom of footwear and from tools including the digging ends and handles. Make sure to clean out crevices. On muddy days, fill the basin with water to assist in rinsing off excess soil once the majority of debris has been removed.
- 3.2.3 Water helps in removing dried clods of soil. This water can be dumped on-site only if the soil originates from on-site.
- 3.2.4 Standing on the 'clean' tarp, spray cleaned footwear and tools with 70% isopropyl alcohol, thoroughly wetting the surface and allowing it to dry (approx. 1 min). If the surface of your footwear or tools is already wet, spray extra alcohol to displace the water and allow the alcohol to soak the surface.
- 3.2.5 Before leaving the site, shake soil off the scrapers, brushes and tarp.
- 3.2.6 At the field office, thoroughly clean the portable sanitation kit by washing out, spraying with alcohol and drying the container and all contents before storage. The portable sanitation kit must be clean before moving to a new site.

4. FAQ

Q. What do we do with left over soil?

A. Depends on the soil. Soil from off-site should be disposed of in a trash bag and thrown away--there's no knowing if off-site soil is contaminated or not. On site soil can be disposed of on-site back where it came from.

Q. What do we do with dirty water?

A. Pouring on pavement or another non-porous surface should disperse the contaminated soil enough to UV (sun) sterilize the water. If using bleach, use neutralizer and the water can be considered clean and safe enough to pour out anywhere. Don't pollute! Other disinfectants need proper disposal that isn't safe for dumping on the ground. Contact Natural Resources Department (Amanda Mills/Coty Sifuentes-Winter) or EH&S for safe disposal procedures.

Q. How do we use the tarps?

A. Two tarps, two purposes. Dirty tarp: use as a containment area to clean off soil clogs, especially offsite soil, for later disposal. Clean tarp: provides users a clean surface to sterilize (with alcohol or other sanitation liquid) shoes and equipment not cleaned at the Field offices.

Q. When will we need to sanitize or use the kits?

A. 1. Contaminated sites (list TBD) 2. Planting events-NR staff lead 3. When NR Staff recommend sanitation. Most of these will be NR staff lead, otherwise a leading crew member will advise on Phytosanitary BMP.

Q. Can we use hot water to sterilize?

A. Hot water can be used only if equipment bathes in 120-125° water for 30 minutes in order to be effective at killing both surface contaminants and internal infections.

Q. What about large equipment and Ranger lead projects?

A. TBD. Field staff will be trained on phytosanitary measures. For field crew lead projects, a crew member should be in charge of facilitating phytosanitary compliance.

Q. Why does this take so much time?

A. It's best to prevent rather than respond to contamination by *Phytophthora*. Once a natural area has been exposed to this soil disease, it can slowly spread and kill other plants. It is very difficult and expensive to kill all the pathogens in the soil of a natural area.

5. Sources

CalPhytos.org. "Guidelines to minimize *Phytophthora* Pathogens in Restoration Nurseries".
Suddenoakdeath.org. http://www.suddenoakdeath.org/wp-content/uploads/2016/04/Restoration.Nsy_.Guidelines.final_.092216.pdf

Kurowki, Chet. "Control Pathogen Spread through use of Disinfectants". Calseed.org.
<http://www.calseed.org/documents/Disinfectants%2004-22-14a.pdf>

Cornell University Institutional Animal Care and Use Committee "Cleaning and sanitizing equipment used in the transport of animals."
<https://ras.research.cornell.edu/care/documents/ACUPs/ACUP532.pdf>

http://agriculture.mo.gov/animals/pdf/animalag_guide4.pdf

6. Future Methods

Let us know how these guidelines worked for your project! We may adjust guidelines based on feedback.

**Midpeninsula Regional Open Space District
Sudden Oak Death Precautions and Acorn Planting Protocol**

1. Sudden Oak Death (SOD) Precautions

- a. Prior to the start of construction work, the Construction Superintendent shall inform construction personnel that they are working in a potential SOD-infested area, the implications of the disease, and the need to prevent further disease spread. Non-English speaking personnel shall be provided the appropriate written or verbal translations.
- b. To the extent practical, avoid locating equipment and material near host plants and trees, especially if showing disease symptoms.
- c. Route equipment away from host plants and trees, especially if showing disease symptoms.
- d. Any cutting or chipping of on-site plant material shall be restricted to the project area and the debris shall remain in the project area.
- e. After completing any cutting or chipping of on-site plant material, ensure that the equipment is free from host debris by first removing any visible plant material that clings to the equipment and follow with the cutting or chipping of non-host material.
- f. Before any equipment or vehicles leave the preserve, the contractor shall inspect the equipment and vehicles for host plant debris (leaves, twigs, and branches). Host plant debris must be removed from equipment and vehicles prior to their departure.
- g. If conditions at the work site are muddy due to dust suppression activities or summer rains, remove or wash off accumulations of soil, mud, and organic debris from shoes, boots, vehicles, and heavy equipment prior to exiting the preserve. If an equipment power wash station is used, its location must first be approved by the District Representative.

2. Acorn Planting Protocols

- a. Prior to planting, the contractor will remove debris within a 2-3 foot diameter of the planting basin and hollow out a planting hole fist deep and wide in loose soil. Place 3 seeds on their side in the hole, cover with soil to grade and firmly pat down. Contractor shall install Tubex Shrubshelters (2.5' height) centered on the planted seeds. Contractor shall insure that each installed Tubex Scrubshelter is in good condition and securely attached to wooden stakes with the bottom edge covered by soil. Contractor shall install a mulch layer or certified weed free stry 3 to 5-inches deep in an area of 3-foot diameter around each tree shelter. Contractor will provide and water each basin with one (1) gallon of water.
- b. After the first Spring, keep only the most vigorous seedling in each basin. If space is an issue, plant trees closer together.
- c. At year 5, thin trees to 2:1 ratio.
- d. At year 10, thin trees to 1:1 ratio.

Midpen will gladly issue a free permit to collect acorns for use from either Coal Creek or Los Trancos Open Space Preserves to a qualified contractor.

2. Clean planting materials

Objective: Start with propagative material that is free from infection or external contamination by *Phytophthora* species as well as other possible pathogens.

Suggested practices:

- 2.1. To avoid introducing *Phytophthora* into seed collection areas, make sure your equipment, vehicle, and footwear are clean. Clean and sanitize your footwear and tools between locations.
- 2.2. Where possible, collect seeds and cuttings as high above the ground as possible, preferably at least 3 ft above the soil surface.
- 2.3. Whenever possible, seed/fruit should not be collected directly from the ground. Seed can be knocked onto clean tarps placed on the ground or collected using seed traps. If seed is otherwise unavailable, exceptions may be considered based on the following criteria: 1). Vegetation is robustly healthy, the site is not known to be and not likely to be contaminated; 2). Seed has recently dropped on dry ground or leaf litter. Seeds that may be contaminated with soil via water splashed from the soil should be appropriately treated before storage or use (see section 9. Sanitizing materials and treatments). Ground-collected seed will be kept separate from other collected material during seed processing and planting and should be prioritized for testing throughout propagation.
- 2.4. Seeds, cuttings, and other plant propagules should not be collected from the vicinity of past restoration plantings or other areas where *Phytophthora* infestations are known, suspected, or likely. In the unusual situations where this is not possible (e.g., for rare populations), seed or tip cuttings may be collected if collected at a distance of 1 m or more above the ground. Material propagated from such sources should be kept segregated from plant material propagated from pathogen-free areas.
- 2.5. Protocols for seed collection from species that are low growing (with height stature less than 1 m above the ground) should minimize the risk of potential *Phytophthora* contamination. In general, seed that matures after the rainy season has ended has a low risk of being contaminated if collected before fall rains begin.
- 2.6. Collect seeds, cuttings, or other propagules only from plants and fruit that appear healthy. Do not collect or store seeds or other propagules with apparent disease symptoms such as decay, atypical discoloration, or fungal fruiting bodies.
- 2.7. If possible, avoid collecting seeds or other propagules during wet or muddy conditions to minimize potential for contaminating propagules or spreading contaminated soil.
- 2.8. Collect propagules with clean hands/gloves and equipment (pruning shears, etc.) and place them in new bags/envelopes and new or clean containers. Sanitize gloves, hands, and tools immediately if they come in contact with soil. Sanitize cutting tools frequently.
- 2.9. Conduct all processing of seeds or cuttings in a clean work area with clean equipment and clean hands or gloves. Discard or sanitize any seed or propagule that is dropped on the ground or comes in contact with contaminated surfaces or materials.

- 2.10. Clean seed as soon as possible after collection to remove any debris before storage or stratification. Inspect stored seeds or other propagules regularly and discard materials that develop symptoms in storage.
- 2.11. Where compatible with seed storage and germination requirements, treat seed using heat or appropriate disinfecting chemicals to eliminate seed-borne pathogens or external contamination. Seed treatment may be omitted for species where it is impractical or the risk of seed-borne or contaminating pathogens is negligible.
- 2.12. Do not bring potentially infected or contaminated plant material into clean production areas of the nursery. Properly collected seed and tip cuttings (described above) will normally be free of *Phytophthora*.
- 2.13. Plant propagules that have been in contact with the soil (divisions, tubers, rhizomes, bulbs, etc.) have an elevated risk of being infected or contaminated with *Phytophthora* or other soilborne pathogens. Plant stock originating from such propagules should be segregated from planting material started from cleaner sources, such as seed or cuttings and from other vegetatively propagated material from different localities. The goal is to avoid introducing pathogens, including pathogens that may be endemic to a given site, to new areas or native plant populations via plants that become infected in the nursery.
- 2.14. Plant propagules from the soil (divisions, tubers, rhizomes, bulbs, etc.) should be thoroughly cleaned to remove soil and inspected. Discard propagules that show evidence of decay. Surface contamination can be removed with treatments such as diluted bleach dips, but surface treatments will not eliminate internal infections. Internal infections can only be eliminated by heat treatments, but not all plant propagules will tolerate temperatures needed to kill *Phytophthora* infections.

Letter 1

COMMENTER: Jane F. Mark, AICP, Planning Manager, Midpeninsula Regional Open Space District

DATE: September 19, 2022

Response 1.1

The commenter requests a new figure in the IS-MND that shows the proposed building's footprint in relation to the creek and property lines.

This figure has been added to the Final IS-MND as Figure 6 in Section 4, *Biological Resources*.

Response 1.2

The commenter suggests that modifying riparian vegetation may be required to create adequate defensible space for fire protection, and that such modification may require encroachment into the creek setback. The commenter states an opinion that the impacts of such vegetation removal or trimming were not adequately studied in the Draft IS-MND and that mitigation is required.

