**Negative Declaration**

**Name of Project**

4303 B Scotts Valley Drive Planned Development

**Lead Agency**

City of Scotts Valley  
One Civic Center Drive  
Scotts Valley, CA  95066

**Contact**

Paula Bradley, MCP, AICP  
Contract Planner  
831 345-5482  
pbradley@mbakerintl.com

**Project Applicant**

John Craycroft  
Craycroft Designs  
455 Happy Valley Way  
Santa Cruz, CA 95065  
831 427-3048  
craycroftdesign@mac.com

**Project Location**

The project site is on one parcel (APN 022-902-11) on Scotts Valley Drive in the City of Scotts Valley.

**Project Description**

The proposed 4303 B Scotts Valley Drive Project (the project) is a Planned Development (minor subdivision) to create three lots (Lots 1, 2, and 3), and one common area (Parcel A) for an access road and utilities, on an existing 18,918 square foot (sf) lot (the project site). The project would construct two, 2-story, 3-bathroom, single-family homes on Lots 2 and 1. An existing single-family residence (Lot 1) would remain, however a new 529 sf garage would be constructed on the northeast side, adjacent to the existing unit.

Access to all three lots would be from a newly created “Parcel A” (remainder parcel) that would serve as common access to the homes and provide underground utilities. Parcel A would
connect to an existing 24-foot wide roadway “Coastal Oak Court” off of Acorn Court, which also provides access to two new triplex units (Lennar Homes Inc.) south of the project site. Parcel A would also include a turn-around for emergency services and an underground retention area with pervious pavers on the south side of the project site.

The project site is located within the R-H High Density Residential Zoning District, which requires a minimum density of 3,000 square feet per unit.

Public Review and Comment Period

March 30, 2021 through April 30, 2021

Any individual, group, or agency disagreeing with this determination or wishing to comment on the project may submit written comments to the City of Scotts Valley at the address listed above or by email to the project planner listed above. All comments received by 5:00 PM on April 30, 2021 will be considered by the City of Scotts Valley.

Findings and Reasons

Apart from the implementation of identified Standard Conditions of Approval, the Initial Study did not identify any potentially significant impacts on the environment. The project will not have the potential to significantly degrade the environment; will have no significant impact on long-term environmental goals; will have no significant cumulative effect upon the environment; and will not cause substantial adverse effects on human beings, either directly or indirectly.

The following reasons will support these findings:

1. The project is consistent with the adopted goals and policies of the City of Scotts Valley General Plan, and the City of Scotts Valley Municipal Code.
2. City staff independently reviewed the Initial Study, and this negative declaration reflects the independent judgment of the City of Scotts Valley.
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Note: All figures are inserted at the end of the document.
Initial Study

Background & Project Description

Project Title
4303 B Scotts Valley Drive Project

Lead Agency Name and Address
City of Scotts Valley
One Civic Center Drive
Scotts Valley, CA 95066

Contact Person and Phone Number
Paula Bradley, MCP, AICP
Contract Planner
831 345-5482
pbradley@mbakerintl.com

Project Location
As shown in Figure 1: Regional Location, and Figure 2: Project Vicinity, the project site is on one parcel (APN 022-902-11) on Scotts Valley Drive in the City of Scotts Valley.

Project Applicant/Sponsor
John Craycroft
Craycroft Designs
455 Happy Valley Way
Santa Cruz, CA 95065
831 427-3048
craycroftdesign@mac.com

General Plan Designation
Residential High Density (R-H)

Zoning
Residential High Density (R-H)

Project Description
The proposed 4303 B Scotts Valley Drive project (the project) is a Planned Development (minor subdivision) to create three lots (Lots 1, 2, and 3), and one common area (Parcel A) for an access road and utilities, on an existing 18,918 square foot (sf) lot (the project site). As shown in Figure 3: Site Plan, the project would construct two new single-family homes on Lots 2 and 3.
An existing single-family residence (Lot 1) would remain; however, a new 529 sf detached garage would be constructed on the northeast side, adjacent to the existing home.

The project site is located within the R-H High Density Residential Zoning District, which requires a minimum density of 3,000 square feet per unit. The residential lots would range in size from 3,540 sf to 8,680 sf.

The two new homes would be two-story, three-bedrooms, each totaling 2,050 sf of occupied space and a two car garage. The elevations of the subdivision are shown in Figure 4: Proposed Elevations of Lot 1 and Figure 5: Proposed Elevations of Lot 2.

Access to all three lots would be from a newly created “Parcel A” (remainder parcel) that would serve as common access to the homes and provide underground utilities. Parcel A would connect to an existing 24-foot wide roadway “Coastal Oak Court” off of Acorn Court, which also provides access to two new triplex units (Lennar Homes Inc.) south of the project site. Parcel A would also include a turn-around for emergency services and an underground retention area with pervious pavers on the south side of the project site.

As shown in Figure 6: Grading Plan, grading for the project would require a cut of 702 cubic yards of soil, and fill of 41 cubic yards, for a net export of 661 cubic yards. Stormwater would flow generally north to south across the project site.

Storm drainage from constructed impervious surfaces (e.g. roofs, driveways) would be conveyed via a series of collector storm drainpipes to underground (Stormtech) chambers located on the new private driveway where it would be retained and treated. Stormwater from the private driveway located on the project site would be collected via drainage inlets and directed to a newly constructed 8-inch storm drain for channel overflow along the southern boundary of the project site. A bioretention facility would be constructed on the southwest corner of the project site to control storm drain flows.

Water and sewer services would connect to an existing six-inch sanitary sewer and eight-inch water main located on Scotts Valley Drive.

Project-Related Approvals and Permits

- Planned Development Permit PD19-004
- Minor Land Division MLD19-002
- Design Review DR19-014
- Environmental Assessment EA19-010
- Environmental Review ND20-002

Other public agencies whose approval is required

None.
Environmental Setting

Background and Intent

The purpose of the project is to allow for the subdivision of the project site (Lots 1 through 3) and the construction of two residential units as part of a Planned Development.

Project Site and Existing Facilities

The project site (APN 022-902-12) is currently developed with a single-family residence, a small shed, and a paved driveway. The General Plan designation is Residential High Density (R-H) and the zoning designation is Residential High Density (R-H). Surrounding the project to the north, and east are single-family residences, and multi-family to the west. Located on an adjacent parcel to the south, is an affordable housing planned development (Lennar Homes Inc.) consisting of two triplexes currently under construction.

Environmental Checklist

The discussion below analyzes the potential environmental impacts of the project per the criteria as described in Public Resources Code Section 21166 and CEQA Guidelines Section 15162. For convenience, this analysis uses the Appendix G of the CEQA Guidelines as a framework. Different from the standard CEQA checklist included in Appendix G of the CEQA Guidelines are the impact options included in this analysis.

Aesthetics

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<thead>
<tr>
<th>ENVIRONMENTAL IMPACTS Issues</th>
<th>Potentially Significant Issues</th>
<th>Potentially Significant Unless Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<tbody>
<tr>
<td>Except as provided in Public Resources Code Section 21099, would the project:</td>
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<tr>
<td>a) Have a substantial adverse effect on a scenic vista?</td>
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<td>X</td>
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<tr>
<td>a) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?</td>
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<td>X</td>
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<tr>
<td>b) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those</td>
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<td>X</td>
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ENVIRONMENTAL IMPACTS

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<thead>
<tr>
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<tbody>
<tr>
<td>that are experienced from 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?</td>
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<tr>
<td>c) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?</td>
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</table>

Discussion

Scenic Vista
The project site currently contains a single-family home and is surrounded by residential uses. The project site is flat and would not block any scenic vista nor substantially change an important view from a scenic vantage point, and therefore there would be no impact.

Scenic Resources and Visual Character
The project site is not located along a state scenic highway or designated scenic corridor. Although the project would represent a visual change from the existing conditions, it would be consistent with the type of development planned for this area in the General Plan. Additionally, the project is subject to design review, which would provide an opportunity for further evaluation that the project would not adversely impact the visual character of the area. Because there are no scenic resources and the visual character would not be substantially altered, there would be no impact.

Light and Glare
Existing ambient sources of nighttime lighting include neon and fluorescent signs, lighting of building exteriors and architectural accents, illumination through windows, landscape lighting, street lighting, parking lot lighting, and vehicle headlights. The project would include outdoor lighting on the site typical of a residential development. As shown in Figure 7: Exterior Lighting Plan, project plans provide details for exterior lighting for the proposed homes that include: 25-inch tall lighting bollards and wall mounted lights. All fixtures would utilize light-emitting diode (LED) lighting with glare cutoff.

Site and architectural lighting is subject to the City design review process which would provide an opportunity for further evaluation of levels of luminance and thereby minimize lighting affects the adjacent properties. To ensure lighting is harmonious with the surrounding area, a
project-specific condition will require the project applicant to use no pole lights, and utilize
down-directed fixtures on building exteriors with concealed light sources, consistent with City
policies and design guidelines for lighting to be at the lowest level and carefully controlled for
security, aesthetics, safety, and identification without interfering with nearby land uses.
Implementation of these standard conditions of approval would reduce potential off-site light
intrusion impacts to a less than significant level.

Findings
The project would not generate affect a scenic vista or scenic resource, would not change the
visual character of the project area, and therefore there would be no impact. The project
would not result in a substantial change to light and glare and therefore impacts would be less
than significant. No mitigation is required.

Agriculture and Forestry Resources

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<thead>
<tr>
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<tbody>
<tr>
<td>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:</td>
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<tr>
<td>a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?</td>
<td></td>
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<td>X</td>
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</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
<td>X</td>
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</tr>
<tr>
<td>ENVIRONMENTAL IMPACTS Issues</td>
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<td>Production (as defined by Government Code section 51104(g))?</td>
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<tr>
<td>d) Result in the loss of forest land or conversion of forest land to non-forest use?</td>
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<td>X</td>
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<tr>
<td>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?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

**Discussion**

The property is not located on land that is classified as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the Farmland Mapping and Monitoring Program of the California Resource Agency. The site is zoned Residential High Density (R-H). Therefore, no agricultural impacts would occur as a result of the project.

**Findings**

As described above, there would be no impact on agricultural resources. Therefore, no mitigation is required.

**Air Quality**

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<tbody>
<tr>
<td>a) Conflict with or obstruct implementation of the applicable air quality plan?</td>
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</table>

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:
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<tbody>
<tr>
<td>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?</td>
<td></td>
<td>X</td>
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<tr>
<td>c) Expose sensitive receptors to substantial pollutant concentrations?</td>
<td></td>
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<td>X</td>
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<tr>
<td>d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?)</td>
<td></td>
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<td>X</td>
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Discussion

Air Quality Plan and Air Quality Standards

The project site is located within the North Central Coast Air Basin (NCCAB), which includes Monterey County, San Benito County, and Santa Cruz County, comprising an area of approximately 5,159 square miles along the central California coast. The Monterey Bay Air Resources District (MBARD) is responsible for local control and monitoring of criteria air pollutants throughout the NCCAB.

MBARD has developed the 2012 Air Quality Management Plan for the Monterey Bay Region (2012 AQMP) The 2012 AQMP is a transitional plan shifting focus of MBARD’s efforts from achieving the 1-hour component of the State ozone AAQS to achieving the 8-hour ozone requirement. The Plan includes an updated air quality trends analysis, which reflects both the 1- and 8-hour standards, as well as an updated emission inventory, which includes the latest information on stationary, area and mobile emission sources.

In March 2017, MBARD adopted the 2012-2015 Triennial Plan Revision, which assesses and updates elements of the 2012 AQMP, including the air quality trends analysis, emission inventory, and mobile source programs. The 2017 AQMP Revision only addresses attainment of the State ozone standard. In 2012, EPA designated the NCCAB as in attainment of the current national 8-hour ozone standard of 0.075 ppm1.

1 On October 1, 2015, U.S. EPA adopted a new 8-hour ozone standard of 0.070 ppm. However, U.S. EPA has not yet reviewed recent NCCAB emissions to determine attainment with the current 0.070 ppm standard. Therefore, this attainment status is based upon U.S. EPA’s prior 0.075 ppm standard.
The following MBARD rules would limit emissions of air pollutants from construction and operation of residential development pursuant to the project:

- **Rule 400 (Visible Emissions)** – Discharge of visible air pollutant emissions into the atmosphere from any emission source for a period or periods aggregating more than 3 minutes in any 1 hour, as observed using an appropriate test method, is prohibited.

- **Rule 402 (Nuisances)** - No person shall discharge from any source whatsoever such quantities of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public; or which endanger the comfort, repose, health, or safety of any such persons or the public; or which cause, or have a natural tendency to cause, injury or damage to business or property.

- **Rule 425 (Use of Cutback Asphalt)** – The use of cutback asphalt (asphalt cement that has been blended with petroleum solvents) is restricted.

- **Rule 426 (Architectural Coatings)** – This rule limits the emissions of ROGs from the use of architectural coatings.

The MBARD’s 2008 CEQA Air Quality Guidelines provides criteria for determining cumulative impacts and consistency. The CEQA Air Quality Guidelines note that a project which is inconsistent with an Air Quality Plan would have a significant cumulative impact on regional air quality. Any emissions sources that would be generated as part of the project would be subject to the MBARD rules and regulations. The proposed development (the point source) does not include any processes or activities that would emit air pollutants. Therefore, the proposed use does not have the potential for significant impacts that would conflict with the AQMP. Therefore, the project would be consistent with the AQMP for the Monterey Bay Region. Thus, the project would not make a considerable contribution to this existing, cumulatively significant impact. Impacts would be less than significant.

**Construction**

MBARD CEQA Guidelines state that construction activities (e.g., excavation, grading, on-site vehicles) that emit 82 pounds per day or more of PM\(_{10}\) would have a significant impact on local air quality when they are located nearby and upwind of sensitive receptors. Based on this emissions threshold, construction activity occurring on more than 2.2 acres per day may result in significant PM\(_{10}\) emissions (MBARD, 2015). Because development of the project would not result construction activity occurring on more than 2.2 acres per day, impacts would be less than significant.

However, grading activities during construction could cause dust accumulation in the project area. Implementation of the following standard conditions of approval would be required to ensure potential impacts are reduced to a less-than-significant level for all construction activities on the project site.
Furthermore, standard conditions of approval require that development projects reduce dust generation from project grading and construction to minimal levels, the project proponent shall require the grading contractor to implement best management practices (BMPs) for dust control, including watering down exposed earth surfaces each non-rainfall day at intervals that attenuate dust problems. Any dirt tracked on to adjacent roadways shall be removed daily in a manner that does not create substantial airborne dust. The following BMPs shall be included in the building plans for the project and be implemented during site grading:

- Excavation of the site shall be done in phases by grading only those areas where immediate activity will take place, leaving the remaining areas in their original condition with ground cover.
- A water truck, using recycled water, shall be available on a repeated basis each day throughout the grading phase of the project to spray exposed earth surfaces.
- In addition to regular water spraying, a biodegradable chemical palliative shall be sprayed on any graded areas that will remain exposed without additional grading for three or more days in succession.
- The site entrance shall be base rocked to avoid or minimize tracking mud on roadways by construction vehicles.
- Roadway(s) along the project frontage shall be mechanically swept at the end of each work day when any dirt or mud has been tracked on the street.
- No grading activities shall occur during days of high wind velocity.
- Finished graded areas that are designated as open space and landscape areas of project, shall be covered with an accepted erosion control substance such as straw mulch or hydro mulch with a tackifier.
- Construction staff shall monitor daily all areas that have received a chemical palliative spray or application of mulch to determine if these areas remain in a dust-free condition and take corrective action as needed to maintain a dust-free environment.

Operational

The project would result in new long-term operational emissions from mobile sources (burning of fossil fuels in cars); energy sources (cooling, heating, and cooking); and area sources (landscape equipment and household products). Mobile source emissions constitute most operational emissions from this type of land use development project. However, emissions associated with buildout of this type of project is not expected to exceed any applicable MBARD thresholds. No stationary sources would be constructed that would be long-term permanent sources of emissions. Therefore, the project would not generate a significant level of operational emissions and impacts would be less than significant.

Sensitive Receptors

Sensitive receptors in the vicinity include residents, located approximately 20 feet from the property boundaries of the proposed development.
Construction equipment and associated heavy-duty truck traffic generates diesel exhaust which is a known toxic air containment (TAC). The California Air Resources Board (CARB) has identified diesel exhaust particulate matter as a toxic air contaminant, and assessment of toxic air contaminant cancer risks is typically based upon a 70-year exposure period. Project grading and construction activities that would utilize diesel-powered equipment would expose receptors to possible diesel exhaust for a very limited number of days (approximately 10 days). Because exposure to diesel exhaust would be well below the 70-year exposure period, and given the limited and short-term duration of activities that would use diesel equipment, construction-related diesel emissions are not considered significant. Furthermore, the State is implementing emission standards for different classes of on- and off-road diesel vehicles and equipment that applies to off-road diesel fleets and includes measures such as retrofits. Additionally, Title 13 of the California Code of Regulations (section 2485(c)(1)) prohibits idling of a diesel engine for more than five minutes in any location.

Therefore, the project would not expose sensitive receptors to substantial pollutant concentrations. Potential exposure of sensitive receptors to diesel emissions and associated risks is considered a less-than-significant impact, and no mitigation measures are required. However, standard conditions of approval require that prior to issuance of any grading permit, the Director of Public Works and the Building Official shall confirm that the grading permit and specifications stipulate that all off-road construction vehicles/equipment shall comply with the California Air Resources Board’s In-Use Off-Road Diesel Vehicle Regulation.

Odors
During construction activities, temporary odors from vehicles exhaust and construction equipment engine would occur. However, construction-related odors would be short-term and would cease upon completion. Therefore, no objectionable odors are anticipated from construction activities associated with the project and there would be no impact.

Land uses typically producing objectionable odors include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting, refineries, landfills, dairies, and fiberglass molding. The project does not include any uses that would be associated with objectionable odors. Odor emissions from the project would be limited to odors associated with vehicle and engine exhaust and idling cars. The project does not include any known sources of objectionable odors associated with the long-term operational use and therefore there would be no impact.