The project is currently designed to avoid all direct impacts within the creek setback zone and avoid and minimize activities within the jurisdictional riparian habitat including removal of riparian canopy. Defensible space requirements pursuant to the 2019 California Residential Code and Chapter 15 of the PAMC do not necessitate that all vegetation be cleared within 30 feet of the residence; therefore, avoidance of impacts within the setback zone and the jurisdictional riparian habitat as proposed is feasible. The IS-MND describes permitting and mitigation requirements in the case that some trimming within the jurisdictional riparian habitat is required. These impacts would be the minimum necessary to provide required clearance between the proposed structure and potentially two to three riparian trees. There is minimal brush or undergrowth present above top of bank and it does not necessarily require removal in order to provide a clear area for fire suppression operations. The vegetation that may require trimming is back from the top of bank and reduction would not increase light transmittal to the creek corridor, increase water temperatures, or decrease shaded riverine habitat for the listed fish or other aquatic species. The riparian corridor edge adjacent to the house is situated away from the top of bank and would remain wider than in other spots along the corridor and would not impede wildlife movement or existing wildlife corridors along the creek. Furthermore, CDFW is a CEQA trustee agency; the City provided an opportunity for state agencies to comment on the IS-MND through the State Clearinghouse's Notice of Completion process; no comments from state agencies were received. No changes to the IS-MND are warranted.

Response 1.3

The commenter states an opinion that the proposed swimming pool could result in the entrapment of semiaquatic species that could travel from the creek to the pool, and that these impacts were not adequately addressed in the Draft IS-MND. The commenter suggests mitigation such as wildlife barriers and/or escape ramps.

Swimming pools can be an attractive nuisance for wildlife. Pursuant to PAMC Section 16.18.160, the pool is required to be enclosed by fencing with no more than a 2-inch gap between grade and the

bottom of fencing, which would be a barrier to turtles, frogs and salamanders entering the pool area. The City would require adherence to PAMC Section 16.18.160 prior to issuance of building permits. Implementation of these requirements would adequately deter wildlife from entering the pool area and significant impacts would be avoided. No changes to the IS-MND are warranted.

Response 1.4

The commenter suggests that the proposed building could present a barrier to wildlife passage parallel to Los Trancos Creek, which could result in habitat fragmentation for species such as deer and mountain lion. The commenter states an opinion that these impacts were not adequately studied in the Draft IS-MND and that mitigation is required.

The project is designed to avoid impacts to the riparian corridor, which includes fencing of the creek setback zone required by Mitigation Measure BIO-3. The proposed placement of the structure is within an existing clearing on the property. The City would require adherence to PAMC Section 18.40.140(B)(3) requiring shielding of the creek from lighting. Implementation of these requirements would limit intrusion into the riparian corridor and impacts to the movement of both terrestrial and aquatic wildlife, established corridors, or nursery sites within the corridor would be less than significant. The following discussion of wildlife movement, migratory corridors, and nursery sites has been added in Section 4, *Biological Resources*, of the Final IS-MND, under checklist item d:

The project site is mapped within CDFW's California Essential Habitat Connectivity areas as somewhat permeable to wildlife passage. However, the project site is outside of mapped Landscape Blocks for the California Bay Area Linkage Network, indicating that it is not identified as highly permeable or high-quality habitat. Within the larger landscape, the project site is surrounded by highly permeable landscape providing terrestrial species more attractive alternatives for movement around the project site. Many large terrestrial wildlife species such as the candidate threatened mountain lion (*Puma concolor*) and most small species such as rodents and herpetofauna avoid openings and use the cover provided by the riparian corridor. The project is designed to avoid impacts to the riparian corridor, and Mitigation Measure BIO-3 requires fencing of the creek setback zone. The proposed placement of the structure is within an existing clearing on the property. The City would require adherence to PAMC Section 18.40.140(B)(3) requiring shielding of the creek from lighting. Implementation of these requirements would limit intrusion into the riparian corridor and impacts to the movement of both terrestrial and aquatic wildlife, established corridors, or nursery sites would be less than significant.

No additional changes to the IS-MND are warranted.

Response 1.5

The commenter requests that the City incorporate appropriate protocols as part of the Conditions of Approval for the Resource Management Permit to minimize the spread of *Phytophthora*-caused plant diseases, including Sudden Oak Death. The commenter provides suggestions for such measures and attaches "Guidelines to Minimize Phytophthora Contamination in Restoration Projects."

This comment is not related to the potential impacts of the proposed project or the analysis and conclusions of the IS-MND, and therefore no changes to the IS-MND are warranted. It will be forwarded to the City's decision makers for their consideration.

Response 1.6

The commenter requests that they be added to the City's future notifications for the proposed project and other development projects located within the vicinity of the Hawthorns Area of Windy Hill Open Space Preserve. This comment is noted and will be considered by City staff.



September 19, 2022

Letter 2

Emily Foley, Emily.Foley@cityofpaloalto.org
Jodie Gerhardt, Jodie.Gerhardt@cityofpaloalto.org
Planning and Development Services Department
City of Palo Alto

Re: 575 Los Trancos Road Residential Project

Dear Ms. Foley and Ms. Gerhardt,

The Santa Clara Valley Audubon Society (SCVAS) and the Sierra Club Loma Prieta Chapter (SCLPC) are environmental organizations that work to protect natural resources and promote the enjoyment of nature. We appreciate the opportunity to comment on the IS/MND for the 575 Los Trancos Road Residential Project.

Project description

The project site is an undeveloped open space, dominated by oak woodland, riparian woodland, and a meadow of non-native grasses. The proposed project includes the construction of a 7,245-square-foot single family residence, a 734-square-foot attached garage, an 895-square-foot accessory dwelling unit (ADU), a swimming pool, access roads, and amenities in the flat, western portion of a 5.38-acre parcel.

Our concerns

SCVAS and SCLPC only learned of this project after it was recommended for approval by the Planning and Transportation Commission on August 31. After reviewing the IS/MND and the staff report, we conclude that the project has the potential to impose significant, unavoidable and permanent impacts on the environment. In this letter, we provide substantial evidence supporting a fair argument that the project as proposed, will cause significant and unavoidable impacts, especially but not exclusively to biological resources.

2.1

Los Trancos Creek is one of the few remaining salmonid streams in the Peninsula and the South Bay. As acknowledged in the Biological Report and the IS/MND, it is designated Critical Habitat for steelhead trout. The creek and its riparian corridor also provide a wildlife connectivity linkage to most of our common and rare wildlife species, including mountain lions. The property is located between important open space areas in Palo Alto (Foothills Park) and Portola Valley (Hawthorns property of Midpeninsula Regional Open Space). Development here has the potential to impact fish and to disrupt movement through a key wildlife riparian ecosystem and wildlife corridor. We maintain that a “fair argument” exists

2.2

that the Project will significantly impact the environment (League for Protection of Oakland’s Historic Resources v. City of Oakland (1997) 52 Cal. App.4th 896, 904.). A public agency must prepare an EIR whenever substantial evidence supports a fair argument that a proposed project “may have a significant effect on the environment” (Protect Niles v. City of Fremont (2018) 25 Cal.App5th 1129, 1138-1139.). This low threshold for the preparation of an EIR, and a “preference for resolving doubts in favor of environmental review” is met here (Mejia v. City of Los Angeles (2005) 130 Cal.App.4th 322, 332.).

The city has discretion over the project and should require that the project be re-designed at a minimum of 55 feet from the top of the bank of Los Trancos creek (in line with the neighboring home) or a wider setback, ideally 150 feet. If this wider buffer/setback is not feasible, the city must prepare an EIR to fully analyze and mitigate the impacts and to consider alternatives to the proposed size of the project and its location on the parcel. Alternatives for a smaller footprint, or potentially loss of a few trees, are likely to reduce the impacts on the riparian ecosystem of Los Trancos Creek and must be considered. Given California’s prolonged drought and regional aridification, a project with no swimming pool should also be considered to allow more space for relocation of the home further from the creek and for saving water.

2.3

1. Mapping of the project

The maps that are provided in the IS/MND are not detailed enough for the public to discern the location on the parcel where the development is proposed or how the delineation of 20 feet from top-of-the-bank was determined. Therefore, the public, regulators, and decision makers lack the ability to fully evaluate the project’s impacts or to make fully informed decisions.

Please recirculate the CEQA document and provide a map that clearly delineates the project elements, including structures, roads, and amenities, on the property. Please show the 20-foot setback from the top-of-the-bank. Please include Los Trancos Creek and public amenities such as roads and trails, and provide the map as an overlay on a satellite photo of the property. This should help ascertain that the project’s slope stability protection area extends to a point “20 feet landward from the top of bank or to a point measured at a ratio of 2:1 (horizontal: vertical) landward from the toe of bank, whichever is greater” (Palo Alto Stream Protection Ordinance).¹

2.4

A map of the areas to be excavated (following the recommendations of the Geotechnical Engineering Study) should be provided.

A clear zoning map for this location is needed, to show the designation of this parcel and that of land surrounding it.

2. Biological resources

The Biological resources section of the IS/MND does not adequately describe the species that may be affected by the project. Chapter 14 of the Stanford Community Plan 2018 General Use Permit Biological report provides a better picture of the many species in the San Francisquito/Los Trancos watershed

2.5

¹ https://codelibrary.amlegal.com/codes/paloalto/latest/paloalto_ca/0-0-0-80331

(Section 3.1.1).² All the species mentioned in this report, and the mitigation measures proposed to reduce impacts, should be considered comprehensively in a CEQA document for this project.

3. Wider riparian buffers are needed

The San Francisco Bay Regional Water Quality Control Board's "Local Government Riparian Buffers in the San Francisco Bay Area" report³ establishes, "The riparian zone is an ecotone, or transition zone, between aquatic and terrestrial habitats. Because riparian zones contain both aquatic and terrestrial plant and animal species they have unusually high species diversity. Riparian zones are also important migratory corridors. A continuous buffer provides migratory and wildlife corridors, which are of particular value in protecting amphibians and waterfowl populations, as well as fish spawning and nursery areas. According to the U.S. Fish and Wildlife Service, California has lost 90 percent or more of its wetlands, which includes riparian communities. This is despite the fact that according to government biologists, riparian communities in the Western states, such as California, provide habitat for up to 80 percent of western wildlife species."

Clearly, riparian ecosystems and buffers are critically important to animal movement, as well as to maintaining water quality in streams. The science is well established and is the reason why agencies regulate construction near streams, and why many agencies impose significant buffers, especially in open space areas. The San Francisco Bay Regional Water Quality Control Board's "Local Government Riparian Buffers in the San Francisco Bay Area" report states, "Riparian zones perform many ecological functions important to enhancing water quality, water quantity, biodiversity, habitat connectivity, and flood capacity. The stream channel itself conveys runoff, supports aquatic plants and animals, provides groundwater recharge, and supplies water to trees and plants that typically thrive in the riparian zone."

The report cites several studies that show the importance of adequate riparian corridor building setbacks. "Buffer Distances Estimates of effective buffer distances for sediment and nutrient filtration vary, but most of the scientific studies suggest distances between 50 and 100 feet for this purpose (Jones & Stokes 2002). Although any buffer distance from the top of the bank is helpful for maintaining channel stability, a minimum 33-foot riparian buffer is required for contributing to a significant reduction in sediment levels." The "buffer distances in the region vary greatly, and it is likely that many were not chosen based upon specific buffer thresholds designed to satisfy water quality considerations. A scientifically based approach can help quantify buffer-induced benefits to water quality, thereby allowing the Board to more easily quantify TMDL reduction amounts when communicating with the region cities." Reducing total maximum daily loads (TMDL) is critical for salmonid bearing streams including Los Trancos Creek. This is why Santa Clara County and the Santa Clara Habitat Agency, based on extensive research, require a buffer of 150 feet from waterways in locations and situations similar to this project siting. The Santa Clara County General Plan Policy R-RC 37 states, "Lands near creeks, streams, and freshwater marshes shall be considered to be in a protected buffer area consisting of...150 feet from the top bank on both sides where the creek or stream is predominantly in its natural state" to protect creeks and

2.6

² https://stgenpln.blob.core.windows.net/document/SU_2018GUP_App_Tab14_Biological.pdf

³ https://www.waterboards.ca.gov/sanfranciscobay/publications_forms/documents/bufferreport1204.pdf

riparian areas from “adverse impacts of adjacent development, including impacts upon habitat, from sedimentation, biochemical, thermal and aesthetic impacts.” To avoid significant unmitigable impacts, Stanford’s Community Plan Policy RC-7, which addresses buffer zones along creeks, contains a cross reference to Santa Clara County General Plan policy R-RC 37.

Palo Alto’s outdated Stream Protection Ordinance requires a minimal setback of 20 feet, which is why the Palo Alto Comprehensive Plan Policy N3.3 Program N3.3.1 seeks to update this ordinance, expressing a desire for a 150-ft buffer in locations west of Foothill Expressway:

Program N3.3.1 Update the Stream Corridor Protection Ordinance to explore 150 feet as the desired stream setback along natural creeks in open space and rural areas west of Foothill Expressway. This 150-foot setback would prohibit the siting of buildings and other structures, impervious surfaces, outdoor activity areas and ornamental landscaped areas within 150 feet of the top of a creek bank. Allow passive or intermittent outdoor activities and pedestrian, equestrian and bicycle pathways along natural creeks where there are adequate setbacks to protect the natural riparian environment. Within the setback area, provide a border of native riparian vegetation at least 30 feet along the creek bank.

The update to the Stream Protection Ordinance should establish: Design recommendations for development or redevelopment of sites within the setback, consistent with basic creek habitat objectives and significant net improvements in the condition of the creek. Conditions under which single-family property and existing development are exempt from the 150-foot setback. Appropriate setbacks and creek conservation measures for undeveloped parcels.

The intent of the Comprehensive Plan is clear. It seeks to create adequate, protective setbacks and design recommendations along creeks west of Foothills Expressway. While a 150-foot setback is cited as appropriate for new development west of Foothill Expressway, the program notes that single-family residential development can be exempt from this larger setback. Although the program states that narrower setbacks can be allowed, it does not state that minimal setbacks of 20 feet is ever appropriate or recommended. We maintain that "can be" is not the same as "shall be" and is not determinative. Instead, "can be" indicates discretion, and a 20-foot setback is inappropriate in this location, and will cause significant, unavoidable and permanent harm to Los Trancos creek and the San Francisquito creek watershed.

Staff proposes that the property is “relatively narrow” (page 6 of the Staff Report, PTC) stating, “the widest part of the house (measured between the creek and the street), the property is approximately 226 ft wide” and “The first 90 feet (approximately) measured from the street property line is dedicated to tree protection. An 150 ft creek setback would render this property undevelopable or result in a need to remove existing mature protected trees.” We do not see 226 feet or even 136 feet (226-90=136) as too narrow to accommodate a home. The City has the discretion and should require a smaller footprint of the development, a change in the design to allow wider setback, or allow the removal of a few trees to safeguard the integrity of the creek’s riparian corridor.

2.7

2.8

In addition, this property is zoned Streamside Open Space (SOS). Palo Alto’s zoning code provides, “This designation is intended to preserve and enhance corridors of riparian vegetation along streams. Hiking, biking and riding trails may be developed in the streamside open space. The corridor will generally vary in width up to 200 feet on either side of the center line of the creek.” The Staff Report says, “This designation does not discuss residential use, in the way that the Open Space/Controlled Development (OS/CD designation) designation does. The OS/CD designation allows 1-2 dwelling units per acre.”⁴ The SOS designation seems to allow no residential development. The proposed development is not consistent with preserving and enhancing corridors of riparian vegetation along streams as intended by the SOS designation.

2.9

Lastly, The Palo Alto Stream Protection ordinance specifies development at, “20 feet landward from the top of bank or to a point measured at a ratio of 2:1 (horizontal: vertical) landward from the toe of bank, whichever is greater”. The Geotechnical Engineering Study (Appendix C) states that the house is located “80 feet from Los Trancos creek” and bases its recommendations on that measurement. Is the creek channel or the center line of the creek at a distance of 60 feet away from the top of the bank? If the creek channel is located 60 feet away from the top of the bank, then the setback required by the Palo Alto Stream Protection ordinance is 120 feet.

2.10

4. Consultation with NOAA Fisheries and CDFW is needed

4.1. Steelhead and other fish

Los Trancos Creek runs along the project site. Since water is available most of the year, the creek is home to Los Trancos Creek is home to fish such as California roach, Sacramento sucker, threespine stickleback, prickly sculpin and rainbow trout (resident). The creek is designated Critical Habitat for steelhead trout.

“Critical habitat” is defined as the specific areas that are essential to the conservation of a federally listed species, and that may require special management consideration or protection. Critical habitat is determined using the best available scientific information about the physical and biological needs of the species. These needs, which are referred to as “primary constituent elements,” include space for individual and population growth and for normal behavior; food, water, light, air, minerals, or other nutritional or physiological needs; cover or shelter; sites for breeding, reproduction, and rearing of offspring; and habitat that is protected from disturbance or is representative of the historical geographic and ecological distribution of a species.

2.11

The IS/MND proposed that a 20-foot creek setback suffices to protect the species from disturbance yet state, “implementation of the proposed project may result in direct or indirect impacts to steelhead at all life stages.”

The Biological Assessment states, “The results and conclusions presented herein represent our best professional judgment but do not represent determinations of the NMFS and CDFW as these agencies

⁴ <https://www.cityofpaloalto.org/files/assets/public/agendas-minutes-reports/agendas-minutes/planning-and-transportation-commission/2022/ptc-08.31.2022-575-los-trancos.pdf>

have ultimate jurisdiction over the steelhead through administration and enforcement of the FESA and CESA, respectively.”

Palo Alto should require consultation with NMFS and CDFW and ensure that all the requirements for steelhead habitat are not impacted significantly. In addition to direct impacts due to the diminutive buffer of 20 feet, impacts of access roads, parking, and light should be addressed and mitigated. For example, outdoor lighting (especially lighting with correlated color temperature of over 2400 Kelvin), can impact local aquatic insects directly and through the reduction of insects and food availability to the fish.⁵ Components from tire dust can kill salmon fry.⁶

4.2. Mountain Lion

The mountain lion has recently been designated as a state candidate for listing under the threatened and endangered species list.⁷ The Central Coast North population of mountain lions contains the project area. Connectivity is crucial for expanding genetic diversity in this population, and a great amount of effort is invested in restoring movement corridors for this species. Creek corridors are important for migration in this species, especially as migration routes are threatened by development and climate change.⁸ Studies of nocturnal patterns of movement suggest mountain lions tend to avoid areas with human disturbance including residential developments that introduce noise and activities as well as light at night.

2.12

4.3. The San Francisco dusky-footed woodrat

This species is endemic to the San Francisco Bay area and is listed as a Species of Special Concern in California. The proposed mitigation – dismantling and translocation of middens – has not been shown to be effective at protecting the woodrats.⁹ There is no evidence that woodrats use dismantled relocated middens and the survival of translocated woodrats is unknown. Please review and propose effective mitigation measures. Please use the mitigations offered in the Stanford Community Plan.

2.13

5. The Palo Alto Comprehensive Plan

The project is inconsistent with the Palo Alto Comprehensive Plan. As discussed above, the diminutive setback requirements of the project do not provide sufficient protection to Los Trancos Creek, and, thus, the project is inconsistent with:

2.14

- Goal N-3: Conservation of both natural and channelized creeks and riparian areas as open space amenities, natural habitat areas and elements of community design.

⁵ <https://besjournals.onlinelibrary.wiley.com/doi/full/10.1002/2688-8319.12053>

⁶ <https://www.science.org/content/article/common-tire-chemical-implicated-mysterious-deaths-risk-salmon>

⁷ <https://wildlife.ca.gov/Conservation/Mammals/Mountain-Lion#562331240-are-mountains-lions-listed-as-a-threatened-or-endangered-species>

⁸ <https://www.washington.edu/news/2019/02/12/assessing-riverside-corridors-the-escape-routes-for-animals-under-climate-change-in-the-northwest/>

⁹ http://wildlifeprofessional.org/western/tws_abstract_detail.php?abstractID=2424&k=l/a/NHKIFi8qQ

- Policy N-3.4: Recognize that riparian corridors are valued environmental resources whose integrity provides vital habitat for fish, birds, plants and other wildlife, and carefully monitor and preserve these corridors.
- Policy N-3.1: All creeks are valuable resources for natural habitats, connectivity, community design, and flood control, and need different conservation and enhancement strategies. Recognize the different characteristics along creeks in Palo Alto, including natural creek segments in the city’s open space and rural areas, primarily west of Foothill Expressway; creek segments in developed areas that retain some natural characteristics; and creek segments that have been channelized. Pursue opportunities to enhance riparian setbacks along urban and rural creeks as properties are improved or redeveloped.

In addition, it is likely to have a significant, unavoidable impact on wildlife movement.

- Policy N-1.5: Preserve and protect the Bay, marshlands, salt ponds, sloughs, creeks, and other natural water or wetland areas as open space, functioning habitats, and elements of a larger, interconnected wildlife corridor, consistent with the Baylands Master Plan, as periodically amended, which is incorporated here by reference
- Policy N-1.6: Preserve and protect the foothills and hillside areas, recognizing their unique value as natural ecosystems and interconnected wildlife corridors.

The project is located in an area that is important to wildlife connectivity between open spaces areas, including Palo Alto’s Foothills Park and the Midpeninsula Regional Open Space District Hawthorns Open Space. Los Trancos Creek, its tributaries and its function in the San Francisquito creek watershed, require special attention to wildlife connectivity. The IS/MND does not discuss, analyze or substantiate its finding of no significant impact.

2.15

Due to the diminutive setback from Los Trancos Creek, we believe that the introduction of human activity during the day and lighting (including outdoor lighting) at night have the potential to interfere substantially with the movement of every native resident and migratory fish and wildlife species that occur in the region, and potentially impede the use of native fish and bat nursery sites. The 20-foot setback also means that outdoor lighting cannot achieve the ambition of Program N3.3.3: For all creeks, update the Stream Corridor Protection Ordinance to minimize impacts on wildlife by *“Requiring careful design of lighting surrounding natural riparian corridors to maximize the distance between nighttime lighting and riparian corridors and direct lighting away from the riparian corridor.”* A wider setback should help achieve this goal.