Findings
A significant air quality impact is defined as any violation of an ambient air quality standard, any substantial contribution to an existing or projected air quality violation, or any exposure of sensitive receptors to substantial pollutant concentrations. As discussed above, the MBARD thresholds of significance have not been exceeded. Therefore, there would be no significant air quality impacts and no mitigation is required in addition to the City’s standard conditions of approval for construction dust control at the time of development.
## Biological Resources

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<tr>
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<tbody>
<tr>
<td>Would the project:</td>
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<tr>
<td>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 Game or U.S. Fish and Wildlife Service?</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?</td>
<td></td>
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<td>X</td>
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</tr>
<tr>
<td>c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological</td>
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<td>X</td>
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<tr>
<td>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?</td>
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<td>X</td>
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<tr>
<td>e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?</td>
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<tr>
<td>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?</td>
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Discussion

An Entomological Assessment was prepared for the project site in September of 2005 (Entomological Consulting Services, September 2005). An updated Entomological Assessment was prepared in April 2020, based on the current project (Dr. Richard Arnold, Consulting Entomologist, February 2020). Additionally, a Preliminary Tree Inventory & Assessment was prepared for the project (Kurt Fouts, December 10, 2019). The analysis below is based on the findings of these assessments.

Sensitive Natural Communities, Special Status Species, and Wildlife Corridors and Nursery Sites

The Santa Cruz County soils mapping (Bowman and Estrada 1980) indicate that the upper portions of the project site are characterized by Zayante sands. Based on a site survey by Dr. Arnold (2020), he examined the soils at several locations on the project site and observed a mixture of loam and sand, as is typical of Elder sandy loam, rather than pure or nearly pure sand, which is characteristic of Zayante sands. Based on his assessment, the illustrated boundary between the Elder sandy loam and Zayante sand soils on the project site appears to more transitional rather than an abrupt change in soil type as shown on the County’s soil map. Because the endangered Mount Hermon June beetle is associated with Zayante sands, the presence of a loam-sand mixture is unlikely to support this beetle. For this reason, Dr. Arnold concluded that the project site is not considered suitable habitat for the endangered Mount Hermon June Beetle.

Dr. Arnold also concluded that due to the absence of Watsonville loam soils and coastal terrace prairie habitat, the project site is not suitable habitat for the endangered Ohlone Tiger beetle or the Opler’s Longhorn moth. Similarly, due to the absence of open sand parkland vegetation, the project site is not considered a suitable habitat for the endangered Zayante Band Winged grasshopper (Richard Arnold, Consulting Entomologist, February 2020).

As an urban infill site surrounded by commercial and high-density residential uses, the project would not impede the movement of native wildlife nursery sites or migratory wildlife corridors. As such, the project would have no impact on wildlife corridors or nursery site.
State and Federal Regulated Waterways and Federal Wetlands

Section 404 of the federal Clean Water Act protects wetland habitats that are classified as federal “jurisdictional wetlands”. Section 1600 et seq. of the California Fish and Game Code also protects wetland habitats and requires a Streambed Alteration Agreement to be obtained from the California Department of Fish and Game (CDFG) for the alteration of most wetlands. There are no swamps, marshes, or other types of wetlands on the project site. Thus, the project would have no impact and no mitigation is required.

Conflict with Local Polices, HCP or NCCP, or Other Conservation Plan

Per SVMC Section 17.44.080(E)(4), tree removal request shall be included as part of the development application, including an arborist’s report, and shall be approved by the planning commission or city council. The development review process shall seek to preserve healthy trees, trees that contribute to the overall aesthetic quality of an area, and to preserve significantly sized trees that are important to the overall landscape of an area.

The Preliminary Tree Inventory & Assessment (Kurt Fouts, December 10, 2019) evaluated 14 “protected” trees on the project site, which includes Coast live oak (8), Coast redwood (1), Incense cedar (2), Glossy Privet (2), and California Laurel (1). The reported identify six trees in poor condition, concluded that more than half of the trees are not suitable for incorporation into the project, either due to poor condition (6 trees), or high construction impacts (5 trees).

As shown in Figure 8: Planting Plan, the project would remove the California Laurel (T2) and the two Incense Cedars (15 and T18). The Preliminary Tree Inventory recommended tree replacement to compensate for their removal at a 2:1 tree replacement using 15-gallon or 24-inch box size trees. This recommendation is consistent with City regulations, as described above.

Standard conditions of project approval require the project applicant to implement all measures contained within the Preliminary Tree Inventory for the protection of existing trees to remain, including but not limited to the required procedures and sequence, required tree replacement, tree preservation and protection, and appraised value of preserved trees in the report.

As described above, the Entomological Assessment concluded that the future development would not impact the Mount Hermon June Beetle or the Zayante Band Wing grasshopper. Therefore, the proposed project would not conflict with any local policies or applicable HCP’s and there would be no impact.

Findings

The project would comply with the City’s standard conditions of approval wherein protected tree removals are compensated at a minimum of 2:1 ratio. Therefore, the project would result in less than significant impacts and no mitigation is required.
Cultural Resources

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<thead>
<tr>
<th>ENVIRONMENTAL IMPACTS Issues</th>
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<tbody>
<tr>
<td>Would the project:</td>
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<tr>
<td>a) Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?</td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>c) Disturb any human remains, including those interred outside of dedicated cemeteries?</td>
<td></td>
<td>X</td>
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</table>

Discussion

Cultural Resources

The Scotts Valley 1994 General Plan, Figure OS-2 ("Archeological Sensitivity Zones"), indicates that the project site is located within areas of moderate archaeological sensitivity.

Standard conditions of approval for development require that the project applicant and construction contractor ensure that any cultural resource, including archaeological, paleontological, or human remains are not destroyed if discovered during project grading or other subsurface work.

As part of the standard conditions of approval, the project applicant shall submit a copy of a contract with a qualified/registered archaeologist to conduct monitoring of all earth disturbing activities for review and approval by the Community Development Director, before grading permit issuance. The project applicant shall include this requirement in the contract for all contractors involved with grading and subsurface work. The qualified/registered archaeologist shall monitor all earthwork activity as described below:

1. An archaeologist shall monitor the grading or excavation of soils at the development site in order to determine if important cultural remains are present. Such monitoring shall begin before and occur during subsurface earth moving activities;
2. The duration and period of archaeological monitoring of project development activities shall be at the discretion of the professional archaeologist. At a minimum, however, any activity that initially displaces or removes original soil from its present context shall be monitored by an archaeologist on a continuous basis;
3. Monitoring activities such as replacing soils in trenches, redistributing displaced soil elsewhere on the development site, or removing stockpiled excavated soil may not require monitoring;
4. Monitoring may include the periodic sampling and screening of soils in order to better determine if cultural remains are present; and,
5. If any cultural resources are discovered, the project contractor shall immediately stop all earth disturbing work within a 150-foot radius of the discovery to allow for inspection, evaluation, and potential recovery of resources by the supervising project archaeologist, before resuming any earth-disturbing construction activities. The project applicant shall also contact the Planning Department and Building Official as soon as work has been stopped. It may be necessary to resume grading or excavation activities under the direction of the supervising archaeologist, in order to locate or expose cultural remains.

Human Remains
No known human remains are located on the project site. Pursuant to section 7050.5 of the Health and Safety Code, if human remains are discovered, there shall be no further excavation or disturbance of the discovery site or any nearby area reasonably suspected to overlie adjacent human remains until the project applicant has complied with the provisions of State CEQA Guidelines Section 15064.5(e).

Findings
As discussed above, the project site is located within areas of moderate and high archaeological sensitivity. However, the project would comply with the City’s standard conditions of approval for on-site project monitoring, which would reduce any potential impacts associated with cultural resources to a less than significant level.

Energy

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<tr>
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<tr>
<td>Would the project:</td>
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<td>x</td>
</tr>
<tr>
<td>a) Result in potentially significant environmental impact due to</td>
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ENVIRONMENTAL IMPACTS

Issues | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact
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wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

X

Discussion

Energy consumption associated with construction of the project would be temporary and short-term. Project design and operation would comply with State Building Energy Efficiency Standards, appliance efficiency regulations, and green building standards. Additionally, the project includes other design features including efficient low-energy lighting, and natural ventilation systems.

The project would also be required to be built according to City and State energy efficiency standards. The project would be required to comply with existing regulations, including applicable measures from the City’s General Plan. Vehicle trips and energy consumption would be less carbon intensive as compared to historic levels due to statewide compliance with future low carbon fuel standard amendments and increasingly stringent Renewable Portfolio Standards).

Findings

The project would comply with existing State energy standards and would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. There would be no impact to energy.

Geology and Soils

ENVIRONMENTAL IMPACTS

Issues | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact
---|---|---|---|---


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<tr>
<td>a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:</td>
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<tr>
<td>i) 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.</td>
<td></td>
<td></td>
<td>x</td>
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<tr>
<td>ii) Strong seismic ground shaking?</td>
<td></td>
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<td>x</td>
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<tr>
<td>iii) Seismic-related ground failure, including liquefaction?</td>
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<td>x</td>
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<tr>
<td>iv) Landslides?</td>
<td></td>
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<td>x</td>
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<tr>
<td>b) Result in substantial soil erosion or the loss of topsoil?</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>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?</td>
<td></td>
<td></td>
<td>x</td>
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<tr>
<td>d) 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?</td>
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<tr>
<td>e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?</td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

Discussion

Earthquake Faults, Landslides, and Seismic Ground Shaking

Project construction would subject the buildings and their inhabitants to periodic seismic shaking associated with the San Andreas Fault and other active faults within the Monterey Bay area. As part of any future Planned Development application submitted to the City of Scotts Valley, the project applicant would be required to submit plans that are in compliance with the latest California Building Code (CBC) standards consistent with Title 15 – Buildings and Construction of the Scotts Valley Municipal Code.

Prior to approval of any entitlements, City staff is required to review project plans and verify that the CBC Seismic requirements are printed on the plans. Building Division staff shall verify that CBC standards are met prior to issuance of Building Permits. Building inspectors shall conduct site inspections to assure that construction occurs consistent with approved plans.

The Scotts Valley 1994 General Plan, Figure S-3 ("Liquefaction Potential") indicates that the project site is not in an area for liquefaction. Figure S-4 ("Landslide Deposits") indicates that the site is not in an area containing landslide deposits. Figure S-5 ("Slopes"), indicate that the project site is not located within any mapped geological hazard areas. Per the earthquake hazard zones defined by the Alquist-Priolo map, the risk of earthquake-induced ground rupture occurring across the project site is moderately low.

A geotechnical investigation was prepared by Rock Solid Engineering, Inc. (Rock Solid Engineering, October 2019), which determined that given the project site is generally level, and the potential for seismically induced landslides are low.

Because compliance with Title 15 – Buildings and Construction of the Scotts Valley Municipal Code is required for all future project, potential impacts associated with earthquake-related ground rupture would be less than significant and no mitigation is required.
Soil Erosion
The project would involve the removal of landscape vegetation and grading activities associated with the construction of buildings, infrastructure, and roads. Grading would largely be limited to the project site, which would limit the amount of exposed soil area that would be subject to erosion. Measures to control erosion would be incorporated into the construction specifications pursuant to the National Pollution Discharge Elimination System (NPDES) requirements for construction. In addition, to comply with the NPDES requirements for construction, projects involving construction on sites that are one acre or more are required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that specifies how the discharger would protect water quality during construction activities. Compliance with the erosion control ordinances and acquisition of the NPDES General Permit for construction activities would ensure that soil erosion impacts associated with development pursuant to the project would be less than significant.

Sewage Disposal
The project would involve disposal of wastewater through the City's existing sanitary sewer system, and there would be no septic systems constructed as part of the project. Therefore, no impacts would occur.

Unique Geological Features and Paleontological Resources
There are no known paleontological resources on the project site. However, development of the project could result in the discovery and disturbance of previously unknown or undiscovered paleontological resources. Should evidence of paleontological resources be encountered during grading and construction, adherence to City, State, and Federal historic preservation laws, regulations, and codes related to archaeological and paleontological resources would ensure the adequate protection of historic and pre-historic resources. With implementation of existing regulations, the impact would be less than significant.

Findings
Compliance with Title 15 – Buildings and Construction of the Scotts Valley Municipal Code and NPDES requirements would reduce any potential impacts associated with geological and soil resources to a less than significant impact. Therefore, no mitigation is required.

Greenhouse Gas Emissions

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<td>Would the project:</td>
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</thead>
<tbody>
<tr>
<td>a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?</td>
<td></td>
<td>X</td>
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</table>

Discussion

Construction

Construction of the project would result in direct emissions of CO₂, N₂O, and CH₄ from the operation of construction equipment and the transport of materials. MBARD does not have a threshold for construction GHG emissions, which would be one-time, short-term emissions and therefore would not significantly contribute to long-term cumulative GHG emissions impacts of the project. In the absence of quantitative significance thresholds in CEQA guidance, this analysis turns to other programs. For example, the CARB Mandatory Reporting program requirements are triggered for sources of GHG emissions exceeding 2,500 MTCO₂e) per year. AB 32 requires California agencies to take actions that would reduce GHG emissions by 2020 to the levels of 1990, and then substantially further reduce emissions by 2050. Most individual projects do not generate sufficient GHGs to create a project-specific impact to significantly influence climate change; therefore, this impact typically involves an analysis to determine if a project’s GHG emissions are cumulatively considerable (significant cumulative impact). Once construction is complete, the generation of construction-related GHG emissions would cease. The project is not expected to exceed the CARB Mandatory Reporting applicability level of 2,500 MTCO₂e per year. As a result, the short-term emission of GHG during construction would be less than significant.

Operational

Operational or long-term emissions would occur over the project’s life. GHG emissions would result from direct emissions such as project generated vehicular traffic, on-site combustion of natural gas, and operation of any landscaping equipment. Operational GHG emissions would also result from indirect sources, such as off-site generation of electrical power over the life of the project, the energy required to convey water to, and wastewater from the project site, the emissions associated with solid waste generated from the project site, and any fugitive refrigerants from air conditioning or refrigerators. The project would meet CalGreen and CBC
standards for energy efficiency standards including passive solar design and natural ventilation and natural lighting.

Additionally, the project includes water-efficient landscape, water-reducing features, and low-impact development practices to reduce water use. The project is an example of “smart growth” strategies based on infill, density, and unit types. Energy use of the completed residential units would be less than similar units constructed in previous years because their construction is required to comply with the energy efficiency standards of the California Building Code. All these factors result in a project that would not significantly contribute to a cumulative GHG impact. Thus, impacts would be considered less than significant.

Findings

While some GHGs would be generated as a result of development of the project, its contribution to GHGs would not be cumulatively considerable and there would not be any significant impacts associated with GHGs. Therefore, the project would result in a less than significant impact, and no mitigation is required.

Hazards and Hazardous Materials

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<tr>
<td>Would the project:</td>
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<tr>
<td>a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</td>
<td></td>
<td>X</td>
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<tr>
<td>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?</td>
<td></td>
<td>X</td>
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<tr>
<td>c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?</td>
<td></td>
<td>X</td>
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<tbody>
<tr>
<td>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?</td>
<td></td>
<td></td>
<td>X</td>
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</tr>
<tr>
<td>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?</td>
<td></td>
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<td>X</td>
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<tr>
<td>f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?</td>
<td></td>
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Discussion

Hazardous Substances

Regarding on-site hazards, the project site is not included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. No records of the project site were found pertaining to open cases of LUSTs, toxic releases, or site cleanup requirements.

It is likely that oils, lubricants, and similar materials may be used to maintain and/or fuel construction vehicles and machinery during the construction phase of the project. Standard conditions of approval require the project applicant to have the construction contractor implement a best management practice/hazardous materials containment plan during the entire time construction activities are occurring. The hazardous materials containment plan shall contain the following elements:
Stationary equipment such as motors, pumps, welding equipment shall be placed over drip pans or other containment apparatus.

Construction materials shall not be stockpiled or stored where they could be accidentally discharged downslope or into Scotts Valley Drive.

Any petroleum, lubricants or other hazardous materials used during; and, construction shall be stored in a special storage location equipped with double containment and this location shall be shown on the erosion control plan and approved by the agencies that review this plan.

The project’s residential uses may involve use and storage of some materials that are considered hazardous, although these materials are typically limited to everyday use solvents, paints, chemicals used for cleaning and building maintenance, and landscaping supplies. These materials would not be substantially different from household chemicals and solvents already in use throughout the City. Therefore, impacts associated with hazardous substances would be considered less than significant, and no mitigation is required.

Release of Substances Near Schools
Scotts Valley Middle School is located approximately 650 feet west of the project site. However, project construction and operation would not involve the emission of hazardous materials, therefore impacts would be considered less than significant and no mitigation is required.

Emergency Response
General Plan Safety Element Figure S-6 “Evacuation Routes” shows Scotts Valley Drive as a primary evacuation route in the City’s Emergency Response Plan. Construction of the project would not change the function of Scotts Valley Drive as a primary evacuation route. Therefore, the proposed project would have no impact on emergency response.

Public Airport or Private Airstrip
The project site is not located within two miles of a public airport or public use airport, or within the vicinity of a private airstrip. Therefore, there would be no impact.

Wildland Fire
Refer to the Wildfire Section below for further discussion.

Findings
The project site is not on a list of hazardous materials sites, nor would the residential use involve the use of hazardous materials that would require permitting by the Santa County Health Department and therefore impacts would be less than significant. The project would not impact the City’s primary evacuation routes, nor is it located within two miles of an airport, and therefore there would be no impacts. No mitigation is required.
### Hydrology and Water Quality

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<tr>
<td>Would the project:</td>
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<tr>
<td>a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?</td>
<td></td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:</td>
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<tr>
<td>i. Result in substantial erosion or siltation on- or off-site?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?</td>
<td></td>
<td></td>
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<td>X</td>
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<tr>
<td>iii. 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?</td>
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<tr>
<td>iv. Impede or redirect flood flows?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
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<tr>
<td>d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?</td>
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<td>X</td>
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</table>

Discussion

Groundwater Demand

According to the project plans, the project would use approximately 110 gallons per day (or 0.1 acre-feet of water per year) of water. The Scotts Valley Water District has reviewed the application and has determined that existing water resources would support the proposed development (SVWD Will Serve Letter, dated October 23, 2019). Therefore, there would be no impact.

Groundwater Recharge

The project is located in an area designated on the Scotts Valley General Plan Hydrological Resources Map, Figure OS-5, as a Potential Groundwater Recharge Area. Per the Open Space and Conservation Policy OSA-343 of the Scotts Valley General Plan, all proposed construction in a Potential Groundwater Recharge Area requires a detailed hydrological evaluation to mitigate the loss of recharge.