2.16

6. Bird friendly design

Bird populations are declining in North America.¹⁰ While there are multiple drivers to this decline, collision with glass is considered one of the primary causes of migratory bird mortality. In North

2.17

¹⁰ <https://www.science.org/content/article/three-billion-north-american-birds-have-vanished-1970-%20surveys-show>

America, it is estimated that hundreds of millions of birds die each year as a result of striking glass walls, doors and windows.¹¹ This is a cumulative, significant impact. Bird collisions with glazed surfaces are especially critical in riparian corridors, and many jurisdictions have regulations in place to reduce and mitigate this hazard within 300-ft of riparian corridors and/or open space.¹²

The American Bird Conservancy (ABC) website is a great resource to learn about the devastating impacts of bird collisions and to find solutions to incorporate into architectural designs. Recently, ABC updated their website with new recommendations for Bird Friendly Building Design¹³ and a clarifying document that establishes what qualifies as Bird Friendly Glass. ABC provides primary elements of bird safe building design. These elements are especially critical near habitat areas such as water bodies and open space.

- Minimize use of glass
- Placing glass behind screening
- Using glass with inherent properties that reduce collisions, such as fritting.

In addition, ABC provides a Products and Solutions Database¹⁴ to evaluate bird safety glazing treatments.

Palo Alto requires bird friendly design for commercial buildings, but not for homes. Bird collisions, however, occur primarily (99%) at homes and low rise buildings.¹⁵ The proposed project is likely to contribute to cumulative impact on birds and should be required to apply bird safety measures.

7. Fire risks

The house is located in a fire-prone area. Most wildfires are caused by human activities.¹⁶ Combined with climate change and housing growth in the wildland-urban interface, fires have become larger and more destructive. We believe that analysis provided in the IS/MND is insufficient, and additional additional analysis and mitigations are needed to ensure that the environment is safe during construction and habituation of the proposed residence.

Insurance Commissioner of California Ricardo Lara's report last year¹⁷ called for policies that would stop construction in hazardous areas. Insurers are dropping policies in wildfire areas¹⁸ shifting the burden to

¹¹ <https://academic.oup.com/condor/article/116/1/8/5153098> and <https://bioone.org/journals/the-condor/volume-116/issue-1/CONDOR-13-090.1/Birdbuilding-collisions-in-the-United-States--Estimates-of-annual/10.1650/CONDOR-13-090.1.full>

¹² <https://www.cupertino.org/our-city/departments/community-development/planning/non-residential-mixed-use-development/bird-safe-and-dark-sky>

¹³ <https://abcbirds.org/glass-collisions/model-ordinance/> and <https://abcbirds.org/glass-collisions/resources/>

¹⁴ <https://abcbirds.org/glass-collisions/products-database/>

¹⁵ https://www.researchgate.net/publication/259562592_Bird-building_collisions_in_the_United_States_Estimates_of_annual_mortality_and_species_vulnerability

¹⁶ <https://www.colorado.edu/asmagazine/2020/09/22/humans-ignite-almost-every-wildfire-threatens-homes>

¹⁷ <http://www.insurance.ca.gov/01-consumers/180-climate-change/upload/Draft-Climate-Insurance-Recommendations.pdf>

¹⁸ <https://www.insurancejournal.com/news/west/2020/12/04/592788.htm>

2.18

taxpayers via the state through court orders.¹⁹ New housing built in the path of wildfires increases liability for the state. The City should evaluate the concern that new residences in this area will increase the risk of wildfire in the Palo Alto foothills area.

According to the IS/MND, the nearest Very High Fire Hazard Severity Zone (VHFHSZ) is located approximately 1 mile northwest of the project site near Portola Valley (Cal Fire 2022). This is not a significant distance away from the hazard severity zone given wind driven fires in California²⁰ and in the western United States, where climate change has doubled the amount of land damaged by wildfires between 1985 and 2015.²¹ NASA's report, "The Effects of Climate Change," states, "The potential future effects of global climate change include more frequent wildfires, longer periods of drought in some regions, and an increase in the duration and intensity of tropical storms." Indeed, it is expected that the amount of properties burned in CA will grow according to a study by the First Street Foundation when "about 40% of the state have at least "moderate" risk of burning in a wildfire some time in the next 30 years".²²

Thank you for granting us an extension for commenting, and please do not hesitate to contact us if you have questions.

Respectfully,

Shani Kleinhaus, Ph.D.
Environmental Advocate
Santa Clara Valley Audubon Society

Gladwyn D'Souza
Conservation Committee Chair
Sierra Club Loma Prieta Chapter

¹⁹ <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/california-s-insurer-of-last-resort-faces-fire-coverage-challenges-after-ruling-65646785>

²⁰ <https://firesafemarin.org/prepare-yourself/red-flag-warnings/diablo-winds/>

²¹ <https://climate.nasa.gov/effects/>

²² <https://www.sacbee.com/news/california/fires/article261495002.html>

Letter 2

COMMENTER: Shani Kleinhaus, Ph.D., Santa Clara Valley Audubon Society, and Gladwyn D’Souza, Sierra Club Loma Prieta Chapter

DATE: September 19, 2022

Response 2.1

The commenters claim that the proposed project would result in significant, unavoidable, and permanent impacts on the environment, especially but not exclusively to biological resources.

This comment serves as an introduction to the following specific comments; please see responses 2.3 through 2.18 for responses to the commenters’ specific comments in this regard.

Response 2.2

The commenters state that the Los Trancos Creek is one of the few remaining salmonid streams in the Peninsula and the South Bay is designated Critical Habitat for steelhead trout, and creek provides wildlife connectivity linkage to most common and rare wildlife species, including mountain lions. The commenters also state that the proposed project is located between two open space areas in Palo Alto (Foothills Park) and Portola Valley (Hawthorns property of Midpeninsula Regional Open Space), and that proposed development has the potential to impact fish and disrupt movement through a key wildlife riparian ecosystem and wildlife corridor. The commenters claim that a “fair argument” exists that the proposed project would significantly impact the environment.

This comment discusses the project context and serves as an introduction to specific comments to follow. Please see response to Comment 1.4 above and responses 2.3 through 2.18 below. As demonstrated in the responses and in the IS-MND, the proposed project would not result in significant and unavoidable impacts and an environmental impact report (EIR) is not required.

Response 2.3

The commenters request that the City of Palo Alto require the proposed project to be re-designed at a minimum of 55 feet from the top of the bank of Los Trancos creek, and state an opinion that if a wider buffer/setback is not feasible, an EIR should be prepared. The commenters express an opinion that alternatives for a smaller footprint, or loss of a few trees, would likely reduce impacts on the Los Trancos Creek riparian ecosystem. The commenters also express the opinion that the swimming pool should be omitted to allow for more space for the relocation of the proposed residence farther from the creek and to save water.

The Initial Study acknowledges that there could be potentially significant impacts; however, the project is generally designed to avoid impacts to riparian habitat and the Los Trancos Creek corridor, and the IS-MND includes mitigation measures to reduce potential impacts to less than significant levels. Please also see response to Comment 1.4 above. There would be no significant unavoidable or unmitigable impacts, and an EIR is not required. The commenters’ suggestions regarding the design of the project are noted and will be forwarded to the City’s decision makers.

Response 2.4

The commenters claim that maps provided in the IS-MND are not detailed enough and request the addition of a map that clearly delineates project elements including structures, roads, and amenities on the property; a map of the areas to be excavated; and a zoning map for the project location.

Please see Response 1.1 and the new figure that was added to the Final IS-MND showing key features as requested in the comment. No excavation is proposed within the creek buffer. A zoning map is not required in order to assess the project's potential impacts on the environment; please see Section 11, *Land Use and Planning*, of the IS-MND for a discussion of the zoning designation of the subject property and impacts related to land use and zoning designations, regulations and policies.

Response 2.5

The commenters state an opinion that the Biological Resources section of the IS-MND does not adequately describe species affected by the project. The commenters claim that all of the species and mitigation measures mentioned in Chapter 14 of the Stanford Community Plan 2018 General Use Permit Biological Report (GUP BR) should be comprehensively considered in this IS-MND.

The GUP BR covers the entire Stanford campus and an area of open space to the south of campus that is larger than the campus itself. The Biological Resources Assessment (BRA) (Appendix A of the IS-MND) prepared for the IS reviewed resources occurring within a 9-quad area centered on the project site, as required by CEQA Guidelines. The BRA and IS-MND are not required to address all species or all habitats within the region or watershed, only the habitats present and those species that have a reasonable potential to occur at the project site. The GUP BR plan area has more habitats present and thus the potential to support many more species than the project site, and as a result directly addresses more resources than are appropriate for the proposed project. The measures in the GUP BR are not required to address project impacts and no changes to the IS-MND are warranted.

Response 2.6

The commenters request wider riparian buffers, citing Santa Clara County and the Santa Clara Habitat Agency, which require a buffer of 150 feet from waterways in locations and situations similar to the proposed project.

While wider riparian setbacks may be ideal, that does not mean that narrower setbacks automatically result in significant unmitigable impacts. The project would be constructed in compliance with the Stream Corridor Protection Ordinance, PAMC Section 18.40.140. Additionally, the proposed project is generally designed to avoid impacts to existing riparian habitat and the Los Trancos Creek corridor and the IS-MND provides avoidance, minimization, and mitigation measures that would reduce potential impacts to less than significant levels. See also responses to comments 1.2 and 1.4 above.

Response 2.7

The commenters state that Palo Alto's Stream Protection Ordinance requires a minimal setback of 20 feet, and the Palo Alto Comprehensive Plan Policy N3.3 Program N3.3.1 seeks to update this ordinance by implementing a desire for a 150-foot buffer in locations west of Foothill Expressway.

The commenters claim that the 20-foot setback is inappropriate and would result in significant and unavoidable impacts to Los Trancos Creek and the San Francisquito creek watershed.

Please see response to Comment 2.6 above.

Response 2.8

The commenters disagree with the City's determination that the property is "relatively narrow." The commenters suggest that the City should require a smaller footprint of development, a change in design to allow for a wider setback, or allow for the removal of trees to protect the creek's riparian corridor.

Please see responses 2.3 and 2.6.

Response 2.9

The commenters state an opinion that the property's zoning designation does not allow residential development and that the proposed project is not consistent with preserving and enhancing corridors of riparian vegetation along streams as intended by the SOS designation.

The proposed project site has a Comprehensive Plan land use designation of Streamside Open Space (SOS) and a zoning designation of Open Space (OS) inside a "streamside review area" as defined in Section 18.40.140 (Stream Corridor Protection) of the Palo Alto Municipal Code (PAMC). The SOS land use designation does not specifically allow for or preclude residential development. However, the OS zoning designation permits single-family dwellings pursuant to Section 18.28.040 of the PAMC. The City of Palo also has full discretion to determine whether residential development is allowed on the site.

Response 2.10

The commenters state that according to the Geotechnical Engineering Study, the proposed structure is located "80 feet from Los Trancos Creek" and bases its recommendations on that measurement. The commenters question whether the creek channel or the center line of the creek is at a distance of 60 feet from the top of the bank and claim that if the channel is located 60 feet from top of bank, then the setback required by the Palo Alto Stream Protection Ordinance should be 120 feet.

Section 18.40.140(b)(3)(a) of the PAMC (Stream Corridor Protection) states that "the slope stability protection area shall extend to a point 20 feet landward from the top of bank or to a point measured at a ratio of 2:1 (horizontal: vertical) landward from the toe of bank, whichever is greater." This refers to a 2:1 horizontal setback to bank width. The Geotechnical Engineering Study states that the bank is 10 feet high. Therefore, a 2:1 horizontal (setback) to vertical (bank height) is 20 feet. This is measured from the toe of bank rather than the 20 feet from top of bank. No changes to the IS-MND are warranted.

Response 2.11

The commenters request that the city require consultation with the National Marine Fisheries Service (NMFS) and California Department of Fish & Wildlife (CDFW) to ensure that impacts to steelhead habitat are mitigated. The commenters also suggest that direct impacts from the 20 feet

buffer, as well as impacts from access roads, parking, and lighting should be addressed and mitigated.

The project would be in compliance with the Stream Corridor Protection Ordinance, PAMC Section 18.40.140. Additionally, the project is generally designed to avoid direct impacts to aquatic habitat and the riparian corridor including Critical Habitat and potentially jurisdictional areas. Indirect impacts would be avoided through implementation of Mitigation Measure BIO-3. The City would require adherence to PAMC Section 18.40.140(B)(3) requiring shielding of the creek from lighting. Implementation of these requirements would limit intrusion into the riparian corridor and impacts to steelhead habitat would be avoided. Finally, the City provided an opportunity for state agencies to comment on the IS-MND through the State Clearinghouse's Notice of Completion process; no comments from state agencies were received. No changes to the IS-MND are warranted.

Response 2.12

The commenter states an opinion that the project vicinity contains the Central Coast North population of mountain lions, that creek corridors are important for the migration of these species, and that mountain lions tend to avoid areas with human disturbance including residential developments that introduce noise and activities as well as light at night.

Please see responses to comments 1.4 and 2.6 above.

Response 2.13

The commenter states an opinion that the proposed mitigation regarding San Francisco dusky-footed woodrats in the IS-MND would be ineffective at protecting the woodrats. The commenters request the usage of mitigation measures in the Stanford Community Plan.

The mitigation measures in the IS-MND are substantially the same as proposed in the Stanford Community Plan

Response 2.14

The commenters claim that the project is inconsistent with Goal N-3, policies N-3.1, N-3.4, N-1.5, and N-1.6 of the Palo Alto Comprehensive Plan because setback requirements of the project do not provide sufficient protection to Los Trancos Creek. The commenters suggest that the project would have a significant and unavoidable impact on wildlife movement.

As discussed above under responses 1.4 and 2.6, the project would comply with setback requirements pursuant to Section 18.40.140(b)(3)(a) of the PAMC and require adherence to PAMC Section 18.40.140(B)(3) requiring shielding of the creek from lighting. Additionally, as discussed in Section 4, *Biological Resources*, of the IS-MND, the project is designed to generally avoid impacts to the riparian corridor, and Mitigation Measure BIO-3 requires fencing of the creek setback zone. Implementation of these requirements would limit intrusion into the riparian corridor and potential impacts to the movement of terrestrial and aquatic wildlife and established wildlife corridors would be less than significant and consistent with the goals and policies mentioned in the comment letter. No changes to the IS-MND are warranted.

Response 2.15

The commenters express that Los Trancos Creek and its tributaries and function in the San Francisquito Creek watershed require special attention to wildlife connectivity. The commenters state an opinion that the IS-MND does not discuss, analyze, or substantiate the conclusion that impacts would not be significant.

A discussion of wildlife movement, migratory corridors, and nursery sites has been added in Section 4, *Biological Resources*, of the IS-MND, under checklist item d. See Response 1.4. No additional changes to the IS-MND are warranted.

Response 2.16

The commenters state an opinion that the introduction of human activity during the day and lighting (including outdoor) at night could potentially substantially interfere with the movement of every native resident and migratory fish and wildlife species in the region and impede the use of native fish and bat nursery sites. Additionally, the commenter suggests that outdoor lighting would not be consistent with Program N3.3.3 of the Palo Alto Comprehensive Plan due to the 20-foot setback.

A discussion of lighting has been added in Section 4, *Biological Resources*, under checklist item a, as follows:

New lighting introduced on the project site could have an adverse effect on animal species in the creek corridor if not properly limited and controlled. PAMC Section 18.40.140(B)(3) requires that “Nighttime lighting shall be directed away from the riparian corridor of a stream” and that “The distance between nighttime lighting and the riparian corridor of a stream should be maximized.” A lighting plan submitted by the applicant shows shielding on exterior safety lighting and shades to limit interior lighting spillover toward the creek. The City would require adherence to PAMC Section 18.40.140(B)(3) during final review of project lighting prior to issuance of building permits. Implementation of these requirements would limit light intrusion into the creek corridor and associated impacts would be avoided.

A discussion of wildlife movement, migratory corridors, and nursery sites has been added under checklist item d. See Response 1.4. No additional changes to the IS-MND are warranted.

Response 2.17

The commenters claim that bird collision with glass is a cumulative, significant impact, and that the proposed project would contribute to this cumulative impact on birds and should be required to apply bird safety measures.

Bird collisions with glass and light traps are a leading cause of migratory bird mortality. Project approvals would require adherence to PAMC Section 18.40.140(B)(3) requiring shielding of the creek from lighting and Section 18.40.250 requiring exterior lighting to be low intensity and designed to focus light downward, avoiding excessive illumination above the light fixture. The proposed project is also located outside of the riparian movement corridor. In considering past, present, and probable future projects in the City of Palo Alto, with implementation of the above requirements the project’s incremental effect is not considered cumulatively considerable. However, the commenters’ recommendation to apply bird-safe design measures will be forwarded to the City’s decision makers. No changes to the IS-MND are warranted.

Response 2.18

The commenters state that the proposed project is located in a fire-prone area and opine that additional analysis and mitigation measures are needed to ensure safety during construction and operation of the project. The commenters claim that the one-mile distance to the nearest Very High Fire Hazard Severity Zone (VHFHSZ) is not a significant distance given wind driven fires in California.

Wildfire significance thresholds as outlined under CEQA Appendix G require analysis of projects “located in or near a state responsibility area or land classified as very high fire hazard severity zones.” As discussed in Section 20, *Wildfire*, of the IS-MND, the project site is not located in a Local Responsibility Area (LRA) or State Responsibility Area (SRA) Very High Fire Hazard Severity Zone (VHFHSZ). Although the project would be located somewhat near (one mile) a VHFHSZ, as discussed in Section 20, *Wildfire*, the proposed project would be required to comply with Policy S-2.14 of the Palo Alto Comprehensive Plan which would require fire protection design in new development and ensure adequate emergency access for the PAFD. This includes requiring fire sprinkler protection in all structures and installing a National Fire Protection Association (NFPA) 13-D fire sprinkler system throughout the house, including closets and bathrooms. The project would also be required to comply with wildland urban interface (WUI) requirements pursuant to the 2019 California Residential Code and Chapter 15 of the PAMC which include requirements for vegetation management; roofing; vents; exterior walls; eaves; exterior porch ceilings, floor projections, underfloor protection, underside of appendages; windows, skylights and doors; garages; decking; and accessory structures, and would also be located in proximity to three fire hydrants. Additionally, the proposed project would be consistent with truck turning radius requirements from the Palo Alto Fire Department, which would not impact emergency plans. Given compliance with existing State and local regulations, the project would ensure safety during both construction and operation and would have less than significant impacts on wildfire.

Letter 3

From

Steve Henry
805 Los Trancos Rd
Palo Alto, CA 94028

To

Emily Foley, AICP
Planner City of Palo Alto Development and Planning Services
Emily.foley@cityofpaloalto.org

Date

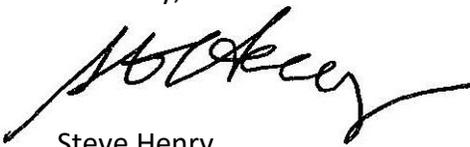
August 25, 2022

RE

Proposed new home 575 Los Trancos Rd Palo alto

John and Dee Ann Suppes have met with me regarding the design of their proposed new home adjacent to us. We reviewed there plans and feel the home will blend in well to environment and landscape. They also took care to provide additional screening separating our homes. We support their new home project and welcome them to the neighborhood.

Sincerely,



Steve Henry

Letter 3

COMMENTER: Steve Henry

DATE: August 25, 2022

Response 1.1

The commenter states support for the project. This comment is noted but does not pertain to the analysis or conclusions of the Draft IS-MND.

From: [Charlotte Epstein](#)
To: [Council, City](#)
Subject: Subject: Item 13 on January 23 agenda: 575 Los Trancos Road
Date: Monday, January 23, 2023 10:39:40 AM

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Dear Mayor Kou, Vice Mayor Stone, and Palo Alto Council Members,

My name is Charlotte Epstein and I am a Palo Alto resident who cares deeply about our City's wildlife and natural environment. I am a long time member of the Santa Clara Valley Audubon Society who alerted me to this issue. I am deeply interested in protecting the land and its wildlife for today and for tomorrow. I believe that the SCVAS view of this project takes in consideration how to moderate the project to best preserve the land and its wildlife while allowing for the house to be built after appropriate modifications are made.

Here are the suggestions from the SCVAS -

The proposed house is too close to Los Trancos Creek, and unless the project is modified, it is likely to significantly impede animal movement, harm the riparian corridor and deprive the creek of the buffer it needs to maintain water quality for steelhead trout, and render the creek more vulnerable to landslides and flooding.

Please decline to approve the project, and ask the homeowner to:

- Require that the project be re-designed at a minimum of 55 feet from the top of the bank of Los Trancos creek (in line with the neighboring home) to reduce the impacts on the riparian ecosystem of Los Trancos Creek and allow wildlife movement along the creek. No roads or fences or structures should be allowed in the buffer area.

In addition,

- Due to California's prolonged drought and regional aridification, disallowing a swimming pool should also be considered to allow more space for relocation of the home further from the creek and for saving water.
- Require implementation of all the recommendations that were submitted by the Midpeninsula Regional Open Space District including disinfectant protocols to prevent spreading of sudden-oak death in the Los Trancos Valley.
- Require all outdoor lighting to be dimmable and in the yellowish range (2700 Kelvin or less) to reduce light pollution and the attraction of migratory birds and insects.
- Require that all glass surfaces apply effective Bird-Safety glazing treatment to protect birds from colliding with windows and other glass elements.

Thank you,
Charlotte Epstein
2192 Waverley St

From: [Carolyn Davidson](#)
To: [Council, City](#)
Subject: Item 13 on City Council agenda, 575 Los Trancos Road
Date: Monday, January 23, 2023 9:19:13 AM

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Dear Mayor Kou, Vice Mayor Stone, and Palo Alto Council Members,

My name is Carolyn Davidson, and I am a Palo Alto resident who cares deeply about our City's wildlife and natural environment.