According to the Stormwater Control Plan (Cornerstone Civil, July 2020), the project site contains 3,766 sf of impervious surface area. Redevelopment would increase the amount of impervious surface area by 6,052 sf and replace an existing 2,039 sf, resulting in a net addition of impervious surface area to 8,091 sf. To offset the potential loss of groundwater infiltration, the project would construct a 70 sf bioretention area in the southwest portion of the project site, as well as porous pavers on the southeast corner of the site, for a retention system. These two new water quality treatment measures would be used as a hybrid system to mitigate all new impervious areas. Additionally, the project would incorporate various low impact development design strategies such as the use of permeable pavements, dispersal of runoff of pervious areas, and stormwater control measures that would assist in improving groundwater conditions. Therefore, there would be no impact and no mitigation is required.
Stormwater Runoff

The project applicant prepared a Stormwater Control Plan (SCP) (Cornerstone Civil, 07/28/2020) to address potential impacts from stormwater runoff. The PSCP described project site-specific best management practices (BMPs) to control erosion and sedimentation and maintain water quality in accordance with the current edition of the City of Scotts Valley Stormwater Technical Guide. The BMPs address the construction and maintenance of storm drain inlets, irrigation and use of pesticides, maintenance of hardscapes, and maintenance of underground stormwater facilities.

Furthermore, standard conditions of approval require the developer and construction contractor to implement best management practices to prevent sedimentation and discharge of contaminants off-site during project construction, including hazardous materials containment plan during the entire time construction activities are occurring. The hazardous materials containment plan shall contain the following elements:

- Stationary equipment such as motors, pumps, welding equipment shall be placed over drip pans or other containment apparatus.
- Construction materials shall not be stockpiled or stored where they could be accidentally discharged downslope or in to Scotts Valley Drive.
- Any petroleum, lubricants or other hazardous materials used during; and, construction shall be stored in a special storage location equipped with double containment and this location shall be shown on the erosion control plan and approved by the agencies that review this plan.

Implementation of recommendations as described in the SCP and preparation of a SWPPP for review and approval prior to construction activities would ensure that impacts from stormwater runoff would be less than significant.

Floodplains, Seiche, Tsunami and Mudflow Related Hazards

The property is not located within a floodplain. There is no possibility of a seiche or tsunami occurring that could affect the project. The project is not located on or near a lake or ocean coastline. Therefore, the project would have no impacts.

Findings

Implementation of recommendations as described in the SCP and preparation of a SWPPP would reduce impacts on hydrology and water resources to a level of less than significant. Therefore, no mitigation is required.
Land Use and Planning

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Would the project:</td>
<td></td>
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</tr>
<tr>
<td>a) Physically divide an established community?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>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 effect?</td>
<td></td>
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<td>X</td>
</tr>
</tbody>
</table>

Discussion

Residential land uses surround the project site on all sides. No community or neighborhood would be physically divided by the project.

The project site is currently zoned Residential High Density (R-H). The project site is designated in the City of Scotts Valley General Plan as Residential High Density (R-H), which allows for 9 to 15 residential units. Therefore, the project would be consistent with the existing zoning and General Plan land use designations.

Findings

The proposed future residential use of the site would be in keeping with surrounding land uses and the development pattern of the neighborhood. The project would have no impact and therefore no mitigation is required.

Mineral Resources

<table>
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<tr>
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<tbody>
<tr>
<td>Would the project:</td>
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</tr>
<tr>
<td>a) Result in the loss of availability of a known mineral resource that would</td>
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ENVIRONMENTAL IMPACTS

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<tbody>
<tr>
<td>be of value to the region and the residents of the state?</td>
<td></td>
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</tr>
<tr>
<td>b) 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?</td>
<td></td>
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<td>X</td>
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</tbody>
</table>

Discussion

The Scotts Valley 1994 General Plan, Figure OS 4, indicates that there are no significant mineral deposits on the project site. The project is not located in an area known to contain regionally significant mineral resources and would not result in the loss of the availability of a known mineral resource of regional value. Additionally, the project site is not located in an area that has been identified by the City of Scotts Valley as a locally important mineral resource recovery site.

Findings

The project would have no impact and therefore no mitigation is required.

Noise

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<tr>
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<tbody>
<tr>
<td>Would the project result in:</td>
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<tr>
<td>a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?</td>
<td></td>
<td>X</td>
<td></td>
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</tr>
<tr>
<td>ENVIRONMENTAL IMPACTS Issues</td>
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<tr>
<td>b) Generation of excessive groundborne vibration or groundborne noise levels?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>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?</td>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>

### Discussion

**Short Term Noise Levels**

Construction noise typically occurs intermittently and varies depending on the nature or phase of construction (e.g. land clearing, grading, excavation, paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. During construction, exterior noise levels could affect the residential neighborhoods surrounding the construction site. Project construction would occur adjacent from existing single-family residences; however, construction activities would occur throughout the project site and would not be concentrated at a single point near sensitive receptors.

Project construction would comply with the City’s Municipal Code Section 17.46.160, which states that all construction activity shall be limited to the hours between 8 a.m. and 6 p.m., Monday through Friday, and 9 a.m. through 5 p.m. on Saturday. No construction activity is allowed on Sunday. These permitted hours of construction are included in the code in recognition that construction activities undertaken during daytime hours are a typical part of living in an urban environment and do not cause a significant disruption. Construction would occur throughout the project site and would not be concentrated or confined in the area directly adjacent to sensory receptors. Therefore, construction noise would be acoustically dispersed throughout the project site and impacts would be less than significant.

**Long Term Noise Levels**

The Noise Contour Map for the City indicates that the project site is in an area of less than 60dBA. The Noise Element of the Scotts Valley General Plan specifies that "exterior noise levels measured at the property line of proposed new residential developments shall be limited to or below an average annual day-night level of 60 dBA" (NA-454).
Implementation of the project would create new sources of noise in the project vicinity from residential sources, mechanical equipment, and landscape maintenance. These noise sources would be similar to those generated in other residential neighborhoods throughout the City. Such noise would primarily occur during the “daytime” activity hours of 7:00 a.m. to 7:00 p.m. Furthermore, the residences would be required to comply with the noise standards set forth in the City’s General Plan and Municipal Code. Per General Plan Policies LP-38, NA-457, NO-441, and NA-444 land uses which include residential uses should not be allowed in areas with excessive noise. Therefore, there would be no impact from long-term noise levels.

Exposure to Groundborne Vibrations
Because the project would not require the use of heavy construction equipment, the residences located adjacent to the project site would not be exposed to vibrations levels exceeding the FTA’s 0.20 in/sec PPV significance threshold vibrations. Therefore, there would be no vibration impacts.

Future project residents may experience occasional groundborne vibrations from nearby traffic on Scotts Valley Drive when large trucks use the roadway. But this vibration is not expected to be frequent nor at high levels. This impact is less than significant.

Airport or Private Airstrip Noise
The project site is not located within any airport noise impact contours and not located within the vicinity of any private air strip, and therefore there would be no impact.

Findings
The project would not expose future residential uses to short-term construction nor long-term operational noise levels in excess of City standards. Noise generated during the construction phase is temporary and would be limited to Monday-Saturday daytime hours per compliance with the City’s Municipal Code Section 17.46.160. Therefore, no mitigation is required.

Population and Housing

<table>
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<tr>
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<tbody>
<tr>
<td>Would the project:</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for</td>
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<td>X</td>
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ENVIRONMENTAL IMPACTS

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<tr>
<td>example, through extension of roads or other infrastructure)?</td>
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<tr>
<td>b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?</td>
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<td>X</td>
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</tbody>
</table>

Discussion

The project would result in a relatively small increase in population (five persons \(^2\) that is well within the land use buildout capacity projections identified within the City of Scotts Valley General Plan (1994) as well as the Association of Monterey Bay Area Government’s 2018 Regional Growth Forecast for the City of Scotts Valley population of 12,418 by 2040. Therefore, there would be no impact.

Findings

There is no potential for a significant impact due to substantial growth either directly or indirectly. Therefore, the project would have a no impact and no mitigation is required.

Public Services

ENVIRONMENTAL IMPACTS

<table>
<thead>
<tr>
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<tr>
<td>Would the project result in:</td>
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<tr>
<td>a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order</td>
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</table>

\(^2\) The average household size for Scotts Valley is 2.67 persons which estimates 5 persons for a project with 2 units
<table>
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<tbody>
<tr>
<td>to maintain acceptable service ratios, response times or other performance objectives for any of the public services:</td>
<td></td>
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<tr>
<td>i) Fire protection?</td>
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<td>X</td>
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<tr>
<td>ii) Police protection?</td>
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<td>X</td>
<td></td>
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<tr>
<td>iii) Schools?</td>
<td></td>
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<td>X</td>
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<tr>
<td>iv) Parks?</td>
<td></td>
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<td>X</td>
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<tr>
<td>v) Other public facilities?</td>
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<td>X</td>
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</table>

**Discussion**

**Fire Services**
The project is located in an existing urban area that is currently served by the Scotts Valley Fire Protection District. The closest fire station is located approximately 300 feet east of the project site. Therefore, there would be no impact.

**Police Services**
The project would add new residents to the City who would occasionally need police services. This type of additional service would not generate a demand beyond what the police department can accommodate. The Scotts Valley Police department is located 700 feet east of the project site. Therefore, there would be no impact.

**Schools**
The project would add approximately five new residents to the City, some of whom will be students attending schools within the Scotts Valley Unified School District. These additional students would not generate a significant demand on the area school system and therefore there would be no impact.

**Parks**
The project would add approximately five new residents to the City who would occasionally utilize City parks and recreational programs; however, this additional use would not generate a demand beyond what the City Parks Department can accommodate, and no new additional park facilities would be required. Additionally, as a standard condition of the approval, the project would be required to pay a parks and recreation in-lieu fee as part of their building permit. Therefore, there would be no impact.
Other Public Facilities
The project does not have the potential to affect other public facilities (e.g. library, city administrative services, etc.), in excess of that previously considered by the General Plan. Therefore, there would be no impact.

Findings
The project would have no impact on public services and therefore no mitigation is required.

Recreation

<table>
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<tr>
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<tbody>
<tr>
<td>Would the project:</td>
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</tr>
<tr>
<td>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?</td>
<td></td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>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?</td>
<td></td>
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<td>X</td>
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</tbody>
</table>

Discussion
Scotts Valley has a total of seven parks, ranging in size from a half-acre to 7.5 acres. Recreational facilities are also available at local schools, the Scotts Valley Senior Center, and Scotts Valley Community Center. The proposed project would not require the construction of new or expanded recreational facilities and therefore there would be no impact. Additionally, standard conditions require the developer pay an in-lieu park fee.

Finding
No significant impacts to recreation and open space resources are expected. Thus, the thresholds of significance have not been exceeded. Payment of Park Impact fees will mitigate the incremental increase created by the project.
Transportation

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<tr>
<td>Would the project:</td>
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</tr>
<tr>
<td>a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</td>
<td></td>
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<td>X</td>
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<tr>
<td>d) Result in inadequate emergency access?</td>
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</table>

Discussion

Conflict with City Policies or Programs, Increase Hazards, Impair Emergency Access

The proposed project’s design utilizes a shared driveway access with the adjacent parcel to the south of the project site, and incorporates a fire turn-around space on the south end of the project site. The driveway would be accessed from a private driveway “Coastal Oak Court” off of Acorn Court. The design of the roadway would be consistent with City standards and subject to design review to ensure there is adequate emergency vehicle access. Therefore, there would be no impact.

Increase Vehicle Miles Travelled

Vehicle Miles Traveled (VMT) is a measure of total vehicular travel that accounts for the number of vehicle trips and the length of those trips. Because the City of Scotts Valley has not
formally adopted VMT significance criteria, this CEQA analysis uses guidance per the City of Scotts Valley’s Draft VMT Implementation Guidelines (Kimley-Horn and Associates, July 2020).

The VMT Implementation include screening criteria to avoid unnecessary analysis and findings for non-significant transportation impacts. Small projects that generate less than 110 trips per day are exempt from VMT analysis. However, upon issuance of the building permit, the proposed project would be required to pay City traffic impact fee.

Project trip generation was estimated by applying the proposed type of development to the appropriate trip generation rates published in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition (2012). The ITE estimated rate for single-family housing is 10.67 average daily trips per household (ITE Code 210). This would result in 21.3 trips per day for the project, which is less than the City’s VMT Implementation Guidelines and as such, the project is exempt from further VMT analysis.

Findings
The project would not conflict with City policies or programs regarding the circulation system, including transit, roadway, bicycle and pedestrian facilities. The project would not cause a hazard nor impair emergency access. The project is considered a “small project” per the City VMT Implementation Guidelines and is exempt to further analysis. Therefore, there would be no impacts to transportation and no mitigation is required.

Tribal Cultural Resources

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<thead>
<tr>
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<tr>
<td>Would the project:</td>
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</tr>
<tr>
<td>a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, 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:</td>
<td></td>
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<td>x</td>
</tr>
<tr>
<td>i) Listed or eligible for listing in the California Register of Historical</td>
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</table>
## ENVIRONMENTAL IMPACTS

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<tr>
<td>Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?</td>
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<tr>
<td>ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>b) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, 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) Listed or eligible for listing in the California</td>
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</table>

### Discussion

Section 21080.3.1(b) of the California Public Resources Code (AB 52) requires a lead agency formally notify a California Native American tribe that is traditionally and culturally affiliated within the geographic area of the discretionary project when formally requested.

As of this writing, no California Native American tribes traditionally and culturally affiliated with the Santa Cruz County region have formally requested a consultation with the City of Scotts Valley.
Valley (as Lead Agency under CEQA) regarding Tribal Cultural Resources. As a result, no Tribal Cultural Resources are known to occur in or near the project area.

Findings

No California Native American tribes traditionally and culturally affiliated with the Santa Cruz County region have formally requested a consultation with the City of Scotts Valley. Therefore, no impact to the significance of a Tribal Cultural Resource is anticipated and no mitigation is required.

Utilities and Service Systems

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<tr>
<td><strong>Would the project:</strong></td>
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<tr>
<td>a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?</td>
<td></td>
<td></td>
<td>X</td>
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</tr>
<tr>
<td>c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments?</td>
<td></td>
<td></td>
<td>X</td>
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<tr>
<td>d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or</td>
<td></td>
<td></td>
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</tbody>
</table>
## Discussion

### Water Treatment Facilities

The two proposed residential units would result in a daily water demand of 110 gallons per day or approximately 0.1-acre feet per year (AFY). Therefore, the proposed residential use would cause only a minimal increase on the demand for water and wastewater service. The Scotts Valley Water District has reviewed the application and has determined that existing water resources would support the proposed development. Thus, impacts are be considered less than significant and no mitigation is required.

### Wastewater Treatment Facilities

The Wastewater Department has reviewed the proposed development and has determined that the existing wastewater treatment facilities would support the proposed development. The project would not generate solid waste in excess of that typically generated by two residential units. Thus, impacts would be considered less than significant, and no mitigation is required.

### Electric Power, Natural Gas, or Telecommunications

The project would require new connections to PG&E for electricity and natural gas. In addition, the project would require new telecommunication connections with the respective service providers. The project site is surrounded by commercial and residential development, which are serviced by various dry utility providers. Because these utilities would be readily extended from existing infrastructure adjacent to the project site, impacts from the project would be less than significant, and no mitigation is required.

---

3 Daily Water Use Factor for High Density Residential is 55 (gallons per capita/day). (5 residents x 55 gallons/day) = 110 (gallons/day)
Solid Waste
The project would generate approximately 25 pounds of daily solid waste. The 25 pounds of daily solid waste generated by the project would represent less than one percent of the daily permit capacities of Buena Vista and Monterey Peninsula landfills, respectively. Therefore, both landfills have adequate capacity. Thus, impacts would be considered less than significant, and no mitigation is required.

Findings
Existing utilities and service systems are available to serve the project and no new facilities would be required to be constructed. Therefore, the project would have less than significant or no impacts associated to utilities and service systems, and no mitigation is required.

Wildfire

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<tr>
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<tbody>
<tr>
<td>If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:</td>
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</tr>
<tr>
<td>a) Substantially impair an adopted emergency response plan or emergency evacuation plan?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>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?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>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</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

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4 Daily Solid Waste Generation Rate for Residential Use is 12.23 pounds per day/unit (CalRecycle, 2019). (2 residential units x 12.23 pounds/day) = 24.5 pounds/day
5 The Buena Vista Sanitary Landfill is permitted to receive 838 tons of solid waste per day (CalRecycle, 2019). The Monterey Peninsula Landfill is permitted to receive 3,500 tons of solid waste per day.
ENVIRONMENTAL IMPACTS

<table>
<thead>
<tr>
<th>Issues</th>
<th>Potentially Significant Issues</th>
<th>Potentially Significant Unless Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
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<td>may result in temporary or ongoing impacts to the environment?</td>
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<td>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?</td>
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Discussion

The California Department of Forestry and Fire Protection (CAL FIRE) has mapped the relative wildfire risk in areas of large population by intersecting residential housing density with proximate fire threat according to three risk levels, namely Moderate, High, and Very High. Wildfires are large-scale brush and grass fires in undeveloped areas. The project is within an urbanized area and not within a Very-High Fire Hazard Severity Zone as mapped by CALFIRE. Additionally, the project would incorporate all applicable fire safety code requirements, including fire protection devices in all residential units and appropriate fire-resistant landscaping on the project site, as required by the Scotts Valley Fire District, and therefore there would be no impact.

Findings

The project would not affect emergency response/evacuation plans, would not expose residents or structures to a wildfire risk, and would not exacerbate fire risk. Therefore, the project would have no impact to wildfires, and no mitigation is required.

Mandatory Findings of Significance

<table>
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<tr>
<th>ENVIRONMENTAL IMPACTS Issues</th>
<th>Potentially Significant Issues</th>
<th>Potentially Significant Unless Mitigation Incorporated</th>
<th>Less Than Significant Impact</th>
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<td>Does the project:</td>
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<tr>
<td>a) 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</td>
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ENVIRONMENTAL IMPACTS Issues | Potentially Significant Issues | Potentially Significant Unless Mitigation Incorporated | Less Than Significant Impact | No Impact
--- | --- | --- | --- | ---
wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory? |  |  |  |  
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)? |  |  | X |  
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly? |  |  |  | X

Discussion

As discussed in the individual sections, the project would not degrade the quality of the environment, including effects on animals or plant, with the implementation of identified Standard Conditions of Approval.

As described in the environmental resource sections of this Initial Study, the project would not have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly.

The project would result in temporary air quality and noise impacts during construction. With the implementation of the identified Standard Conditions of Approval, and consistency with adopted City policies, construction impacts would be mitigated to a less than significant level.
As described above, these impacts would be temporary and the project would not have cumulatively considerable impacts on air quality and noise impacts in the project area.

The project would have a less than significant impact or no impact on the remaining environmental resources and would not contribute to cumulative impacts to these resources. Therefore, the project would not cause a cumulatively considerable impact and no mitigation is required.

**Determination**

On the basis of this initial evaluation:

<table>
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<tr>
<th>Statement</th>
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<tbody>
<tr>
<td>I find that the project <strong>COULD NOT</strong> have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.</td>
<td>X</td>
</tr>
<tr>
<td>I find that although the project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.</td>
<td></td>
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<tr>
<td>I find that the project <strong>MAY</strong> have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.</td>
<td></td>
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<tr>
<td>I find that the project <strong>MAY</strong> have a potentially significant or a 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.</td>
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</tr>
<tr>
<td>I find that although the project could have a significant effect on the environment, because all potentially 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 project, nothing further is required.</td>
<td></td>
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</tbody>
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_________________________________ _____________________________
Paula Bradley, MCP, AICP  
Contract Planner Date
Figure 1: Regional Location
4303 B Scotts Valley Drive Planned Development
Initial Study
Figure 2: Project Vicinity
4303 B Scotts Valley Drive Planned Development Initial Study
Figure 3: Site Plan
4303 B Scotts Valley Drive Planned Development
Initial Study

Source: Craycroft Design, 2020
Figure 4: Proposed Elevations of Lot 1
4303 B Scotts Valley Drive Planned Development
Initial Study

Source: Craycroft Design, 2020
Figure 5: Proposed Elevations of Lot 2
4303 B Scotts Valley Drive Planned Development
Initial Study
Source: Craycroft Design, 2020
Figure 6: Grading Plan
4303 B Scotts Valley Drive Planned Development
Initial Study

Source: Cornerstone Civil, 2020
Figure 7: Exterior Lighting Plan
4303 B Scotts Valley Drive Planned Development Initial Study

Source: Craycroft Design, 2020
Figure 8: Planting Plan
4303 B Scotts Valley Drive Planned Development
Initial Study

Source: GREGORY LEWIS. LANDSCAPE ARCHITECT, 2020
4303 B Scotts Valley Drive Planned Development Initial Study Reports

1. Entomological Report, by Richard Arnold, PhD., Entomological Conservation Resources, dated 2/20/2020
2. Entomological Report, by Entomological Conservation Resources, dated 9/26/2005
3. Arborist Report, Tree Inventory & Preliminary Assessment, by Kurt Fouts, dated 12/10/19
4. Geotechnical Soils report, by Rock Solid Engineering, dated 10/14/19
5. Stormwater Control Plan, by Cornerstone Civil, dated 7/28/20 (and separate Drainage map attachment)
6. Drainage Map, by Cornerstone Civil, dated 12/06/19
20 February 2020

Mr. Rick Hochler
Hochler Construction
325 Canham Road
Scotts Valley, CA 95066

Re: APN 022-902-11 located at 4303 B Scotts Valley Drive in Scotts Valley, CA
Updated Habitat Assessment for Four Special-Status Insects

Dear Rick:

In 2005 I conducted a habitat assessment report for four special-status insects at this property and did not observe suitable habitat to support them. My written report, dated 26 September 2005, was prepared for Stephen Graves & Associates of Soquel. At that time, I referred to this property as 4303 Scotts Valley Drive with an APN of 022-172-73.

I understand that you are the current owner and plan to demolish an existing home there to redevelop this property. At your request I revisited the property on Feb. 18th to observe if habitat conditions had changed in the interim and might possibly now support any of the four special-status insects. I refer you to my 2005 report for background information on the four insects and their habitat requirements. The remainder of this letter updates my earlier habitat assessment report based on my site visit conducted earlier this week.

SITE DESCRIPTION

APN 022-902-11 measures 0.46 acres and has a single-family residence with a concrete driveway. Topography slopes from the rear to the front, but the site was previously graded to provide a flat area for construction of the existing home. The front yard has been terraced and has concrete sidewalks, driveway, and patio, while the back yard is characterized by a sizeable concrete patio.

County soils maps (Soil Survey of Santa Cruz County, Bowman and Estrada 1980) indicate that soils at the property consist of Elder sandy loam and Zayante sands in approximately a 50:50 mix. In general, Elder sandy loam occurs in the front while Zayante sands occur at the rear of the site.

SURVEY RESULTS AND DISCUSSION

When I visited the site in 2005, the home was occupied and the lot between 4303 B and the business along Scotts Valley Drive was vacant. At this time the residence is not occupied.
and the adjacent vacant lot is being developed. Habitat conditions at the subject property appear similar to what I observed in 2005, i.e., very disturbed due to past site grading, terracing, plus subsequent residential development and use.

Due to the absence of Watsonville loam soils and coastal terrace prairie habitat, this property is not suitable habitat for the endangered Ohlone Tiger beetle or the Opler's Longhorn moth. Similarly, due to the absence of open sand parkland vegetation, this property is not suitable habitat for the endangered Zayante Band Winged grasshopper.

The Santa Cruz County soils mapping indicate that the upper portions of this property are characterized by Zayante sands. During my site visit I examined the soils at several locations in this portion of the property and observed a mixture of loam and sand, as is typical of Elder sandy loam, rather than pure or nearly pure sand, which is characteristic of Zayante sands. Based on my field examination, the illustrated boundary between the Elder sandy loam and Zayante sand soils at the property appears to more transitional rather than an abrupt change in soil type as the map (Bowman and Estrada 1980) indicates. Because the endangered Mount Hermon June beetle is associated with Zayante sands, the presence of a loam-sand mixture at this property is unlikely to support this beetle. For this reason, I do not consider the property to provide suitable habitat for this endangered beetle.

To summarize, habitat conditions at this property have not significantly changed since my 2005 habitat assessment report. For the reasons stated above, this property does not have suitable habitat to support any of the four special-status insect species, and redevelopment of this property should not impact them.

If you have any questions about this updated habitat assessment report for your property, just contact me.

Sincerely,

[Signature]

Richard A. Arnold, Ph.D.
Mr. Jason McCombs  
c/o Stephen Graves & Associates  
2735 Porter Street  
Soquel, CA 95073  

Attn: Sarah Wilkinson  

Re: Jason McCombs Property - Habitat Assessment for Sensitive Insects  
   APN 022-172-73 located at 4303 Scotts Valley Drive in Scotts Valley, CA  

Dear Sarah:  

This letter reports the findings of my habitat assessment of the above-noted site, which is located off of Scotts Valley Drive in Scotts Valley, CA. My habitat assessment focused on four sensitive insect taxa, namely:  

a) Mount Hermon June beetle, *Polyphylla barbata* (Coleoptera: Scarabaeidae);  
b) Zayante Band Winged grasshopper, *Trimerotropis infantilis* (Orthoptera: Acroridae);  
c) Ohlone Tiger beetle, *Cicindela ohlone* (Coleoptera: Cicindelidae); and  
d) Opler’s Longhorn moth, *Adela oplerella* (Lepidoptera: Incurvariiidae).  
Both beetles and the grasshopper are recognized as endangered species by the U.S. Fish & Wildlife Service (USFWS), while the moth is a federal species of special concern.  

The four aforementioned insects are known to occur in Scotts Valley and surrounding areas of Santa Cruz County. Because of the proximity to the aforementioned parcel to locations known to support these insects, a habitat assessment for all four insects was conducted on September 3, 2005. I can briefly summarize the findings of my report by stating that no suitable habitat for any of these four insects was observed at the aforementioned site. The remainder of this report describes my survey methods and findings in greater detail, and also provides pertinent background information on the four insect taxa.  

SITE DESCRIPTION  

Assessor’s Parcel Number 022-172-73 is a lot that measures 0.46 acres. It is located on the north side of Scotts Valley Drive in the City of Scotts Valley (Santa Cruz County), CA. One building is on the otherwise vacant lot.  

Although the site is largely vacant, it has been disturbed by past and current land uses. The site supports the following tree taxa: redwood, coast live oak, and acacia.
Understory vegetation at the site consists primarily of annual grassland, weeds, and ornamentals, as well as some bare areas, such as the driveway leading to the house that is located offsite but immediately north (i.e., upslope) of the property. A solitary tree lupine (*Lupinus arboreus*) was observed.

Soils at the project site consist primarily of Elder sandy loam and Zayante sands (Bowman and Estrada 1980). Topography at the site is generally flat, although there is a slight rise in elevation from the front to the rear of the property.

**BACKGROUND INFORMATION**

This section summarizes pertinent information on the distribution, habitat, biology, and conservation of the four sensitive insects.

**Mount Hermon June Beetle and Zayante Band Winged Grasshopper.**

Both of these insects were recognized as endangered species by USFWS in 1997 (U.S. Fish & Wildlife Service 1997). They are known only from the greater Scotts Valley – Felton – Ben Lomond area in Santa Cruz County. This portion of the county is characterized by the Zayante sand hills, which are old marine deposits of sand. Native vegetation on the Zayante sands includes a mixture of Ponderosa pine forest, maritime chaparral, and grassland with areas of bare or sparsely vegetated sand. This mixture of plant communities has been referred to as sand parkland vegetation.

Within the Zayante sand hills, the June beetle is known from approximately 70 locations while the grasshopper is known from about 12 locations (BUGGY Data Base 2005). Ponderosa pines grow at all known locations of the June beetle, and for this reason it is a suspected larval food plant. The larval stage of the beetle is fossorial, meaning that it burrows in the ground, where it feeds on roots. As the common name suggests, adult activity begins in May or June and continues through mid-August. Adults are active at dusk.

The grasshopper is also associated with sand parkland vegetation, but prefers areas where the tree cover is limited and the understory vegetation is characterized by grasses and forbs. A primary habitat requirement of the grasshopper is barren or sparsely vegetated ground that receives sunlight at ground level, a habitat that is referred to as open sand parkland. Adult grasshoppers have been observed between July and early November.

Additional information on both of these endangered species can be found in the final ruling to list them (U.S. Fish & Wildlife Service 1997) and their recovery plan (U.S. Fish & Wildlife Service 1998a).

**Ohlone Tiger Beetle.**

The Ohlone Tiger beetle (OTB) was described in 1993 by Freitag, Kavanaugh, and Morgan (1993). Their description of this new species was based on specimens collected from three sites in west central Santa Cruz County between 1987 and 1992.
Subsequently, the beetle has been found at the Vine Hill Elementary School in Scotts Valley, Moore Creek Open Space, Pogonip Park next to the UC Santa Cruz campus, and privately-owned ranches near the UC Santa Cruz campus.

This species appears to be restricted to coastal terrace situations, at low to mid-elevations (less than 1,200 feet), located between the crest of the Santa Cruz Mountains and the Pacific Ocean. On these terraces Cicindela ohlone inhabits areas characterized by remnant stands of native grassland. California oatgrass (Danthonia californica) and Purple needlegrass (Stipa pulchra) are two native grasses that grow at all known sites. Within these grasslands, the beetle has been observed primarily on level ground, where the vegetation is sparse or bare ground is prevalent.

The soil type, as mapped by the Soil Conservation Service (Bowman and Estrada. 1980), at all locations known to support the tiger beetle is Watsonville loam, which consists of shallow, poorly drained clay or sandy-clay soils that have accumulated over a layer of bedrock. This soil type has also been referred to as Santa Cruz Mudstone (Freitag, Kavanagh, and Morgan 1993). Because the larvae and to a lesser degree, the adults of all tiger beetle species live much of their lives in earthen burrows, every species is usually associated with a specific soil type.

The diurnally active adults and larvae of C. ohlone are associated with sunny areas of bare or sparsely vegetated ground. Both adults and larvae are voracious predators. Collection records indicate that most adult C. ohlone are active from mid-January through mid-May (BUGGY Data Base 2005).

The U.S. Fish & Wildlife Service (2001) recently recognized the OTB as an endangered species. Additional information on the OTB is presented in this rulemaking.

**Opler’s Longhorn Moth.**

Adelids are small, brightly colored, day-flying moths with exceptionally long antennae, hence their common name of Longhorn moths. They have been treated both as a family, the Adelidae, and as a subfamily (the Adelinae) of the Incurvariidae. These and other small moths are often referred to as microlepidoptera because of their small size.

*Adela oplerella* is a small, dark bronze colored moth with antennae only slightly longer than the forewing in the male and shorter than the forewing in the female. Males are approximately 10 mm. in size (i.e., wingspan), while females are slightly larger at approximately 12 mm. The color and maculation pattern of the wings and features of the head appendages and abdominal sclerites are primary characteristics used to distinguish *A. oplerella* from related species (Powell 1969).

This microlepidopteran is known primarily from various localities in Marin, San Francisco, and Santa Clara counties. The population behind the Vine Hill School in Scotts Valley was only recently discovered (U.S. Fish & Wildlife Service 1998b).

Opler’s Longhorn moth is known primarily from serpentine grasslands.
throughout most of its geographic range (U.S. Fish & wildlife Service 1998b). Adult moths are usually found in association with *Platystemon californicus* (Papaveraceae), its presumed larval foodplant (Powell 1969). However, this plant is not strictly limited to serpentine grasslands. Indeed, it grows at locations, such as the Vine Hill School site, in Scotts Valley, where no serpentine is present.

Little specific information is available about the biology and life history of this species. Indeed, none of the 11 Nearctic species of *Adela* have been reared. Information on the biologies of Nearctic species is inferred from information gained from rearing related European species (Powell 1969).

Larvae of *Adela oplerella* are presumed to feed on *Platystemon californicus* because females have been observed ovipositing on the flowers. Young larvae probably consume the contents of developing seed capsules and then descend to the ground. There they construct a case, in which they feed on the lower or fallen leaves of the same or other plants.

There is only one generation per year. Adults are active in the spring, typically during the flowering period of *Platystemon californicus*, which is early April through mid-May.

The U.S. Fish & Wildlife Service (1991) first recognized *A. oplerella* as a category 2 candidate in response to a petition to recognize the moth as endangered, which was submitted in 1990. Until recently, *A. oplerella* continued to be recognized as a category 2 candidate for endangered or threatened status; however, the U.S. Fish & Wildlife Service (1996) eliminated all category 2 candidates and now considers these taxa, including the moth, to be species of special concern.

**SURVEY METHODS**

I visited the property on September 3rd, 2005, and surveyed the entire project site by hiking throughout it. Even though soils at the project site do not include Watsonville loams, I searched for the OTB and other signs of it, such as larval burrows, which are evident at this time of year. Since the OTB is strictly associated with grassland vegetation, I looked for barrens or areas of sparse vegetation, preferably characterized by native bunch grass, that are favored by the OTB, at the property. Where such areas were found, I then examined the ground for evidence of burrows. I also visited the nearby Glenwood site to confirm that larvae of the OTB were active at the time of my visit to the property.

Life stages of the Mount Hermon June beetle were not active at the time of my site visit, I focused my survey efforts on identifying features characteristic of suitable habitat for this beetle, namely loose sandy deposits with sand parkland vegetation. Similarly, Opler's Longhorn moth was not active at the time of my site visit, and its
annual food plant also was not apparent. For this reason, I focused on identifying suitable habitat conditions for this moth.

My survey visit occurred during the late summer-fall activity period of the Zayante Band Wing grasshopper. The nearby Mt. Hermon Cross, which supports a known population of the grasshoppers was briefly visited on the same date as I visited the property to confirm that adults were active. I performed both a habitat assessment and presence-absence survey for the grasshopper at the subject property.

**HABITAT ASSESSMENT RESULTS**

**Mount Hermon June Beetle and Zayante Band Winged Grasshopper.**

Neither sand parkland vegetation nor Ponderosa pine forests were observed at the property. Trees at the property include redwood, acacia, and coast live oak. No areas of loose, sandy soils were observed at the parcel. Where soils were barren, they were compacted, such as along the driveway that traverses the full length of the property. All grassland at the site is dominated by annuals, which provide nearly complete cover. For these reasons, I did not find any suitable habitat for the Mount Hermon June beetle or Zayante Band Wing grasshopper and would not expect either of these endangered insects to occur at the parcel. Indeed, no individuals of the endangered grasshopper were observed at the subject property.

**Ohlone Tiger Beetle.**

All known locations of the Ohlone Tiger beetle are characterized by sandy-clay soils known Watsonville loam. Soils at the project site are Elder sandy loams and Zayante sands (Bowman and Estrada 1980). According to the descriptions provided by Bowman and Estrada 1980, these soil types are not known to support inclusions of Watsonville loam. Furthermore, vegetation at the site is inappropriate for the OTB, with dense annual grassland vegetation, and shadows cast by the resident trees. For these reasons, the Ohlone Tiger beetle is not expected to occur at the parcel. No larval burrows were noted during my survey of the subject property.

**Opler's Longhorn Moth.**

As indicated by the county soils map (Bowman and Estrada 1980), serpentine conditions do not occur at this property. No specimens of the suspected larval food plant, *Platystemon californicus*, were observed during my survey of the project site. Due to the past and current disturbance at the site, and inappropriate vegetation and habitat conditions, I would not expect the moth or its presumed food plant to occur at the parcel.

**CONCLUSIONS AND RECOMMENDATIONS**

Since no suitable habitat was observed at the property for any of the four special-status insects treated in report, I do not anticipate that these insects utilize the site. As no impacts to the insects or their habitat are anticipated, no mitigation actions should be required.
REFERENCES

Bowman, R.H. and D.C. Estrada. 1980. Soil survey of Santa Cruz County, California. U.S. Dept. of Agriculture and Soil Conservation Service in cooperation with the University of California, Agricultural Experiment Station Publication.

BUGGY Data Base. 2003. Report of sensitive insect and invertebrate species and their occurrences in the greater Scotts Valley (Santa Cruz County) area. Data base maintained by Entomological Consulting Services, Ltd., Pleasant Hill, CA.


If you have any questions about my report, please give me a call.

Sincerely,

Richard A. Arnold, Ph.D.
President
Fig. 1
Existing habitat conditions at 4303 Scotts Valley Drive
(foreground of photograph).
ARBORIST REPORT
Tree Inventory & Preliminary Impact Assessment
4303 B Scotts Valley Drive, APN: 022-902-11
Scotts Valley, CA
December 10, 2019

Prepared for:
Mr. Rick Hochler
325 Canham Road
Scotts Valley, CA 95066

Prepared by:

ISA Certified Arborist  WE0681A
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- Tree Protection Fencing
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- Monitoring
- Root Pruning
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- City of Scotts Valley Protected Trees

Appendix G - Assumptions & Limiting Conditions
SUMMARY

- An existing home will be demolished, and four two-story single-family units will be constructed on a sloped lot.
- Fourteen "protected" trees within the project limits were inventoried.
- Eight trees are in good or fair condition.
- Six trees are in poor condition and are not suitable for retention in the project.
- Preliminary site plans were reviewed to evaluated potential impacts to trees.
- The preliminary design will allow the retention of two mature and one young coast live oak located in the rear of the property, if no grade changes are required.
- If modifications to some retaining wall locations are made, three additional trees, a mature coast redwood and two maturing coast live oak can be retained.
- At least two "protected" trees will require removal due to impacts from the proposed plan.
- If removals are permitted, replacement trees will be required.