The proposed house is too close to Los Trancos Creek, and unless the project is modified, it is likely to significantly impede animal movement, harm the riparian corridor, deprive the creek of the buffer it needs to maintain water quality for steelhead trout, and render the creek more vulnerable to landslides and flooding.

Please decline to approve the project, and ask the homeowner to:

- Require that the project be re-designed at a minimum of 55 feet from the top of the bank of Los Trancos creek (in line with the neighboring home) to reduce the impacts on the riparian ecosystem of Los Trancos Creek and allow wildlife movement along the creek. No roads or fences or structures should be allowed in the buffer area.

In addition,

- Require implementation of all the recommendations that were submitted by the Midpeninsula Regional Open Space District including disinfectant protocols to prevent spreading of sudden oak death in the Los Trancos Valley.
- Require all outdoor lighting to be dimmable and in the yellowish range (2700 Kelvin or less) to reduce light pollution and the attraction of migratory birds and insects.
- Require that all glass surfaces apply effective bird-safety glazing treatment to protect birds from colliding with windows and other glass elements.

Thank you,
Carolyn Davidson
1919 Barbara Drive, Palo Alto 94303

From: [E Nigenda](#)
To: [Council, City](#)
Subject: Fwd: Ask Palo Alto to Protect Los Trancos Creek
Date: Monday, January 23, 2023 8:04:28 AM

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Dear Mayor and Council Members,

I agree with Green Foothills that our City's required setback of 20 feet from the creek is insufficient for adequate creek protection.

I request that the City's municipal code be updated as soon as possible to require a riparian setback of 150 feet and that a minimum of 55 feet from the creek be required for this project as recommended by Green Foothills.

"The Palo Alto Comprehensive Plan suggests that in open space areas like this one, riparian setbacks for development should be 150 feet, which is what Santa Clara County requires in their jurisdiction. Unfortunately, Palo Alto has not yet updated its antiquated ordinance to comply with the Comprehensive Plan".

In addition, I ask that all possible measures be taken to protect the existing ecosystems and to minimize the impacts of this project during and after construction.

Thank you for your service to our community,
Esther Nigenda

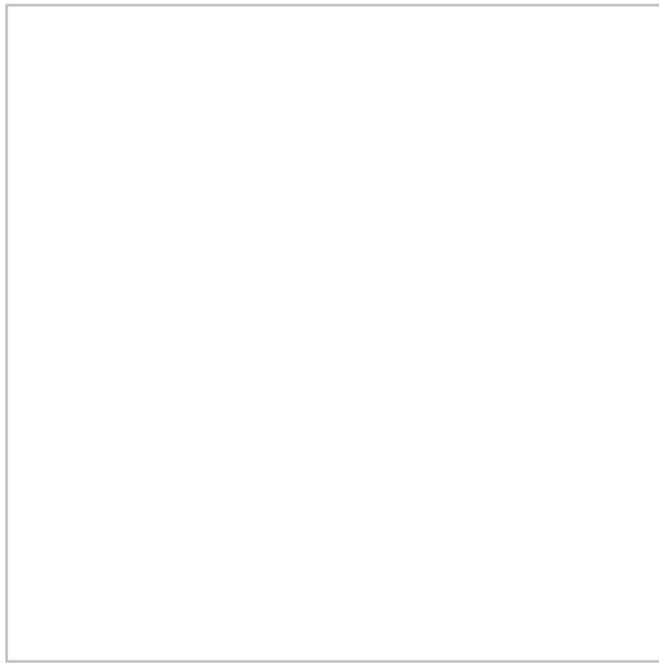


image of ...

Photo credit: Ray Krebs, flickr

On Monday, January 23, the Palo Alto City Council will consider approving a monster home on an open space parcel far up in the foothills above Palo Alto. The house would be too close to the bank of Los Trancos Creek, which could result in erosion and landslides into the creek, impacts to sensitive species, and blocking of wildlife movement along the creek corridor. [Please email the City Council](#) and ask them to require changes to the project to mitigate these impacts.

[Email the City Council](#)

What's Happening

A landowner has proposed a 7,200 square foot home, plus an accessory dwelling unit (ADU) and swimming pool, on an open-space-zoned site in the Palo Alto foothills. This mansion is a mere 20 feet away from the bank of Los Trancos Creek, which provides critical habitat for threatened and endangered species and a movement pathway for animals.

The Palo Alto Comprehensive Plan suggests that in open space areas like this one, riparian setbacks for development should be 150 feet, which is what Santa Clara County requires in their jurisdiction. Unfortunately, Palo Alto has not yet updated its antiquated ordinance to comply with the Comprehensive Plan; thus a 20-foot setback is all that is required. However, the City Council has discretionary authority to direct the landowner to modify the project because it is located in an ecologically sensitive area. We are recommending a 55-foot setback, which would be in line with neighboring homes, and for the Council to require bird-safe design, outdoor lighting restrictions, and protocols to control the spread of Sudden Oak Death during construction.

Why It Matters

The recent storms, with their subsequent mudslides and flooding, have clearly demonstrated that if we disrespect and neglect our creeks, people's homes will suffer the consequences. The foothills of the Santa Cruz Mountains are notoriously erosion-prone, as witnessed by the brown sediment coloring our creeks and floodwaters in recent weeks. When we allow construction too close to creek banks, the resulting erosion dumps tons of sediment into creek channels, increasing future flood risk.

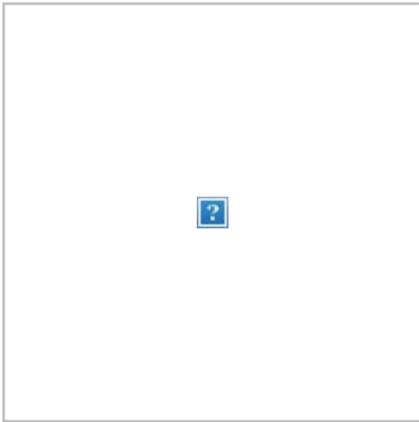
Also, putting homes too close to creek corridors is harmful to wildlife. Almost all of our local species use creek corridors at some point of their life history — for drinking, for breeding, for nesting, for shelter, and for migration and movement in the landscape. Los Trancos Creek supports critical habitat for threatened steelhead trout as well as threatened and endangered frogs and salamanders. Furthermore, creek corridors are critically important as movement pathways for larger animals like mountain lions, bobcats and badgers. A home 20 feet from the top of the creek bank is very likely to impede the movement of these animals.

What You Can Do

Please email the Palo Alto City Council and ask them to require changes to the project to protect the creek, wildlife, and riparian habitat.

[Email the City Council](#)

Sincerely,



Alice Kaufman
Policy and Advocacy Director



If you haven't already, consider making a [monthly donation of \\$20, \\$10, or \\$5 to support this work](#) so that we can create the greatest impact. Your gift will ensure that there is a champion for local nature and will empower a new generation of environmental activists.

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Palo Alto, CA 94303
United States
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From: [Shani Kleinhaus](#)
To: [Council, City](#)
Cc: [Foley, Emily](#); [Gerhardt, Jodie](#); [Barbara Kelsey](#); [James Eggers](#); [Mike Ferreira](#)
Subject: Item 13 on the 1/12/23 agenda: 575 Los Trancos Road
Date: Sunday, January 22, 2023 5:02:07 PM
Attachments: [575 Los Trancos comments January 22, 2023.docx.pdf](#)

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Dear Mayor Kou and Palo Alto Council Members,

The Santa Clara Valley Audubon Society (SCVAS) and the Sierra Club Loma Prieta Chapter (SCLP) are environmental organizations that work to protect natural resources and promote the enjoyment of nature. We provided comments on the draft IS/MND for the 575 Los Trancos Project, and we remain concerned after reading the responses to our comments and further study of the project and the CEQA documents. We submit the attached letter to your consideration.

Respectfully,

Shani Kleinhaus for Santa Clara VALley Audubon Society

Mike Ferreira for the Sierra Club Loma Prieta Chapter

From: [Hong-Ha Vuong](#)
To: [Council, City](#)
Subject: Item 13 on January 23 agenda: 575 Los Trancos Road
Date: Sunday, January 22, 2023 10:21:36 AM

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Dear Mayor Kou, Vice Mayor Stone and Palo Alto Council Members,

My name is Thi-Hong-Ha Vuong and I am a Palo Alto resident.

The proposed mansion is too close to Los Trancos Creek, and unless the project is modified, it is likely to significantly impede animal movement, harm the riparian corridor and deprive the creek of the buffer it needs to maintain water quality for steelhead trout, and render the creek more vulnerable to landslides and flooding.

Please decline to approve the project, and require that the project be re-designed at a minimum of 55 feet from the top of the bank of Los Trancos creek (in line with the neighboring home) to reduce the impacts on the riparian ecosystem of Los Trancos Creek. No fences or structures should be allowed in the buffer area.

In addition,

Require implementation of all the recommendations that were submitted by the Midpeninsula Regional Open Space District including disinfectant protocols to prevent spreading of sudden-oak death in the Los Trancos Valley.

Require all outdoor lighting to be dimmable and in the yellowish range (2700 Kelvin or less) to reduce light pollution and the attraction of migratory birds and insects.

Require that all glass surfaces apply effective Bird-Safety glazing treatment to protect birds from colliding with windows and other glass elements.

Thank you,

Thi-Hong-Ha Vuong
hongha.vuong@sbcglobal.net
236 Scripps Court
Palo Alto, CA 94306

From: [Nancy Olson](#)
To: [Council, City](#)
Subject: Item 13 on January 23 agenda: 575 Los Trancos Road
Date: Saturday, January 21, 2023 7:31:27 PM

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Dear Mayor Kou, Vice Mayor Stone and Palo Alto Council Members,

My name is Nancy Olson and I am a Palo Alto resident who cares deeply about our City's wildlife and natural environment.

The proposed mansion is too close to Los Trancos Creek, and unless the project is modified, it is likely to significantly impede animal movement, harm the riparian corridor and deprive the creek of the buffer it needs to maintain water quality for steelhead trout, and render the creek more vulnerable to landslides and flooding.

Please decline to approve the project, and ask the homeowner to:

- Require that the project be re-designed at a minimum of 55 feet from the top of the bank of Los Trancos creek (in line with the neighboring home) to reduce the impacts on the riparian ecosystem of Los Trancos Creek. No fences or structures should be allowed in the buffer area.

In addition,

- Due to California's prolonged drought, disallowing a swimming pool should also be considered to allow more space for relocation of the home further from the creek and for saving water.

- Require implementation of all the recommendations that were submitted by the Midpeninsula Regional Open Space District including disinfectant protocols to prevent spreading of sudden-oak death in the Los Trancos Valley.

- Require all outdoor lighting to be dimmable and in the yellowish range to reduce light pollution and the attraction of migratory birds and insects.

- Require that all glass surfaces apply effective Bird-Safety glazing treatment to protect birds from colliding with windows and other glass elements.