Background

Plans will be submitted to the City of Scotts Valley Planning Department for demolition of an existing residence and construction of four two-story single-family units at 4303-B Scotts Valley Drive, Scotts Valley. Mr. Rick Hochler, has requested my services, to assess the condition of trees on the applicant’s property and the construction impacts that may affect them. Further, to provide a report with my findings and recommendations to meet City of Scotts Valley planning requirements.

Assignment

Provide an arborist report that includes an assessment of the trees within the project area. The assessment is to include the species, size (trunk diameter, height and canopy spread), condition (health and structure), and suitability for preservation ratings. Further, to review the preliminary development plans and assess the potential construction impacts.

To complete this assignment, the following services were performed:

- **Tree Resource Evaluation**: Tag with metal tags, inventory, evaluate and assign suitability for preservation ratings for subject trees.
- **Construction Impact Assessment**: Combine tree resource data with anticipated construction impacts, to provide recommendations for removal or retention of trees.
- **Mapping**: Tree locations were plotted onto: Proposed Site Plan, dated 10/17/19, and a Tree Location Map was created.
Limits of the Assignment

The information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection on 12/5/2019.

The inspection is limited to visual examination of accessible items without climbing, dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in questions may not arise in the future.

Purpose and use of the report

The report is intended to identify all the trees within the plan area that could be affected by a project. The report is to be used by the developer, their agents, and the City of Scotts Valley as a reference for existing tree conditions and to help satisfy the City of Scotts Valley planning requirements.

Resources

All information within this report is based on site plans as of the date of this report. Resources are as follows:

- Site Visit, Tree Inventory & Condition Evaluation at 4303-B Scotts Valley Drive, Scotts Valley on 12/5/2019.
- City of Scotts Valley Municipal Code –Section 17.44.080 Tree Protection Regulations (applicable sections).
OBSERVATIONS

The property is fronted by new construction on an adjacent parcel to the south. Acorn Court Apartments is to the west, and private residences are to the north and east. The parcel is almost flat at the southern boundary and slopes up to the north.

There are 14 “protected” trees within the project area, represented by five species, with coast live oak the dominant species (Image #1).

Image #1 – Tree T3, young Coast Live Oak in good condition.
Most of the oaks are in good or fair condition, but three in a grouping of five trees in the northwest corner are in poor condition (Image #2)

Image #2 – Tree T7 - Coast Live Oak.

Tree T7 has deadwood and decay in some limbs, with foliar dieback over 25-30% of the canopy. Most of the limb structure overhangs the adjacent property.
Tree T5 has minimal branching structure and live canopy. The trunk has sprouted from a previous tree failure and the new trunk is poorly attached. The trunk basal area has a significant cavity with deadwood decay and wood decay fungi (Image #3).

Image #3 – Tree T5 – Coast Live Oak. Note minimal canopy development.

Image #4 – Tree T5 – Note the large cavity filled with leaves, seam at attachment point (arrow) and wood decay fungi (circled).
A third tree in poor condition, tree T8, has minimal branching structure and foliar canopy. Two mature oaks in the grouping of five, T4 and T6 are in fair condition (Image #5).
Two oaks on the western edge of the property are in fair condition.

Image #6 – Tree T13, and T14, Coast live oak.
Image #7 – Trees T13 & T14, coast live oak. Lower trunk and branching structure.
There are two incense cedars, and both are in good condition (Image #10),

Image #10 – Trees T15, on right & T18, incense cedar.
There is one coast redwood tree in fair condition. There are large gaps on the canopy on one side due to clearance pruning from overhead lines (Image #11).

Image #11- Tree T1 – coast redwood, note gap in canopy where tree has been clearance pruned for utility lines.
A California laurel, tree T2, is in fair to poor condition. This tree has been topped at 15’ above grade for utility clearance. Limb regrowth from topping is poorly attached. The canopy density is very thin for species and leaf color is light green (should be dark green) or yellowing over most of the canopy (Image #12).

Two glossy privets, T16 & T17 are in fair condition but have poor structure. The trees are located very near the western property line. They have co-dominant trunks and unbalanced branching structures with a weight bias to the west. The poor structural development is due to larger adjacent trees. Most of both trees’ growth overhangs the adjacent property.
DISCUSSION

Species List

**TOTAL SUBJECT TREES: 18 Trees**

**Protected: 14**

<table>
<thead>
<tr>
<th>#</th>
<th>Species</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Coast Live Oak</td>
<td><em>Quercus agrifolia</em></td>
</tr>
<tr>
<td>2</td>
<td>Incense Cedar</td>
<td><em>Calocedrus decurrens</em></td>
</tr>
<tr>
<td>2</td>
<td>Glossy Privet</td>
<td><em>Ligustrum lucidum</em></td>
</tr>
<tr>
<td>1</td>
<td>Coast Redwood</td>
<td><em>Sequoia sempervirens</em></td>
</tr>
<tr>
<td>1</td>
<td>California laurel</td>
<td><em>Umbellularia californica</em></td>
</tr>
</tbody>
</table>

**Not Protected: 4**

<table>
<thead>
<tr>
<th>#</th>
<th>Species</th>
<th>Scientific Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Bailey Acacia</td>
<td><em>Acacia baileyana</em></td>
</tr>
<tr>
<td>1</td>
<td>English Laurel</td>
<td><em>Prunus laurocerasus</em></td>
</tr>
</tbody>
</table>

Tree Evaluation and Recording Methods

Site evaluations were made on 12/5/19. The inventory included all trees on the property within the project limits. The health and structural condition of each tree was assessed and recorded. Based on the trees health and structural condition, each trees suitability for preservation was rated and recorded.

The recorded data is included in the Tree Assessment Chart, Appendix A, of this report. Tree numbers were plotted on the attached Tree Location Map sheet, T1. To correlate the data in the Tree Assessment Chart to the tree’s location on the site, refer to the Tree Protection Plan sheet - Appendix C.
Condition Rating

A tree's condition is determined by assessing both its health and structure, then combining the two factors to reach a condition rating. Tree condition is rated as poor, fair or good. The quantity of trees assigned for each category (good, fair or poor), is indicated below:

Tree Condition Rating

- Good - 3
- Fair - 8
- Poor - 7

Suitability for Preservation

A tree's suitability for preservation is determined based on its health, structure, age, species characteristics and longevity using a scale of good, fair or poor. The quantity of trees assigned to each category (good, fair or poor), is listed below.

Suitability Rating

- Good - 3
- Fair – 6
- Poor - 9

Trees Recommended for Removal (Based on condition)

- Nine Trees

1. T1 - California laurel (Umbellularia californica)
2. T5, T7, T8 - Coast Live Oak (Quercus agrifolia)
3. T16, T17 - Glossy Privet (Ligustrum lucidum)
4. T9, T10, T11 - Bailey Acacia (Acacia baileyana) Not protected tree.
Tree Protection Zone

The tree protection zone (TPZ), is a defined area within which certain activities are prohibited or restricted to minimize potential injury to designated trees during construction.

The size of the optimal TPZ can be determined by a formula based on 1) trunk diameter 2) species tolerance to construction impacts, and 3) tree age (Matheny, N. and Clark, J 1998). In some instances, tree drip line is used as the TPZ. Development constraints can also influence the final size of the tree protection zone.

Fencing is installed to delineate the (TPZ), and to protect tree roots, trunk, and scaffold branches from construction equipment. The fenced protection area may be smaller than the optimal or designated TPZ area in some circumstances. Tree protection may also involve the armoring of the tree trunk and/or scaffold limbs with barriers to prevent mechanical damage from construction equipment. See Tree Protection Guidelines & Restrictions – Appendix E.

Once the TPZ is delineated and fenced (prior to any site work, equipment and materials move in), construction activities are only to be permitted within the TPZ if allowed for and specified by the project arborist.

Where tree protection fencing cannot be used, or as an additional protection from heavy equipment, tree wrap may be used. Wooden slats at least one inch thick are to be bound securely, edge to edge, around the trunk. A single layer or more of orange plastic construction fencing is to be wrapped and secured around the outside of the wooden slats. Major scaffold limbs may require protection as determined by the City arborist or Project arborist. Straw wattle may also be used as a trunk wrap and secured with orange plastic fencing.

Data has been entered in the Tree Assessment Chart – Appendix A, which indicates the optimal Tree Protection Zone for each tree.

Critical Root Zone

Critical Root Zone (CRZ) is the area of soil around the trunk of a tree where roots are located that provide critical stability, uptake of water and nutrients required for a tree's survival. The CRZ is the minimum distance from the trunk that trenching that requires root cutting should occur and can be calculated as three to the five times the trunk Diameter at Breast Height (DBH). For example, if a tree is one foot in trunk diameter than the CRZ is three to five feet from the trunk location. We will often average this as four times the trunk diameter or 1ft. DBH = 4ft. CRZ (Smiley, E.T., Fraedrich, B. and Hendrickson, N. 2007).
Root Disturbance Distance

No one can estimate and predict with absolute certainty what distance from a tree, a soil disturbance such as excavation for construction should be, to ensure it will not significantly affect tree stability or health. Or to what degree, (low, moderate or high), a tree might be impacted. There are simply too many variables involved that we cannot see or anticipate. However, three times the D.B.H. (diameter at breast height), is a widely accepted minimum used in the industry for root disturbance, on one side of the trunk, and is supported by several research studies including (Smiley, Fraedich & Hendrickson 2002, Bartlett Tree Research Laboratories). This distance is often used during the design and planning phases of a project in order to estimate root loss due to construction activities. This distance is a guideline only and should be increased for trees with significant leans, decay or other structural problems.

The ISA, International Society of Arboriculture- Root Management (2017) publication recommends, “cutting roots at a distance greater than six times the trunk diameter (DBH) minimizes the likelihood of affecting both health and stability. This recommendation is given further direction by the companion publication, A.N.S.I. (American National Standard) A300 (Part 8)- 2013 Root Management, when roots are cut in a non-selective manner, i.e. in a straight line on one side of a tree. It says, if the cutting is “within six times the trunk diameter (DBH), mitigation shall be recommended”. Further, A.N.S.I. recommends the “minimum distance from the trunk for root cutting should be adjusted according to trunk diameter, species tolerance to root loss, tree age, health and site condition”.

In general, root cutting that occurs at a distance less than six times the diameter of a tree should be undertaken by hand digging and hand (or Sawzall), root pruning. These methods help mitigate root loss impacts.

Construction Impacts to Subject Trees

Construction Phases Affecting Subject Trees –

1. Grading to achieve level lots.
2. Excavation for retaining walls
3. Excavation for home foundations.
4. Building footprints.
5. Second story construction (canopy clearance).
Discussion of Findings

More than half of the fourteen “protected” trees are not suitable for incorporation into the project, either due to poor condition (6 trees), or high construction impacts (5 trees).

The mature coast redwood, tree T1 is located within 1 ½’ and 3 ½’ from the retaining wall, and the amount of root loss it would suffer would significantly impact both its health and stability (ability to remain upright). To retain this tree, the wall would need to be a minimum of 10 feet from the tree. Since the species has a good tolerance to some root loss, the distance could be reduced to 7-8 feet if pre-construction root exploration did not find large amounts of significant roots (< 2” in diameter). If retained it would require supplemental irrigation during and after the construction period as coast redwood has a high water requirement.

The multi-trunked California laurel, tree T2, has been poorly maintained (topped), and the regrowth is poorly attached. There is deadwood, decay and wood decay fungi in some trunks and branches and the canopy density is very thin. This tree is recommended for removal.

Tree T3, a young stand-alone oak in good condition, will be only low to moderately impacted, provided demolition of the existing retaining wall and existing garage conversion structure are removed according to tree protection specifications. Also, the new wall must be installed according to methods specified to preserve the tree.

A grouping of 5 mature coast live oak in the upper left (northwest) corner of the property, trees T4-T8, includes three trees in poor condition, and they are recommended for removal. Their condition is described above and in the Tree Assessment Chart, Appendix A. Two oaks are in fair condition and will receive low to moderate impacts provided there are no grade changes. Demolition of the existing retaining wall, and installation of new wall, must done according to tree protection specifications in a later report. One tree T6, will require targeted tree clearance pruning from the unit in Lot 4.

Two maturing coast live oak, trees T13 and T14 will be highly impacted by grade changes and installation of the new retaining wall. Since the retainer wraps around 3 sides of tree T13, root loss would occur on three sides of the tree. Root cutting would be required on two sides of tree T14 as well. For each side root cutting occurs, the percentage of root loss increases. To retain these trees, the retainers will need to be installed a minimum of 10 feet from trees T13 and T14. If the two trees are retained, they will require minor clearance pruning from the unit in Lot 1.

Two mature incense cedar, trees T15 and T18 will receive high construction impacts. Tree T18 is within the footprint of the unit on Lot 1. Tree T15 will suffer significant root loss on all sides of the tree due to grading and soil loss to achieve a level lot. The amount of root loss involved will significantly impact the health and stability (anchoring root loss), of the tree. Based on the submitted design, there is no practical way to preserve this tree.

Two glossy privet trees, T16 and T17 have poorly developed branching structures, with unbalanced canopy growth due to competition from larger adjacent oaks and cedar. Their poor structure cannot be corrected thru remedial pruning and their removal is recommended.
Tree Replacement

The City of Scotts Valley has a two to one replacement ratio for each permitted tree removed and replacement trees will be required.

CONCLUSION

- An existing home will be demolished, and four two-story single-family units will be constructed on a sloped lot.
- Fourteen “protected” trees within the project limits were inventoried.
- Eight trees are in good or fair condition including trees T1 coast redwood, T3, T4, T6, T13 & T14 coast live oak, and T15 & T18 incense cedar.
- Six trees are in poor condition and are not suitable for retention in the project including trees T1 California laurel, T5, T7 & T8 coast live oak and T16 & T17 glossy privet.
- Preliminary site plans were reviewed to evaluated potential impacts to trees.
- The preliminary design will allow the retention of two mature (T4 & T6), and one young coast live oak (T3), located in the rear of the property, if no grade changes are required.
- If modifications to some retaining wall locations are made, three additional trees, a mature coast redwood, T1, and two maturing coast live oak, T13 & T14 can be retained.
- At least two trees, incense cedars, T15 & T18, will require removal due to impacts from the proposed plan.
- If removals are permitted, replacement trees will be required.
RECOMMENDATIONS

1. Obtain all necessary permits prior to removing or significantly altering any trees on site.
2. Remove trees recommended for removal.
3. Modify locations of retaining walls a minimum of 7-10 feet, adjacent to treeT1, coast redwood and a minimum of 10 feet from T13 & 14 coast live oak, if they are to be retrained.
4. Additional tree protection specifications will be required once final plan sets are completed.

Respectfully submitted,

Kurt Fouts
ISA Certified Arborist
WE0681A
### 4303 Scotts Valley Drive, Scotts Valley

**Tree Assessment Chart - Appendix A**

### Suitability for Preservation Ratings:

- **Good:** Trees in good health and structural condition with potential for longevity on the site
- **Fair:** Trees in fair health and/or with structural defects that may be reduced with treatment procedures
- **Poor:** Trees in poor health and/or with poor structure that cannot be effectively abated with treatment

### Retention or Removal Code:

- **RT:** Retain Tree
- **RI:** Remove Due to Construction Impacts
- **I.M.:** Impacts Can Be Mitigated With Pre-Construction Treatments
- **R.C.:** Remove Due to Condition

### Protected Tree City of Scotts Valley

Any tree 13 inches or greater in diameter measured at 4.5 feet above grade. Any oak 8 inches or greater. Any multi-trunk oak with one trunk 4 inches or greater.

<table>
<thead>
<tr>
<th>Tree #</th>
<th>Species</th>
<th>Trunk Diameter @ 54 inches a.g.</th>
<th>Protected Tree</th>
<th>Crown Height &amp; Spread (diameter)</th>
<th>Health Rating</th>
<th>Structural Rating</th>
<th>Suitability for Preservation (Based Upon Condition)</th>
<th>Tree Protection Zone (in radius feet)</th>
<th>Construction Impacts (Rating &amp; Description)</th>
<th>Retention or Removal Code</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>coast redwood (<em>Sequoia sempervirens</em>)</td>
<td>48”</td>
<td>Yes</td>
<td>80’X15’</td>
<td>Fair</td>
<td>Fair-Poor</td>
<td>Fair</td>
<td>20’</td>
<td>High (Root loss: excavation)</td>
<td>RI</td>
<td>Requires a minimum of 10’ from retaining structure to be preserved. Clearance pruned on north side for utility clearance, creating large gap in branching structure. Branching structure is thin (distance between branches), for species.</td>
</tr>
<tr>
<td>T2</td>
<td>California laurel (<em>Umbellularia californica</em>)</td>
<td>6-10” multi</td>
<td>Yes</td>
<td>18’X15’</td>
<td>Fair-Poor</td>
<td>Fair-Poor</td>
<td>Poor</td>
<td>22’</td>
<td>High (Root loss: excavation)</td>
<td>RC, RI</td>
<td>Requires a minimum of 8’ from retaining structure to be preserved. Multiple trunks separate at grade. Topped at 15’ above grade for utility clearance. Limb regrowth from topping is poorly attached. Very thin canopy density, with yellowing foliage.. Dead wood, decay and wood decay fungi in some trunks and branches.</td>
</tr>
<tr>
<td>Tree #</td>
<td>Species</td>
<td>Trunk Diameter @ 54 inches a.g.</td>
<td>Protected Tree</td>
<td>Crown Height &amp; Spread (diameter)</td>
<td>Health Rating</td>
<td>Structural Rating</td>
<td>Suitability for Preservation (Based Upon Condition)</td>
<td>Tree Protection Zone (in radius feet)</td>
<td>Construction Impacts (Rating &amp; Description)</td>
<td>Retention or Removal Code</td>
<td>Comments</td>
</tr>
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<td>--------</td>
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<td>---------------------------------------------------</td>
<td>--------------------------------------</td>
<td>-----------------------------------------------</td>
<td>------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>T3</td>
<td>coast live oak (Quercus agrifolia)</td>
<td>12&quot;,11&quot;</td>
<td>Yes</td>
<td>25'X20'</td>
<td>Good</td>
<td>Fair</td>
<td>Good</td>
<td>14'</td>
<td>Low to Moderate (Root loss: excavation)</td>
<td>RT, IM</td>
<td>New retainer location is compatible with tree preservation. Co-dominant trunks at grade. May require minimal canopy clearance pruning from garage of unit on Lot 3.</td>
</tr>
<tr>
<td>T4</td>
<td>coast live oak</td>
<td>14&quot;,12&quot;</td>
<td>Yes</td>
<td>40'X25'</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
<td>15'</td>
<td>Low to Moderate (Root loss: excavation)</td>
<td>RT, IM</td>
<td>New retainer location is compatible with tree preservation. Co-dominant trunks at grade. One trunk with horizontal growth pattern and significant end weight.</td>
</tr>
<tr>
<td>T5</td>
<td>coast live oak</td>
<td>7&quot;</td>
<td>Yes</td>
<td>15'X10'</td>
<td>Poor</td>
<td>Fair-Poor</td>
<td>Poor</td>
<td>8'</td>
<td>Moderate (Root loss: excavation)</td>
<td>RC</td>
<td>Significant basal cavity and decay, with deadwood and wood decay fungi. Re-sprouted trunk is poorly attached. Minimal branching structure and live canopy.</td>
</tr>
<tr>
<td>T6</td>
<td>coast live oak</td>
<td>18&quot;</td>
<td>Yes</td>
<td>40'X25'</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
<td>14'</td>
<td>Low to Moderate (Root loss: excavation)</td>
<td>RT, IM</td>
<td>New retainer location is compatible with tree preservation. 30 degree trunk lean to south. Thinning canopy with some dead wood and decay in upper canopy on limbs up to 4&quot; in diameter. Will require some canopy clearance pruning from unit on Lot 4.</td>
</tr>
<tr>
<td>T7</td>
<td>coast live oak</td>
<td>15&quot;</td>
<td>Yes</td>
<td>25'X25'</td>
<td>Fair-Poor</td>
<td>Poor</td>
<td>Poor</td>
<td>12'</td>
<td>Low to Moderate (Root loss: excavation)</td>
<td>RC</td>
<td>30 degree trunk lean to south. Half of canopy and limb structure overhangs adjacent property. Minimal foliar canopy relative to diameters of primary scaffolds. Foliar dieback over 25% of canopy.</td>
</tr>
</tbody>
</table>
# Tree Assessment Chart - Appendix A

<table>
<thead>
<tr>
<th>Tree #</th>
<th>Species</th>
<th>Trunk Diameter @ 54 inches a.g.</th>
<th>Protected Tree</th>
<th>Crown Height &amp; Spread (diameter)</th>
<th>Health Rating</th>
<th>Structural Rating</th>
<th>Suitability for Preservation (Based Upon Condition)</th>
<th>Tree Protection Zone (in radius feet)</th>
<th>Construction Impacts (Rating &amp; Description)</th>
<th>Retention or Removal Code</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>T8</td>
<td>coast live oak</td>
<td>7&quot;</td>
<td>Yes</td>
<td>15'X10'</td>
<td>Poor</td>
<td>Fair-Poor</td>
<td>Poor</td>
<td>8'</td>
<td>Low to Moderate (Root loss: excavation)</td>
<td>RC</td>
<td>Minimal branching structure and foliar canopy.</td>
</tr>
<tr>
<td>T9</td>
<td>Bailey acacia (Acacia baileyana)</td>
<td>9&quot;</td>
<td>No</td>
<td>40'X10'</td>
<td>Fair</td>
<td>Poor</td>
<td>Poor</td>
<td>N/A</td>
<td>Low (Root loss: excavation)</td>
<td>RC</td>
<td>&gt;30 degree trunk lean to southwest. Unbalanced canopy with significant weight bias to south.</td>
</tr>
<tr>
<td>T10</td>
<td>Bailey acacia</td>
<td>8&quot;</td>
<td>No</td>
<td>35'X10'</td>
<td>Fair</td>
<td>Poor</td>
<td>Poor</td>
<td>N/A</td>
<td>Low to Moderate (Root loss: excavation)</td>
<td>RC</td>
<td>&gt;30 degree trunk lean to southwest. Unbalanced canopy with significant weight bias to south.</td>
</tr>
<tr>
<td>T11</td>
<td>Bailey acacia</td>
<td>6&quot;</td>
<td>No</td>
<td>20'X10'</td>
<td>Fair</td>
<td>Poor</td>
<td>Poor</td>
<td>N/A</td>
<td>Low to Moderate (Root loss: excavation)</td>
<td>RC</td>
<td>&gt;30 degree trunk lean to southwest. Unbalanced canopy with significant weight bias to south.</td>
</tr>
<tr>
<td>T12</td>
<td>English laurel (Prunus laurocerasus)</td>
<td>6&quot;</td>
<td>No</td>
<td>15'X20'</td>
<td>Good</td>
<td>Fair</td>
<td>Fair</td>
<td>N/A</td>
<td>High (Within home footprint)</td>
<td>RI</td>
<td>15 degree trunk lean to south.</td>
</tr>
</tbody>
</table>
### Tree Assessment Chart - Appendix A

<table>
<thead>
<tr>
<th>Tree #</th>
<th>Species</th>
<th>Trunk Diameter @ 54 inches a.g.</th>
<th>Protected Tree</th>
<th>Crown Height &amp; Spread (diameter)</th>
<th>Health Rating</th>
<th>Structural Rating</th>
<th>Suitability for Preservation (Based Upon Condition)</th>
<th>Tree Protection Zone (in radius feet)</th>
<th>Construction Impacts (Rating &amp; Description)</th>
<th>Retention or Removal Code</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>T13</td>
<td>coast live oak</td>
<td>24&quot;</td>
<td>Yes</td>
<td>60'X35'</td>
<td>Fair</td>
<td>Fair-Poor</td>
<td>Fair</td>
<td>18'</td>
<td>High (Root loss: excavation)</td>
<td>RI</td>
<td>Retaining structures impact roots on 3 sides. Requires a minimum of 10' from retainers to be preserved. Co-dominant trunks with included bark at 5’ above grade. Limited scaffold development. Competition from adjacent oak and incense cedar has reduced canopy development. No lower branch structure. Will require some canopy clearance pruning from 2nd story of unit on Lot 1.</td>
</tr>
<tr>
<td>T14</td>
<td>coast live oak</td>
<td>23&quot;</td>
<td>Yes</td>
<td>60'X35'</td>
<td>Fair</td>
<td>Fair</td>
<td>Fair</td>
<td>18'</td>
<td>High (Root loss: excavation)</td>
<td>RI</td>
<td>Retaining structures impact roots on 2 sides. Requires a minimum of 8-10' from retainers to be preserved. Co-dominant trunks at 8’ above grade. 5 degree lean to west. Most of branch structure and foliar canopy overhangs adjacent property. Existing lower branches should be maintained. Will require some canopy clearance pruning from 2nd story of unit on Lot 1.</td>
</tr>
<tr>
<td>T15</td>
<td>incense cedar (Calocedrus decurrens)</td>
<td>33&quot;</td>
<td>Yes</td>
<td>70'X20'</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>23'</td>
<td>High (Root loss: grade change)</td>
<td>RI</td>
<td>Co-dominant trunks at 1’ above grade. Unbalanced canopy with weight bias to south. Poor structural development due to larger adjacent trees. Most of canopy overhangs adjacent property.</td>
</tr>
<tr>
<td>T16</td>
<td>glossy privet (Ligustrum lucidum)</td>
<td>8&quot;,6&quot;,4&quot;</td>
<td>Yes</td>
<td>40'X15'</td>
<td>Fair</td>
<td>Poor</td>
<td>Poor</td>
<td>9'</td>
<td>High (Root loss: excavation)</td>
<td>RC,RI</td>
<td></td>
</tr>
</tbody>
</table>

**Kurt Fouts Arborist Consultants**

826 Monterey Avenue, Capitola, CA 95010 831-359-3687 kurtfouts1@outlook.com
### Tree Assessment Chart - Appendix A

<table>
<thead>
<tr>
<th>Tree #</th>
<th>Species</th>
<th>Trunk Diameter @ 48 inches a.g.</th>
<th>Protected Tree</th>
<th>Crown Height &amp; Spread</th>
<th>Health Rating</th>
<th>Structural Rating</th>
<th>Suitability for Preservation (Based Upon Condition)</th>
<th>Tree Protection Zone (in feet)</th>
<th>Construction Impacts (Rating &amp; Description)</th>
<th>Retention or Removal Code</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>T17</td>
<td>glossy privet</td>
<td>9&quot;, 5&quot;, 5&quot;</td>
<td>Yes</td>
<td>40'X15'</td>
<td>Fair</td>
<td>Poor</td>
<td>Poor</td>
<td>9'</td>
<td>High (Root loss: excavation)</td>
<td>RC, RI</td>
<td>Co-dominant trunks at 1’ above grade. Unbalanced canopy with weight bias to south. Poor structural development due to larger adjacent trees. Most of canopy overhangs adjacent property.</td>
</tr>
<tr>
<td>T18</td>
<td>incense cedar</td>
<td>28&quot;</td>
<td>Yes</td>
<td>60'X20'</td>
<td>Fair</td>
<td>Good</td>
<td>Good</td>
<td>21'</td>
<td>High (Within home footprint)</td>
<td>RI</td>
<td>Trunk leans 5 degrees to south. Dieback of terminal (top), with branches up to 1&quot; in diameter. Lack of foliar canopy on west side due to competition with adjacent trees. Ivy growing half way up trunk. Thinning canopy in pockets.</td>
</tr>
</tbody>
</table>

**Kurt Fouts Arborist Consultant**

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APPENDIX B – CRITERIA FOR TREE ASSESSMENT CHART

Following is an explanation of the data used in the tree evaluations. The data is incorporated in the Tree Assessment Chart, Appendix A.

Trunk Diameter and Number of Trunks:
   Trunk diameter as measured at 4.5 feet above grade. The number of trunks refers to a single or multiple trunked tree. Multiple trunks are measured at 4.5 feet above grade.

Health Ratings:

   **Good:** A healthy, vigorous tree, reasonably free of signs and symptoms of disease

   **Fair:** Moderate vigor, moderate twig and small branch dieback, crown may be thinning and leaf color may be poor

   **Poor:** Tree in severe decline, dieback of scaffold branches and/or trunk, most of foliage from epicormics

Structure Ratings:

   **Good:** No significant structural defects. Growth habit and form typical of the species

   **Fair:** Moderate structural defects that might be mitigated with regular care

   **Poor:** Extensive structural defects that cannot be abated.

Suitability for Preservation Ratings:

Rating factors:

   **Tree Health:** Healthy vigorous trees are more tolerant of construction impacts such as root loss, grading and soil compaction, then are less vigorous specimens.

   **Structural integrity:** Preserved trees should be structurally sound and absent of defects or have defects that can be effectively reduced, especially near structures or high use areas.

   **Tree Age:** Over mature trees have a reduced ability to tolerate construction impacts, generate new tissue and adjust to an altered environment. Young to maturing specimens are better able to respond to change.
**Species response:** There is a wide variation in the tolerance of individual tree species to construction impacts.

**Rating Scale:**

**Good:** Trees in good health and structural condition with potential for longevity on the site

**Fair:** Trees in fair health and/or with structural defects that may be reduced with treatment procedures.

**Poor:** Trees in poor health and/or with poor structure that cannot be effectively abated with treatment. Trees can be expected to decline or fail regardless of construction impacts or management. The species or individual may possess characteristics that are incompatible or undesirable in landscape settings or unsuited for the intended use of the site.

**Construction Impacts:**

**Rating Scale:**

**High:** Development elements proposed that are located within the Tree Protection Zone that would severely impact the health and/or stability of the tree. The tree impacts cannot be mitigated without design changes. The tree may be located within the building footprint.

**Moderate:** Development elements proposed that are located within the Tree Protection Zone that will impact the health and/or stability of the tree and can be mitigated with tree protection treatments.

**Low:** Development elements proposed that are located within or near the Tree Protection Zone that will have a minor impact on the health of the tree and can be mitigated with tree protection treatments.

**None:** Development elements will have no impact on the health and stability of the Tree.

**Tree Protection Zone (TPZ):**

Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, particularly during construction or development.


Glossary of Terms

**Basal rot**: decay of the lower trunk, trunk flare, or buttress roots.

**Canker**: Localized diseased area on stems, roots and branches. Often sunken and discolored.

**Critical Root Zone (CRZ)**: Area of soil around a tree where a minimum number of roots considered critical to the structural stability or health of the tree are located. CRZ determination is sometimes based on the drip line or a multiple of the DBH, but because root growth can be asymmetric due to site conditions, on-site investigation may be required.

**Codominant branches/stems**: Forked branches (or trunks), nearly the same size in diameter, arising from a common junction and lacking a normal branch union, may have included bark.

**Crown**: Upper part of a tree, measured from the lowest branch, including all branches and foliage.

**Defect**: An imperfection, weakness, or lack of something necessary. In trees defects are injuries, growth patterns, decay, or other conditions that reduce the tree’s structural strength.

**Diameter at breast height (DBH)**: Measurement of trunk diameter at 4.5 feet above grade.

**Frass**: Fecal material and/or wood shavings produced by insects.

**Included Bark Attachments (crotches)**: Branch/limb or limb/trunk, or codominant trunks originating at acute angles from each other. Bark remains between such crotches, preventing the development of axillary wood. The inherent weakness of such attachments increases with time, through the pressure of opposing growth and increasing weight of wood and foliage, often resulting in failure.

**Live Crown Ratio (LCR)**: Ratio of the height of the crown containing live foliage to overall height of the tree.

**Scaffold branches**: Permanent or structural branches that form the scaffold architecture or structure of a tree.

**Suppressed**: Trees that have been overtopped and occupy an understory position within a group or grove of trees. Suppressed trees often have poor structure.

**Tree Protection Zones (TPZ)**: Defined area within which certain activities are prohibited of restricted to prevent or minimize potential injury to designated trees, especially during construction or development.

**Trunk flare**: Transition zone from trunk to roots where the trunk expands into the buttress or structural roots.

This Glossary of Terms was adapted from the *Glossary of Arboricultural Terms* (ISA, 2015)
Appendix F - TREE PROTECTION GUIDELINES AND RESTRICTIONS

Protecting Trees During Construction:

1) Before the start of site work, equipment or materials move in, clearing, excavation, construction, or other work on the site, every tree to be retained shall be securely fenced-off as delineated in approved plans. Such fences shall remain continuously in place for the duration of the work undertaken in connection with the development.

2) If the proposed development, including any site work, will encroach upon the tree protection zone, special measures shall be utilized, as approved by the project arborist, to allow the roots to obtain necessary oxygen, water, and nutrients.

3) Underground trenching shall avoid the major support and absorbing tree roots of protected trees. If avoidance is impractical, hand excavation undertaken under the supervision of the project arborist may be required. Trenches shall be consolidated to service as many units as possible. Boring/tunneling under roots should be considered as an alternative to trenching.

4) Concrete or asphalt paving shall not be placed over the root zones of protected trees, unless otherwise permitted by the project arborist.

5) Artificial irrigation shall not occur within the root zone of native oaks, unless deemed appropriate on a temporary basis by the project arborist to improve tree vigor or mitigate root loss.

6) Compaction of the soil within the tree protection zone shall be avoided.

7) Any excavation, cutting, or filling of the existing ground surface within the tree protection zone shall be minimized and subject to such conditions as the project arborist may impose. Retaining walls shall likewise be designed, sited, and constructed to minimize their impact on protected trees.

8) Burning or use of equipment with an open flame near or within the tree protection zone shall be avoided. All brush, earth, and other debris shall be removed in a manner that prevents injury to the tree.

9) Oil, gas, chemicals, paints, cement, stucco or other substances that may be harmful to trees shall not be stored or dumped within the tree protection zone of any protected tree, or at any other location on the site from which such substances might enter the tree protection zone of a protected tree.

10) Construction materials shall not be stored within the tree protection zone of a protected tree.
Project Arborist Duties and Inspection Schedule:

The project arborist is the person(s) responsible for carrying out technical tree inspections, assessment of tree health, structure and risk, arborist report preparation, consultation with designers and municipal planners, specifying tree protection measures, monitoring, progress reports and final inspection. A qualified project arborist (or firm) should be designated and assigned to facilitate and insure tree preservation practices. He/she/they should perform the following inspections:

**Inspection of site: Prior to equipment and materials move in, site work, demolition, landscape construction and tree removal:** The project arborist will meet with the general contractor, architect / engineer, and owner or their representative to review tree preservation measures, designate tree removals, delineate the location of tree protection fencing, specify equipment access routes and materials storage areas, review the existing condition of trees and provide any necessary recommendations.

**Inspection of site: During excavation or any activities that could affect trees:** Inspect site during any activity within the Tree Protection Zones of preserved trees and any recommendations implemented. Assess any changes in the health of trees since last inspection.

**Final Inspection of Site:** Inspection of site following completion of construction. Inspect for tree health and make any necessary recommendations.

Kurt Fouts shall be the Project Arborist for this project. All scheduled inspections shall include a brief Tree Monitoring report, documenting activities and provided to the City Arborist.

**Tree Protection Fencing**

Tree Protection fencing shall be installed prior to the arrival of construction equipment or materials. Fence shall be comprised of six -foot chain link fence mounted on eight - foot tall, 1 and 7/8-inch diameter galvanized posts, driven 24 inches into the ground and spaced on a minimum of 10-foot centers. Once established, the fence must remain undisturbed and be maintained throughout the construction process until final inspection.

A final inspection by the City Arborist at the end of the project will be required prior to removing any tree protection fencing.

**Tree Protection Signs**

All sections of fencing should be clearly marked with signs stating that all areas within the fencing are Tree Protection Zones and that disturbance is prohibited.
Monitoring

Any trenching, construction or demolition that is expected to damage or encounter tree roots should be monitored by the project arborist or a qualified ISA Certified Arborist and should be documented.

The site should be evaluated by the project arborist or a qualified ISA Certified Arborist after construction is complete, and any necessary remedial work that needs to be performed should be noted.

Root Pruning

Root pruning shall be supervised by the project arborist. When roots over two inches in diameter are encountered they should be pruned by hand with loppers, handsaw, reciprocating saw, or chain saw rather than left crushed or torn. Roots should be cut beyond sinker roots or outside root branch junctions and be supervised by the project arborist. When completed, exposed roots should be kept moist with burlap or backfilled within one hour.

Tree Work Standards and Qualifications

All tree work, removal, pruning, planting, shall be performed using industry standards of workmanship as established in the Best Management Practices of the International Society of Arboriculture (ISA) and the American National Standards Institute series, Safety Requirements in Arboriculture Operations ANSI Z133-2017,

Contractor licensing and insurance coverage shall be verified.

During tree removal and clearance, sections of the Tree Protection Fencing may need to be temporarily dismantled to complete removal and pruning specifications. After each section is completed, the fencing is to be re-installed.