Thank you,

Nancy Olson
2431 Bryant Street
Palop Alto CA 94301-4205



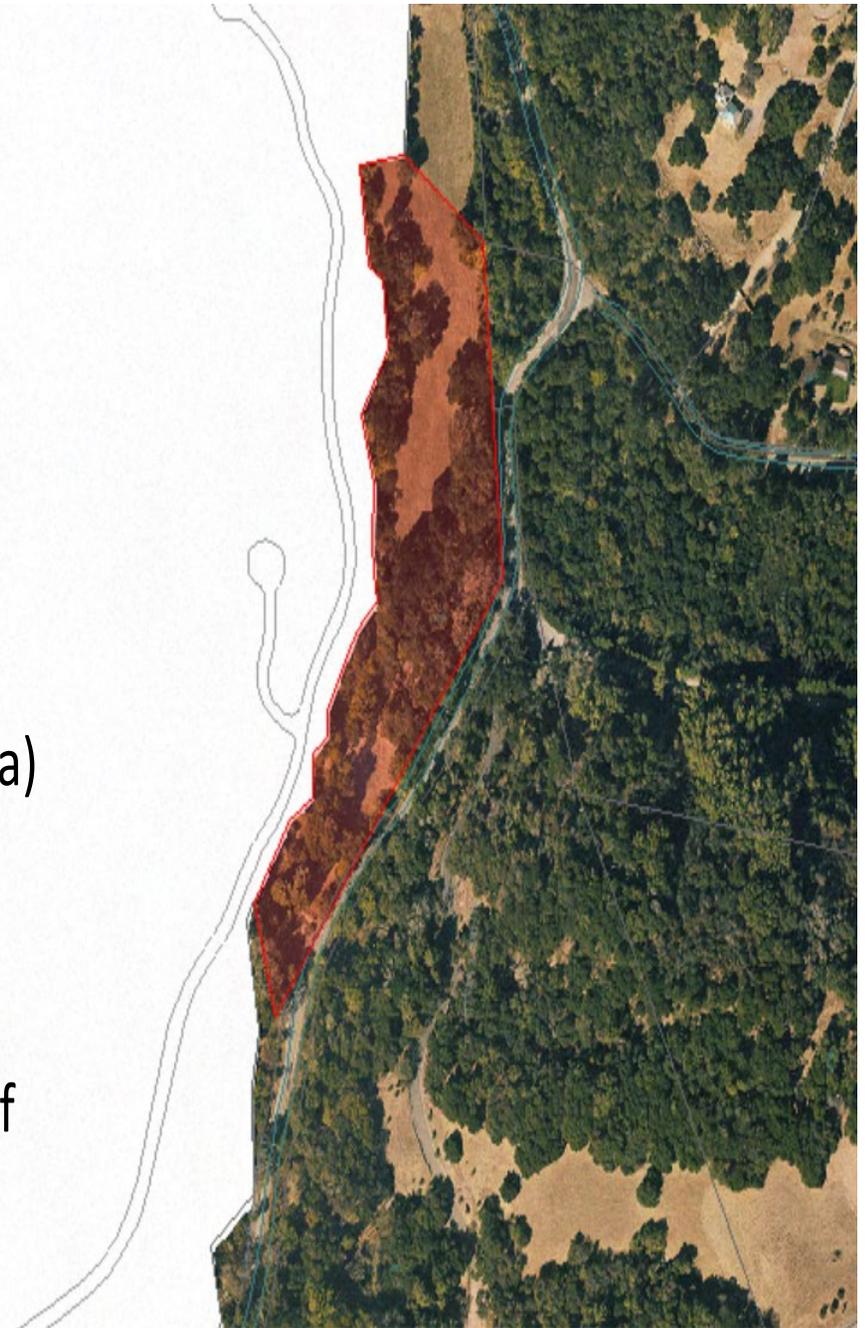
575 Los Trancos Road

Single Family House

Site and Design Review Permit

Project Overview

- 5.38 acre vacant property
 - Adjacent to Los Trancos Creek and Town of Portola Valley
- Proposed FAR includes 7,245 sf house and 895 square feet ADU (8,140 sf total)
- Maximum allowed FAR is 9,374 (4% of Site Area)
- Proposed impervious coverage is 6,925 square feet of building and 2,267 square feet of hardscape (9,192 sf total)
 - Maximum allowed 9,374 square feet (4% of Site Area)
- Zoning: Open Space (OS)





Process Overview

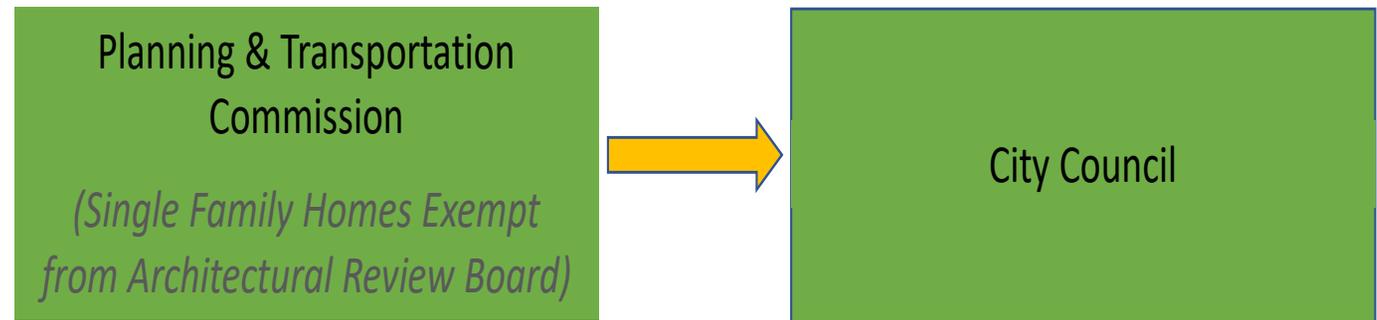
Major Site & Design Review:

- The site and design review provides a process for review and approval of development in environmentally and ecologically sensitive areas, including established community areas which may be sensitive to negative aesthetic factors, excessive noise, increased traffic or other disruptions, in order to assure that use and development will be harmonious with other uses in the general vicinity, will be compatible with environmental and ecological objectives, and will be in accord with the Palo Alto Comprehensive Plan.

This project received PTC recommendation for approval on 8/31/22 and is now before the Council.

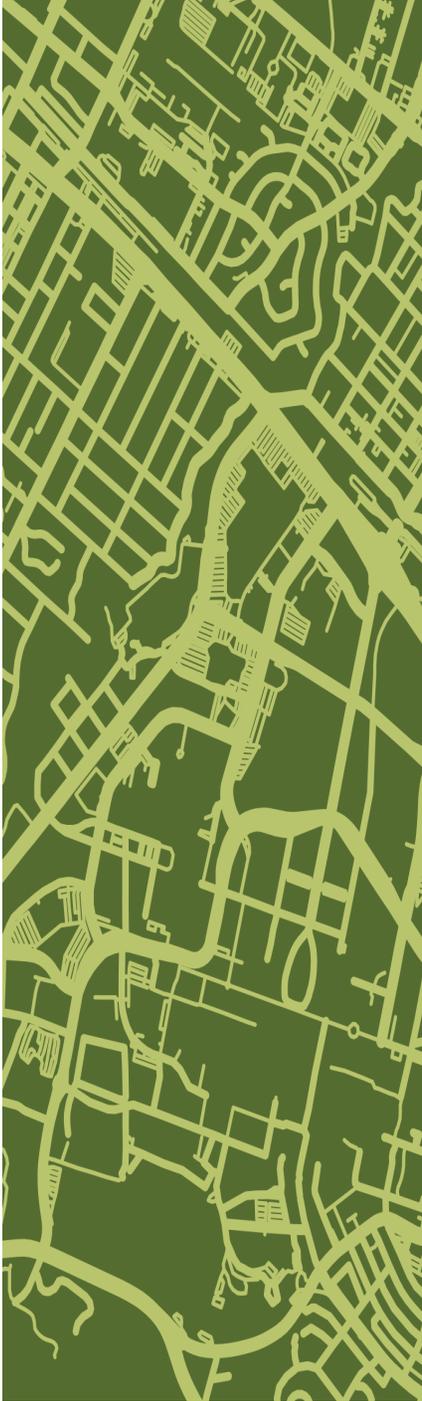
Process Overview

Site & Design Review Applications:



Site & Design Findings / Objectives

- (a) construction and operation is orderly, harmonious, and compatible with existing or potential uses of adjoining or nearby sites.
- (b) ensure the desirability of investment or other authorized occupations, in the same or adjacent areas.
- (c) ensure that sound principles of environmental design and ecological balance shall be observed.
- (d) ensure that the use will be in accord with the Palo Alto Comprehensive Plan.

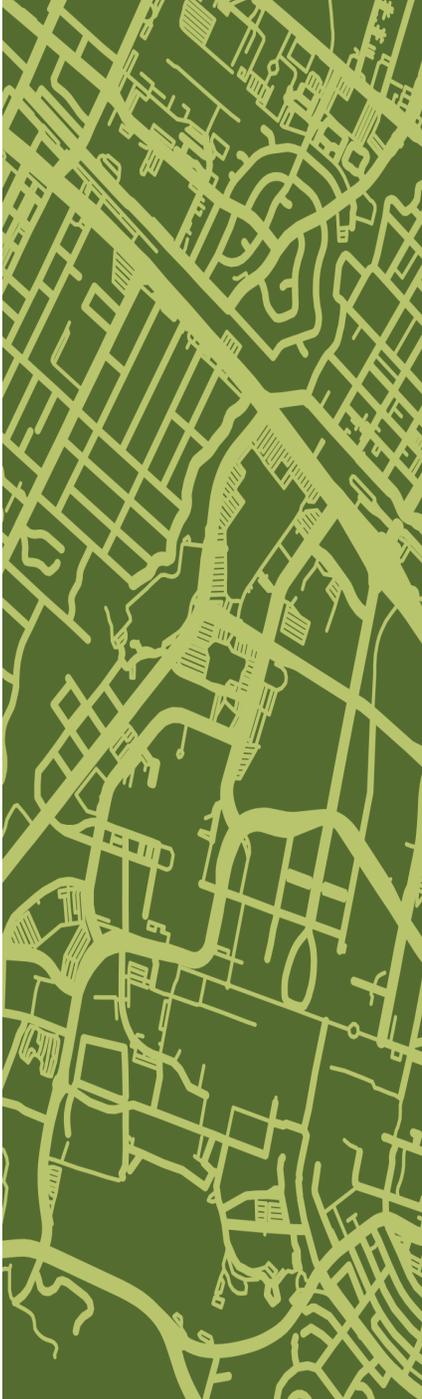


Project Review

The site has a Comprehensive Plan land use designation of Streamside Open Space (SOS) and is zoned Open Space (OS).

The SOS designation is intended to preserve and enhance corridors of riparian vegetation along streams. Hiking, biking and riding trails may be developed in the streamside open space. The corridor will generally vary in width up to 200 feet on either side of the center line of the creek.