Trees to be removed shall be cut into smaller manageable pieces consistent with safe arboricultural practices, and carefully removed so as not to damage any surrounding trees or structures. The trees shall be cut down as close to grade as possible. Tree removal is to be performed by a qualified contractor with valid City Business/ State Licenses and General Liability and Workman’s Compensation insurance.
Development Site Tree Health Care Measures

RECOMMENDED TO PROVIDE OPTIMUM GROWING CONDITIONS, PHYSIOLOGICAL INVIGORATION AND STAMINA, FOR PROTECTION AND RECOVERY FROM CONSTRUCTION IMPACT.

Establish and maintain TPZ fencing, trunk and scaffold limb barriers for protection from mechanical damage, and other tree protection requirements as specified in the arborist report.

Project arborist to specify site-specific soil surface coverings (wood chip mulch or other) for prevention of soil compaction and loss of root aeration capacity.

Soil, water and drainage management is to follow the ISA BMP for "Managing Trees During Construction" and the ANSI Standard A300(Part 2)- 2011 Soil Management (a. Modification, b. 'Fertilization, c. Drainage.)

Fertilizer / soil amendment product(s) amounts and method of application to be specified by certified arborist.
City of Scotts Valley - Protected Tree List*

A. Any size tree located within five (5) feet of a public right-of-way or street.

B. Any single-trunk oak tree greater than or equal to eight (8) inch diameter (25 inch circumference).**

C. Any multi-trunk oak tree with any trunk greater than or equal to four (4) inches diameter (12 inch circumference).**

D. Any tree greater than or equal to eight (8) inch diameter (25 inch circumference)** if located within 20 feet of a moderate slope (greater than 20% slope).

E. Any single-trunk tree greater than or equal to 13-inch diameter (40 inch circumference).**

F. Any multi-trunk tree with any trunk greater than or equal to eight (8) inch diameter (25 inch circumference).**

G. Any tree, regardless of size, required as part of a permit approved by the Planning Department, Planning Commission or City Council, or required as a replacement tree for a removed tree.

H. Any Heritage Tree, as specified in Municipal Code Section 17.44.080 and Exhibit A. A list and map of Heritage Trees are available at the Planning Department. Fees for removal of Heritage Trees are higher than other protected tree removals and applications must be approved at a public hearing before the Planning Commission.

* Note: No tree removal permit is required to remove:
C Monterey Pine trees that are infected with pitch canker; proof of infection is required;
C Blue Gum Eucalyptus or Acacia trees;
C Bay Laurel trees if they are growing under the drip-line of an established oak tree; or,
C Fruit trees.

** Tree measurement shall be taken 4½ feet (54 inches) above the ground.
ASSUMPTIONS AND LIMITING CONDITIONS

1. Any legal description provided by the appraiser/consultant is assumed to be correct. No responsibility is assumed for matters legal in character nor is any opinion rendered as the quality of any title.

2. The appraiser/consultant can neither guarantee nor be responsible for accuracy of information provided by others.

3. The appraiser/consultant shall not be required to give testimony or to attend court by reason of this appraisal unless subsequent written arrangements are made, including payment of an additional fee for services.

4. Loss or removal of any part of this report invalidates the entire appraisal/evaluation.

5. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person(s) to whom it is addressed without written consent of this appraiser/consultant.

6. This report and the values expressed herein represent the opinion of the appraiser/consultant, and the appraiser/consultant’s fee is in no way contingent upon the reporting of a specified value nor upon any finding to be reported.

7. Sketches. Diagrams. Graphs. Photos. Etc., in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering reports or surveys.

8. This report has been made in conformity with acceptable appraisal/evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.

9. When applying any pesticide, fungicide, or herbicide, always follow label instructions.

10. No tree described in this report was climbed, unless otherwise stated. We cannot take responsibility for any defects which could only have been discovered by climbing. A full root collar inspection, consisting of excavating around the tree to uncover the root collar and major buttress roots, was not performed, unless otherwise stated. We cannot take responsibility for any root defects which could only have been discovered by such an inspection.

CONSULTING 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 risk of living near trees. Clients may choose to accept or disregard the recommendations of the arborist, or to 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 medicine, cannot be guaranteed.

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

Kurt Fouts
Arborist Consultant
826 Monterey Avenue
Capitola, CA 95010
831-359-3607
kurtfouts1@outlook.com
UPDATED GEOTECHNICAL INVESTIGATION

Proposed Four Unit Planned Development
4303B Scotts Valley Drive
Scotts Valley, California
APN: 022-902-11

For:
Rick Hochler
325 Canham Road
Scotts Valley, California 95066

Project No. 06058B
October 14, 2019
Project No. 06058B
October 14, 2019

Rick Hochler
325 Canham Road
Scotts Valley, California 95066

SUBJECT: UPDATED GEOTECHNICAL INVESTIGATION
Proposed Four Unit Planned Development
4303B Scotts Valley Drive, Scotts Valley, California
APN: 022-902-11

Dear Mr. Hochler:

In accordance with your authorization, we have updated our recommendations for the subject project to be in accordance with the current building code requirements and project scope.

It is a pleasure being associated with you on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact our office.

Sincerely,

ROCK SOLID ENGINEERING, INC.

Signed: October 17, 2019

Yvette M. Wilson, P.E.
Principal Engineer
R.C.E. 60245

Distribution: (6) Addressee and via email
(1) John Craycroft via email
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Appendix A: Field Exploration and Laboratory Testing Program
1. **INTRODUCTION**

1.1 **Purpose**

The purpose of this updated report is to revise the design criteria from the original Geotechnical Investigation report (Reference 9) to be in accordance with the current code requirements. We have also updated the recommendations for the currently proposed project which consists of a four unit planned development.

1.2 **Proposed Development**

   a. Based on our review of the design development drawings (Reference 6), it is our understanding that the current project consists of dividing the parcel into 4 lots, the construction of a new residence with attached garage on each lot and the construction of the access road.

   b. At Lots 1 & 2, the proposed homes are two stories. At Lots 3 & 4, the proposed homes are three stories.

   c. Anticipated construction consists of standard wood frame construction with raised wood or slab-on-grade floors. Exact wall, column, and foundation loads are unavailable, but are expected to be typical of such construction.

   d. Final grading and foundation plans were unavailable at the time of this report. It is our understanding that the information obtained during our investigation will be used in the development of a finalized plan set.

1.3 **Scope of Services**

The scope of services provided during the course of our investigation included:

   a. Review of the referenced geotechnical, geologic, and seismological reports and maps pertinent to the development of the site (available in our files).

   b. Field exploration consisting of 3 borings, drilled to depths of approximately 21.5 feet below existing grade in the area of the proposed development.

   c. Logging and sampling of the borings by our Field Engineer, including the collection of soil samples for laboratory testing.

   d. Laboratory testing of soil samples considered representative of subsurface conditions.

   e. Geotechnical analyses of field and laboratory data.

   f. Preparation of a report (6 copies) presenting our findings, conclusions and recommendations.
1.4 **Authorization**

This updated report, as outlined in our Proposal dated September 13, 2019, was performed in accordance with your written authorization on September 19, 2019.

1.5 **Exclusions**

Our services on this project are limited to the proposed development. Our services specifically exclude all existing structures, foundations and associated improvements to the site.

2. **FIELD EXPLORATION AND LABORATORY TESTING PROGRAM**

Details of the previous field exploration and laboratory testing completed in 2007 are presented in Appendix A.

3. **SITE DESCRIPTION**

3.1 **Location**

The subject project is located at 4303B Scotts Valley Drive in Scotts Valley, California. The site is accessed off of Acorn Court. The location is shown on the Location Map, **Figure 1**.

3.2 **Surface Conditions**

The project site slopes gently to moderately to the south. There is an existing one story residential home at the northern end of the project site. At the time of our field investigation, several other smaller apparently unoccupied buildings were located on the eastern area of the project site, these appear to have been removed since our initial investigation. At the time of our field investigation, the site was vegetated with scattered grassy areas, exposed soil areas, landscaped areas, and several very large diameter trees.

3.3 **Subsurface Conditions**

a. The results of our field exploration indicate that the subsurface soils present on the site are relatively consistent, however, there are some variations in color, moisture content, and density. Groundwater was not encountered during the course of our field exploration.
FIGURE 1
LOCATION MAP
4303B Scotts Valley Drive, Scotts Valley

SITE
b. All three borings encountered native soils underlain by Santa Margarita Sandstone. The native soils consisted of an upper layer of approximately 4 feet of loose to very loose black very silty sand. Underlying this layer, the native soils graded into loose very dark yellowish brown silty sand which extended to a depth of approximately 7 to 8 feet below the existing ground surface. The Santa Margarita Sandstone bedrock was encountered at this depth and consisted of medium dense yellowish white silty sandstone. This sandstone was generally fine grained and weakly cemented.

c. Based on our laboratory test results, the native silty sand soil is slightly to moderately compressible under the anticipated loads and slightly to moderately collapsible upon wetting.

d. Complete soil profiles are presented on the Logs of Exploratory Borings and the boring locations are shown on the Boring Location Plan in Appendix A.

4. GEOTECHNICAL HAZARDS

a. Potential geotechnical hazards to man made structures include ground shaking, surface rupture, landsliding, liquefaction, lateral spreading, and differential compaction. The potential for each of these to impact the site is discussed below.

b. Ground shaking caused by earthquakes is a complex phenomenon. Structural damage can result from the transmission of earthquake vibrations from the ground into the structure. The intensity of an earthquake at any given site depends on many variables including, the proximity of the site to the hypocenter, and the characteristics of the underlying soil and/or rock. The subject site is situated at the approximate latitude of 37°02' 50" and longitude -122°01' 14". The project location (latitude and longitude) were used in conjunction with the American Society of Civil Engineers website (Reference 1) to obtain the seismic design parameters presented in Table 1. All proposed structures at the subject site shall be designed with the corresponding seismic design parameters in accordance with the 2016 California Building Code (Reference 3).

<table>
<thead>
<tr>
<th>Site Class</th>
<th>Seismic Design Category</th>
<th>Spectral Response Accelerations</th>
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c. Surface rupture usually occurs along lines of previous faulting. Based on our review of the Faults and Their Potential Hazards in Santa Cruz County map (Reference 8), no faults are shown to cross the property. Therefore, the potential for surface rupture should be considered low.
d. Landslides are generally mass movements of loose rock and soil, both dry and water saturated, and usually gravity driven. Based on our review of the Preliminary Map of Landslide Deposits in Santa Cruz County (Reference 4), no landslides are mapped on the subject parcel. In addition, the subject site slopes only gently, therefore, the potential for landsliding to occur across the site and cause damage to structures should be considered low.

e. Liquefaction, lateral spreading, and differential compaction tend to occur in loose, unconsolidated, noncohesive soils with shallow groundwater. Based on our review of Geology and Liquefaction Potential of Quaternary Deposits in Santa Cruz County, California (Reference 7) the site is mapped as Zone C, moderate potential for liquefaction. However, our field observations indicate that the potential for these hazards to occur should be considered low, due to the presence of relatively dense soils and the lack of a shallow groundwater table.

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 General

a. Based on the results of our investigation, it is our opinion that from the geotechnical standpoint, the subject site will be suitable for the proposed development provided the recommendations presented herein are implemented during grading and construction.

b. It is our opinion that the subject site will be suitable for the support of the proposed structure on a foundation system composed of conventional, shallow, continuous and pad footings. Recommendations for this foundation system are provided in Section 5.3, Foundations.

c. Laboratory consolidation test results indicate that the near-surface soils are slightly to moderately compressible under the anticipated loads and slightly to moderately collapsible upon wetting. Site preparation, consisting of over excavation and recompaction of the native subgrade will be required prior to placement of shallow foundations, slabs-on-grade, and pavements. See section 5.2.6 for Preparation of On-Site Soil recommendations.

d. Based on our review of the proposed development plans (Reference 6), the rear of Lots 3 and 4 will be cut and retained. Per OSHA requirements, excavations over 5 feet in depth must be either sloped, shored, or shielded. All excavation shall meet current OSHA standards. It is the responsibility of the contractor to provide the design.

e. At the time we prepared this report, grading and foundation plans had not been finalized. We request an opportunity to review these plans during the design stages to determine if supplemental recommendations will be necessary.
f. The design recommendations of this report must be reviewed during the grading phase when subsurface conditions in the excavations become exposed.

g. **Field observation and testing must be provided by a representative of Rock Solid Engineering, Inc.,** to enable them to form an opinion regarding the adequacy of the site preparation, and the extent to which the earthwork is performed in accordance with the geotechnical conditions present, the requirements of the regulating agencies, the project specifications and the recommendations presented in this report. Any earthwork performed in connection with the subject project without the full knowledge of, and not under the direct observation of Rock Solid Engineering, Inc., the Geotechnical Consultant, will render the recommendations of this report invalid.

h. **The Geotechnical Consultant should be notified at least five (5) working days prior to any site clearing or other earthwork operations** on the subject project in order to observe the stripping and disposal of unsuitable materials and to ensure coordination with the grading contractor. During this period, a preconstruction conference should be held on the site to discuss project specifications, observation/testing requirements and responsibilities, and scheduling. This conference should include at least the Grading Contractor, the Architect, and the Geotechnical Consultant.

5.2 **Grading**

5.2.1 **General**

All grading and earthwork should be performed in accordance with the recommendations presented herein and the requirements of the regulating agencies.

5.2.2 **Site Clearing**

a. The initial site clearing should include the removal of the existing residential house, the other structures on the site, and other existing improvements should be completed removed from the site. This removal should include all foundation elements and underground portions of the improvements. Prior to grading, the areas to be developed for structures, pavements and other improvements, should be stripped of any vegetation and cleared of any surface or subsurface obstructions, including any existing foundations, utility lines, basements, septic tanks, pavements, stockpiled fills, and miscellaneous debris.
b. All pipelines encountered during grading should be relocated as necessary to be completely removed from construction areas or be capped and plugged according to applicable code requirements.

c. Any wells encountered shall be capped in accordance with the City of Scotts Valley and Santa Cruz County Health Department requirements. The strength of the cap shall be at least equal to the adjacent soil and shall not be located within 5 feet of any structural element.

d. Surface vegetation and organically contaminated topsoil should be removed from areas to be graded. The required depth of stripping will vary with the time of year the work is done and must be observed by the Geotechnical Consultant. It is generally anticipated that the required depth of stripping will be 6 to 12 inches.

e. Holes resulting from the removal of buried obstructions that extend below finished site grades should be backfilled with compacted engineered fill per Section 5.2.5, Fill Placement and Compaction.

5.2.3 Excavating Conditions

a. We anticipate that excavation of the on-site soils may be accomplished with standard earthmoving and trenching equipment.

b. Groundwater was not encountered during the course of our field exploration and is not expected to present a problem during construction.

c. Although not anticipated, any excavations adjacent to existing structures should be reviewed, and recommendations obtained to prevent undermining or distress to these structures.

5.2.4 Fill Material

a. The on-site soils may be used as compacted fill.

b. All soils, both on-site and imported, to be used as fill, should contain less than 3% organics and be free of debris and cobbles over 6 inches in maximum dimension.

c. Any imported soil to be used as engineered fill shall meet the following requirements:

   (i) free of organics, debris and other deleterious materials
   (ii) be granular (sandy) in nature and have sufficient fines to allow for excavation of the foundation trenches.
(iii) free of rock and cobbles in excess of 3 inches  
(iv) have an expansion potential not greater than low (EI<20)  
(v) have a soluble sulfate content less than 150 ppm  

d. Imported fill material should be approved by the Geotechnical Consultant prior to importing. The Geotechnical Consultant should be notified not less than 5 working days in advance of placing any fill or base course material proposed for import. Each proposed source of import material should be sampled, tested and approved by the Geotechnical Consultant prior to delivery of any soils imported for use on the site.

5.2.5 Fill Placement and Compaction  

a. Any fill or backfill required should be placed in accordance with the recommendations presented below.

b. Material to be compacted or reworked should be moisture-conditioned or dried to achieve near-optimum conditions, and compacted to achieve the following minimum relative compaction:  
   (a) All fill and compacted building subgrade: 90%  
   (b) Upper 6 inches of subgrade in pavement/drive areas: 95%  
   (c) Baserock and subbase: 95%.

c. The placement moisture content of imported material should be evaluated prior to grading.

d. The relative compaction and required moisture content shall be based on the maximum dry density and optimum moisture content obtained in accordance with ASTM D-1557.

e. The in-place dry density and moisture content of the compacted fill shall be tested in accordance with ASTM D-8167/D8167M-18 or ASTM D-2922/ASTM D-3017.

f. The number and frequency of field tests required will be based on applicable county standards and at the discretion of the Geotechnical Consultant. As a minimum standard every 1 vertical foot of engineered fill placed within a building pad area, and every 2 vertical feet in all other areas shall be tested, unless specified otherwise by a Rock Solid Engineering, Inc. representative.

g. Fill should be compacted by mechanical means in uniform horizontal loose lifts not exceeding 8 inches in thickness.

h. All fill should be placed and all grading performed in accordance with applicable codes and the requirements of the regulating agency.
5.2.6 **Preparation of On-Site Soils**

a. Laboratory consolidation test results indicate that the near-surface soils are slightly to moderately compressible under the anticipated loads and slightly to moderately collapsible upon wetting. Site preparation, consisting of over excavation and recompaction of the native subgrade will be required prior to placement of shallow foundations, slabs-on-grade, and pavements.

b. The native subgrade beneath shallow foundations should be reworked to a depth sufficient to provide a zone of compacted fill extending at least 24 inches below the bottom of all footings.

c. The native subgrade beneath slabs-on-grade and pavements should be reworked to a depth sufficient to provide a zone of compacted fill extending at least 12 inches below the bottom of the capillary break material and/or aggregate base course.

d. Should the proposed residences be founded on a cut/fill transition pad, it is important that all foundation elements be founded on a consistent bearing surface. Therefore the subgrade on the cut portion of the pad shall be overexcavated and recompacted to provide a minimum of 24 inches of compacted subgrade beneath all foundation elements. Please refer to **Figure 2** for Cut/Fill Transition Pad construction.

e. The zone of compacted fill must extend a minimum of 3 feet laterally beyond all shallow foundations. At locations that will be retained, the compaction may be horizontally limited to the cut required for the retaining wall and backdrain.

f. Prior to placing fill, the exposed surface should be scarified to a depth of 6 to 8 inches, moisture conditioned, and compacted.

g. A representative of our firm shall observe the bottom of the excavation once the required depth of overexcavation has been achieved to verify suitability. Prior to replacing the excavated soil, the exposed surface should be scarified to a depth of 6 to 8 inches, moisture conditioned, and compacted.

h. The depths of reworking required are subject to review by the Geotechnical Consultant during grading when subsurface conditions become exposed.
EXISTING GRADE

MINIMUM 24 INCHES OF COMPACTED SUBGRADE BENEATH ALL FOUNDATION ELEMENTS

5' MAX FILL DIFFERENTIAL

FOOTPRINT

MIN 5'

MIN 5'

THE LESSER OF 3' OR 1/3 OF THE FILL SLOPE HEIGHT

FILL SLOPE PER DETAIL 3

CUT/FILL TRANSITION
5.2.7 Cut and Fill Slopes

a. All fill slopes should be constructed with engineered fill meeting the minimum density requirements of this report and have a gradient no steeper than 2:1 (horizontal to vertical). Fill slopes should not exceed 15 feet in vertical height unless specifically reviewed by the Geotechnical Consultant. Where the vertical height exceeds 15 feet, intermediate benches must be provided. These benches should be at least 6 feet wide and sloped to control surface drainage. A lined ditch should be used on each bench.

b. Fill slopes shall be benched and keyed into the native slopes by providing a base keyway whose minimum width is 10 feet and which is sloped negatively at least 2% back into the slope. The depth of keyways will vary, depending on the materials encountered, but at all locations shall be at least 2 feet into firm material. This keyway should be combined with intermediate benching as required. Refer to Figure 3 for Typical Key and Bench Detail.

c. Cut slopes shall not exceed a 2:1 (horizontal to vertical) gradient and a 15 foot vertical height unless specifically reviewed by the Geotechnical Consultant. Where the vertical height exceeds 15 feet, intermediate benches must be provided. These benches should be at least 6 feet wide and sloped to control surface drainage. A lined ditch should be used on each bench.

d. If a fill slope is to be placed above a cut slope, the toe of the fill slope should be set back at least 8 feet horizontally from the top of the cut slope. A lateral surface drain should be placed in the area between the cut and fill slopes.

e. The surfaces of all cut and fill slopes should be worked to reduce erosion. This work, as a minimum, should include track rolling of the fill slopes and effective planting of all slopes.

f. Periodic maintenance of slopes may be necessary, as minor sloughing and erosion may take place.