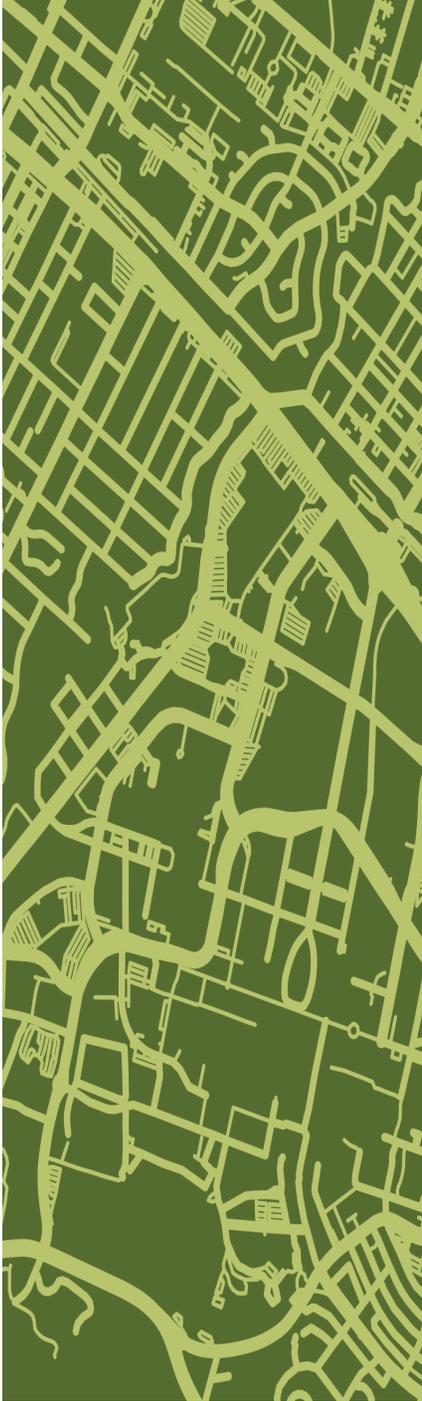
Single Family Residential is a permitted land use in the OS district. The establishment of an ADU is permitted in all zoning districts where single-family residential is a permitted land use.



Project Review – Open Space Review Criteria

The following criteria shall be considered in the Site and Design review of all development in the Open Space district.

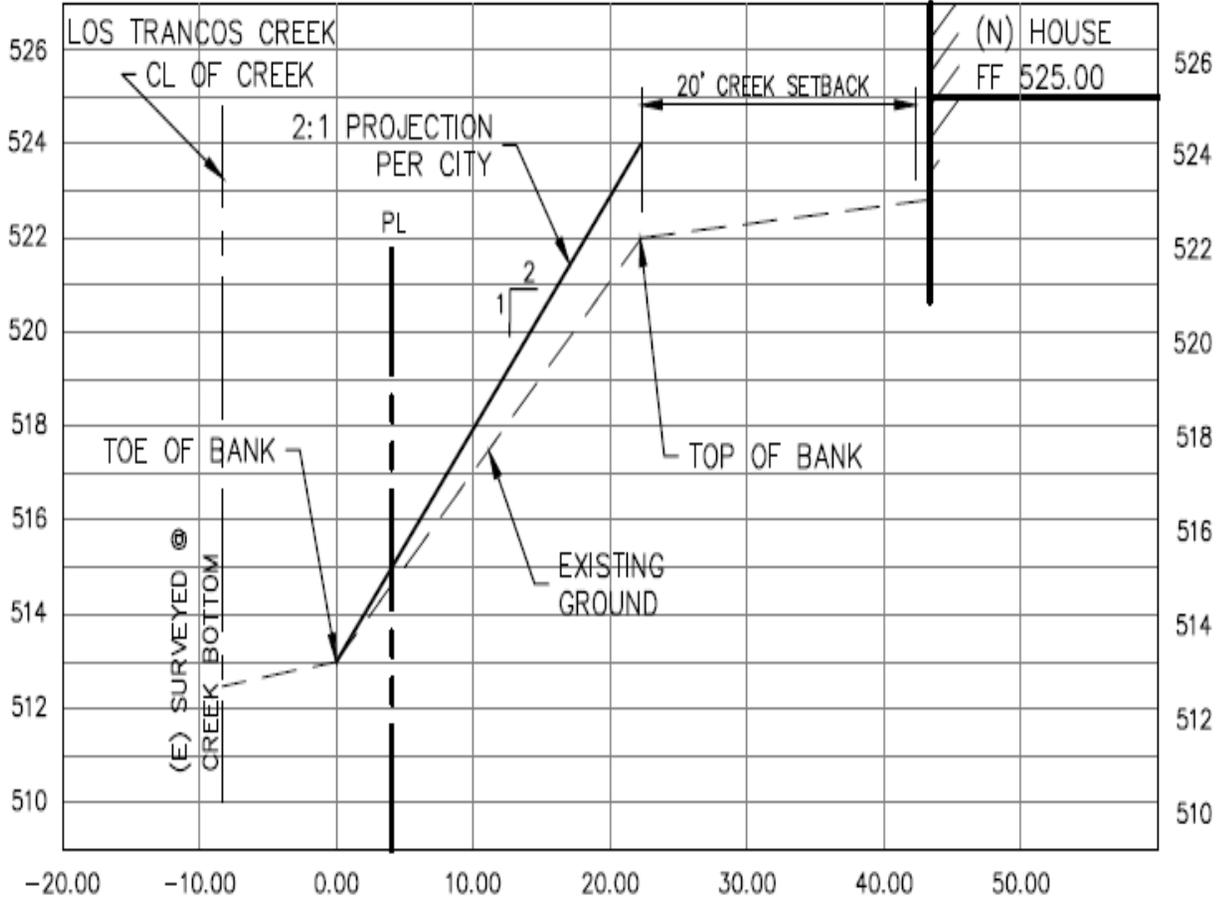
1. not be visually intrusive from public roadways and public parklands / as much as possible hidden from view;
2. located away from hilltops and designed to not extend above the nearest ridge line;
3. consideration of impacts on privacy and views of neighboring property;
4. should be clustered to minimize access roads, and reduce fragmentation of natural habitats;
5. built and landscape forms should mimic the natural topography;
6. existing vegetation should be retained as much as possible; trees with a circumference of 37.5 inches should be preserved;
7. Cut is encouraged when it is necessary for geotechnical stability and to enable the development to blend into the natural topography; fill is generally discouraged and should never be distributed within the driplines of existing trees;
8. To reduce the need for cut and fill and to reduce potential runoff, large, flat expanses of impervious surfaces should be avoided;
9. Buildings should use natural materials and earth-tone or subdued colors;
10. Landscaping should be native species that require little or no irrigation; fire retardant plants should be used as a fire prevention technique;
11. Exterior lighting should be low-intensity and shielded from view so it is not directly visible from off-site; and,
12. Access roads should be of a rural rather than urban character.



Setback from the Creek

- The Zoning Ordinance requires a 20 foot setback from the top-of-bank.
- The Comprehensive Plan includes a policy to “explore” a 150 foot setback from streams and conditions for a reduced setback for single family residences.
- This policy has not been implemented in the zoning code.

Creek to House Diagram



A CREEK SECTION
SCALE: 1"=10' VERT & HORZ 1"=4'

Creek Conditions – Aug '22 and Jan '23



Environmental Review – IS/MND Prepared

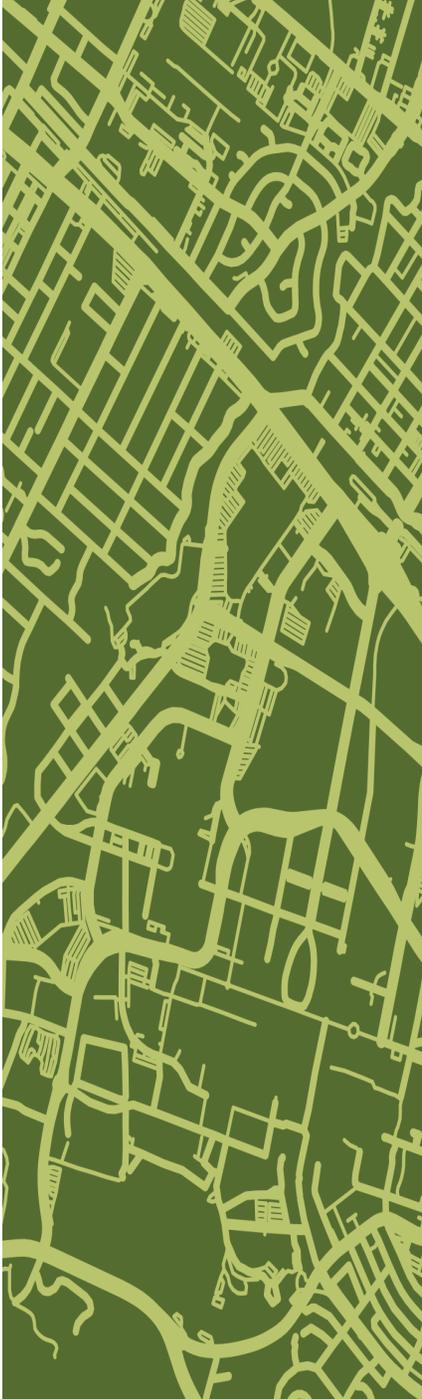
- An Initial Study/Mitigated Negative Declaration has been prepared and circulated.
- Potentially affected environmental factors include: Air Quality, Biological Resources, Geology/Soils, Hydrology/Water Quality, and Cultural Resources.
- Proposed mitigations include standard pre-construction and construction-phase mitigations, with no need for post-construction mitigation or monitoring.
- Public comments were received and responded to in the MND.



Lighting Updates

As a response to the concerns raised at the PTC meeting, the following changes were made to the design:

- Automatic blackout shades will be installed on all upper-story windows facing the creek, to limit nighttime light intrusion on potential local wildlife.
- Recessed lighting has been relocated further away from these windows and the rooms have vacancy sensors.
- Exterior lighting will have motion sensors and be the minimum required by the Building Code.



Fire Risk Updates

The following changes were incorporated into the Conditions of Approval:

- At the time of Building Permit application, the applicant shall prepare a Fire Protection Plan to the satisfaction of the Fire Code Official, and meeting the requirements of California Fire Code 4903.1-4903.4 (corresponds to PAMC 15.04.195).
- Defensible space shall be maintained in compliance with California Fire Code 4907.1- 4907.2 (corresponds to PAMC 15.04.200).

Public Comments

The City has received correspondence since this item was published expressing concern about the proposed development, including:

- Concern about an inadequate setback from creek / riparian area;
- Disruption to wildlife due to light and noise and need for bird safe design solutions;
- Impacts from runoff or erosion impacting endangered steelhead and aquatic habitat;
- Home placement creates a conflict between riparian protection and wildfire defensible space;
- Concern about deferred project mitigation;
- Geotechnical studies and suggestion for over-excavation potentially into the protected habitat; and,
- Impact to riparian tree identified as #30 on the project plans.

Recommendation

Recommend approval of the proposed Site and Design Review based on the objectives and Open Space Design Criteria, subject to conditions of approval.

Alternative Actions:

- A. Provide direction and remand the project back to the Planning and Transportation Commission
- B. Provide direction and remand the project back to the City Council
- C. Provide other direction as appropriate.



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