5.2.8 Groundwater Table

Groundwater was not encountered during the course of our investigation, and is not expected to interfere with the proposed construction.
NOTES:

ALL GRADING SHOULD BE IN ACCORDANCE WITH THE LOCAL JURISDICTION REQUIREMENTS AND THE 2016 CALIFORNIA BUILDING CODE.

ALL GRADING SHOULD BE INSPECTED BY THE SOIL ENGINEER. THE ENGINEER MUST APPROVE THE BASE KEYWAY, BENCHING AND COMPACTION.

WHEN NATURAL SLOPE IS LESS THAN 5:1 AND THE MAXIMUM DEPTH OF THE FILL IS LESS THAN 5 FEET, BENCING IS NOT REQUIRED. HOWEVER, FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.

ALL GRADING RECOMMENDATIONS ARE SUBJECT TO REVIEW BY THE SOILS ENGINEER DURING GRADING.
5.2.9 Expansive Soils

Our laboratory testing shows that the expansion index of the near surface soils are equal to 1, this indicates that the expansion potential of the near surface soils should be considered very low.

5.2.10 Sulfate Content

The results of our laboratory testing indicate that the soluble sulfate content of the on-site soils likely to come into contact with concrete is below the 150 ppm generally considered to constitute an adverse sulfate condition. Type II cement is therefore considered adequate for use in concrete in contact with the on-site soils.

5.2.11 Surface Drainage

a. Pad drainage should be designed to collect and direct surface water away from structures to approved drainage facilities. Where soil is adjacent to foundations, a minimum gradient of 5 percent for a distance of no less than 10 feet measured perpendicularly from the wall face, should be maintained and drainage should be directed toward approved swales or drainage facilities. If 10 horizontal feet cannot be satisfied due to lot lines or physical constraints, the drainage shall be designed in accordance with the requirements of Section 1804.4 of the 2016 California Building Code.

b. Swales and impervious surfaces shall be sloped a minimum of 2 percent towards an approved drainage inlet or discharge point or as specified by the Project Civil Engineer.

c. All roof eaves should be guttered with downspouts provided. The downspouts shall discharge to either splash blocks or solid pipe to carry the storm water away from the structure to reduce the possibility of soil saturation and erosion. It may be necessary to use swales or pipes to direct the runoff to an appropriate drainage system or discharge location.

d. Drainage patterns approved at the time of construction should be maintained throughout the life of the structures. The building and surface drainage facilities must not be altered nor any grading, filling, or excavation conducted in the area without prior review by the Geotechnical Consultant.

e. The surface soils are classified as moderately erodible. Therefore, the finished ground surface should be planted with erosion resistant landscaping and ground cover and continually maintained to minimize surface erosion.
f. Irrigation activities at the site should be controlled and reasonable. Planter areas should not be sited adjacent to walls without implementing approved measures to contain irrigation water and prevent it from seeping into walls and under foundations and slabs-on-grade. Large trees should be planted a minimum distance of \( \frac{1}{2} \) their mature height away from the foundation.

5.2.12 Utility Trenches

a. Bedding material may consist of sand with SE not less than 20 which may then be jetted, unless local jurisdictional requirements govern.

b. Existing on-site soils may be utilized for trench backfill, provided they are free of organic material and rocks over 6 inches in diameter.

c. If sand is used, a 3 foot concrete plug should be placed in each trench where it passes under the exterior footings.

d. Backfill of all exterior and interior trenches should be placed in thin lifts and mechanically compacted to achieve a relative compaction of not less than 95% in paved areas and 90% in other areas per ASTM D-1557. Care should be taken not to damage utility lines.

e. Utility trenches that are parallel to the sides of a building should be placed so that they do not extend below a line sloping down and away at an inclination of 2:1 (H:V) from the bottom outside edge of all footings.

f. Trenches should be capped with 1.5\( \pm \) feet of impermeable material. Import material must be approved by the Geotechnical Consultant prior to its use.

g. Trenches must be shored as required by the local regulatory agency, the State Of California Division of Industrial Safety Construction Safety Orders, and Federal OSHA requirements.

5.3 Foundations

5.3.1 General

a. It is our opinion that the subject site will be suitable for the support of the proposed structure on a foundation system composed of conventional, shallow, continuous and pad footings. These footings should be underlain by a minimum of 24 inches of compacted and engineered material. Please refer to the Section 5.2.6, Preparation of On-site Soils.
b. Isolated (pad) shallow foundations shall not be placed in active wedge of retaining walls as they would be subject to lateral movement. The active wedge extends a distance of 0.5 x height of the wall horizontally from the back of the wall.

c. At the time we prepared this report, grading and foundation plans had not been finalized. We request an opportunity to review these plans during the design stages to determine if supplemental recommendations will be necessary.

5.3.2 Conventional Shallow Foundations

a. Footing widths should be based on the allowable bearing values but not less than 12 inches for 1 story, 15 inches for 2 story and 18 inches for 3 story structures.

b. The minimum recommended depth of embedment is 18 inches for all footings. Should local building codes require deeper embedment of the footings or wider footings the codes must apply.

c. Footing excavations must be checked by the Geotechnical Consultant before steel is placed and concrete is poured to insure bedding into proper material. Excavations should be thoroughly wetted down just prior to pouring concrete.

d. The allowable bearing capacity shall not exceed:

   Continuous footings - 1,800 psf  
   Square pad footings - 1,800 psf

   Please Note: These values were computed assuming a minimum embedment depth of 18 inches for footings underlain by 24 inches of compacted soils.

e. The allowable bearing capacity values above may be increased by one-third in the case of short duration loads, such as those induced by wind or seismic forces.

f. Footings should meet the setback requirements for clearance from ascending/cut slopes (CBC 1808.7) and for foundation setback from descending/fill slopes surface (CBC 1808.7.2).

g. In the event that footings are founded in structural fill consisting of imported soil, the recommended allowable bearing capacity may need to be re-evaluated.
5.4 Settlements

Total and differential settlements beneath foundation elements are expected to be within tolerable limits. Vertical movements are not expected to exceed 1 inch. Differential movements are expected to be within the normal range (½ inch) for the anticipated loads and spacings. These preliminary estimates should be reviewed by the Geotechnical Consultant when foundation plans for the proposed structures become available.

5.5 Retaining Structures

5.5.1 General

a. Retaining walls may be founded on conventional shallow footings. Recommendations for this foundation system are provided in Section 5.3, Foundations.

b. For retaining walls that are part of the foundation of the structure, the subgrade shall be compacted in accordance with Section 5.2.6(b).

c. Isolated (pad) shallow foundations shall not be placed in active wedge of retaining walls as they would be subject to lateral movement. The active wedge extends a distance of 0.5 x height of the wall horizontally from the back of the wall.

5.5.2 Lateral Earth Pressures

a. The lateral earth pressures presented in Table 2 are recommended for the design of retaining structures with a gravel backdrain and backfill soils of expansivity not higher than medium. Should the slope behind the retaining walls be other than level or 2:1 (H:V), supplemental design criteria will be provided for the active earth or at-rest pressures for the particular slope angle.
Table 2: Lateral Earth Pressures

<table>
<thead>
<tr>
<th>Type</th>
<th>Soil Profile</th>
<th>Soil Pressure (psf/ft)</th>
<th>Unrestrained Wall</th>
<th>Rigidly Supported Wall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Pressure</td>
<td>Level 2:1</td>
<td>35</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>At-Rest Pressure</td>
<td>Level 2:1</td>
<td>-</td>
<td>50</td>
<td>80</td>
</tr>
<tr>
<td>Passive Pressure*</td>
<td>Level 2:1</td>
<td>400</td>
<td>200</td>
<td>100</td>
</tr>
<tr>
<td>*Neglect upper 2'</td>
<td></td>
<td>200</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

b. The friction factor between rough concrete and the native, near-surface silty sand is 0.40.

c. Where both friction and the passive resistance are utilized for sliding resistance, either of the values indicated should be reduced by one-third.

d. When required by the code, lateral load due to earthquakes may be calculated as $12xH^2$ acting at 0.6H above the base of the wall.

e. These are ultimate values, no factor of safety has been applied.

f. Although not anticipated, pressure due to any surcharge loads from adjacent footings, traffic, etc., should be analyzed separately. Pressures due to these loading configurations can be supplied upon receipt of the appropriate plans and loads.

5.5.3 Backfill

a. Backfill should be placed under engineering control.

b. It is recommended that granular, or relatively low expansivity, backfill be utilized, for a width equal to approximately 1/3 x wall height, and not less than 2 feet, subject to review during construction.

c. The granular backfill should be capped with at least 12 inches of relatively impermeable material.

d. Backfill should be compacted to achieve a minimum 90 percent relative compaction, the compaction standard being obtained in accordance with ASTM D-1557.
e. Precautions should be taken to ensure that heavy compaction equipment is not used immediately adjacent to walls, so as to prevent undue pressures against, and movement of, the walls.

f. The use of water-stops/impermeable barriers and appropriate waterproofing should be considered for any basement construction, and for building walls which retain earth.

5.5.4 Backfill Drainage

a. Backdrains should consist of a minimum 4-inch diameter, perforated, SDR 35 pipe or equivalent, embedded in permeable material meeting the State of California Standard Specification Section 68-2.02F(3), Class 2, or equivalent. A layer of Mirafi 140N Filter Fabric, or equivalent, shall be placed over the permeable material and the remaining 12 inches shall be capped with compacted native soil. The pipe should be approximately 4 inches above the trench bottom with a gradient of at least 1% being provided to the pipe and trench bottom, discharging to an approved location. See Figure 4 for Retaining Wall Backdrain Configuration.

b. Perforations in backdrains are recommended as follows: 3/8-inch diameter, in 2 rows at the ends of a 120 degree arc, at 3-inch centers in each row, staggered between rows, placed downward.

c. Backdrains placed behind retaining walls should be approved by the Geotechnical Consultant prior to the placement of backfill.

d. An unobstructed outlet should be provided at the lower end of each segment of backdrain. The outlet should consist of an unperforated pipe of the same diameter, connected to the perforated pipe and extended to a protected outlet at a lower elevation on a continuous gradient of at least 1%.

e. When terrace retaining walls are proposed, the upper retaining wall should have a backdrain which extends below the elevation of the top of the lower retaining wall backdrain. This will prevent spring effects and seepage between the terraced walls.

5.6 Slabs-on-Grade

a. Concrete floor slabs may be founded on compacted engineered fill per the recommendations in Section 5.2.6. The subgrade should be proof-rolled just prior to construction to provide a firm, relatively unyielding surface, especially if the surface has been loosened by the passage of construction traffic.
FINISHED GRADE 2:1 MAX SLOPE

PROVIDE SWALE CAP OF COMPACTED SOIL (12 IN) OR CONCRETE.

SLOPE TO SUITABLE OUTLET

CLASS I, TYPE A PERMEABLE MATERIAL WITH SPECIFIED FILTER FABRIC COVERING TOP OF PERMEABLE MATERIAL.

FOR WALLS ENCLOSING INTERIOR SPACES, THE WALL SHALL BE DAMPPROOFED OR WATERPROOFED IN ACCORDANCE WITH THE CBC & THE PROJECT STRUCTURAL ENGINEER’S RECOMMENDATIONS.

4 INCH RIGID PERFORATED SDR 35 PIPE OR APPROVED EQUIVALENT PERFORATIONS DOWN SLOPE PIPE MIN 1% TO OUTLET

18 INCHES

BOTTOM OF DRAIN TO BE LOCATED BELOW FINISHED SLAB ELEVATION.
b. It is important that the subgrade soils be thoroughly saturated for 24 to 48 hours prior to the time the concrete is poured. For compacted engineered fill with a low expansion potential, the subgrade should be presoaked 4 percentage points above optimum to a depth of 1.0 feet.

c. The slab-on-grade section should incorporate a minimum 4 inch capillary break consisting of 3/4 inch, clean, crushed rock, or approved equivalent. Class II baserock is not recommended. Structural considerations may govern the thickness of the capillary break.

d. Where moisture sensitive floor coverings are anticipated or vapor transmission may be a problem, a 15 mil waterproof membrane should be placed between the floor slab and the capillary break in order to reduce moisture condensation under the floor coverings.

e. Slab thickness, reinforcement, and doweling should be determined by the Project Structural Engineer, based on the design live and dead loads, including vehicles.

5.7 Pavement Design

The design of the pavement section was beyond our scope of services. The following considerations are imperative for the selected pavement sections to perform effectively:

a. Use only quality materials of the type and minimum thickness specified. All baserock must meet Cal-Trans Standard Specifications for Class II Aggregate Base.

b. The R-Value should be obtained at the conclusion of grading and the design pavement sections reviewed at that time.

c. Compact the base and subgrade uniformly to a minimum relative dry density of 95%.

d. Asphalt concrete should be placed only during periods of fair weather when the ambient air temperature is within prescribed limits.

e. Provide sufficient gradient to prevent ponding of water.

f. Maintenance should be undertaken on a routine basis.
5.8 Exterior Concrete Flatwork

a. Exterior concrete flatwork should be underlain by a minimum of 18 inches of compacted soil material.

b. Concrete flatwork should be divided into as nearly square panels as possible. Frequent joints should be provided to give articulation to the panels. Landscaping and planters adjacent to concrete flatwork should be designed in such a manner as to direct drainage away from concrete areas to approved outlets.

c. It is assumed that concrete flatwork will be subjected only to pedestrian traffic.
6. **LIMITATIONS**

a. Our investigation was performed in accordance with the usual and current standards of the profession, as they relate to this and similar localities. No other warranty, expressed or implied, is provided as to the conclusions and professional advice presented in this report.

b. The samples taken and tested, and the observations made, are considered to be representative of the site; however, soil and geologic conditions can vary significantly between sample locations.

c. As in most projects, conditions revealed during construction excavation may be at variance with preliminary findings. If this occurs, the changed conditions must be evaluated by the Project Geotechnical Consultant, and revised recommendations be provided as required.

d. This report is issued with the understanding that it is the responsibility of the Owner, or of his Representative, to ensure that the information and recommendations contained herein are brought to the attention of the Architect and Engineer for the project and incorporated into the plans, and that it is ensured that the Contractor and Subcontractors implement such recommendations in the field.

e. This firm does not practice or consult in the field of safety engineering. We do not direct the Contractor's operations, and we are not responsible for other than our own personnel on the site; therefore, the safety of others is the responsibility of the Contractor. The Contractor should notify the Owner if he considers any of the recommended actions presented herein to be unsafe.

f. The findings of this report are considered valid as of the present date. However, changes in the conditions of a site can occur with the passage of time, whether they be due to natural events or to human activities on this or adjacent sites. In addition, changes in applicable or appropriate codes and standards may occur, whether they result from legislation or the broadening of knowledge.

g. Accordingly, this report may become invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and revision as changed conditions are identified.
REFERENCES

1. American Society of Civil Engineers, *ASCE 7 Hazards Report*, Site Utilized October 14, 2019. [https://www.asce7hazardtool.online/](https://www.asce7hazardtool.online/)


5. County of Santa Cruz, PublicGISWeb, Site Utilized October 14, 2019. [http://gis.co.santa-cruz.ca.us/PublicGISWeb](http://gis.co.santa-cruz.ca.us/PublicGISWeb).


APPENDIX A

FIELD EXPLORATION AND LABORATORY TESTING PROGRAM

• Field Exploration Procedures       Page A-1
• Laboratory Testing Procedures     Page A-2
• Boring Location Plan               Figure A-1
• Key to Logs                        Figure A-2
• Logs of Exploratory Borings       Figures A-3 thru A-5
• Summary of Laboratory Test Results Figure A-6
• Direct Shear Test Results          Figures A-7 & A-8
• Consolidation Test Results         Figures A-9 & A-10
FIELD EXPLORATION PROCEDURES

A-1. Subsurface conditions were previously explored by drilling 3 borings to an approximate depth 21.5 feet below existing grade. The borings were advanced with a truck mounted drill rig equipped with 6 inch solid stem augers. The approximate locations of the borings are shown on the Boring Location Plan, Figure A-1. The Key to Logs, Figure A-2, gives definitions of the terms used in the Logs of Exploratory Borings. The Logs of Exploratory Borings are presented in Figures A-3 through A-5.

A-2. Drilling of the borings was observed by our Field Geologist who logged the soils and obtained bulk and relatively undisturbed samples for classification and laboratory testing. The soils were classified, based on field observations and laboratory testing, in accordance with Unified Soil Classification System.

A-3. Relatively undisturbed soil samples were obtained by means of a drive sampler. The hammer weight and drop being 140 pounds and 30 inches, respectively. The number of “Blows/Foot” required to drive samplers are indicated on the logs.

A-4. Exploratory borings were located in the field by measuring from known landmarks. The locations, as shown, are therefore within the accuracy of such a measurement.

A-5. Groundwater was not encountered during the course of our field exploration.
LABORATORY TESTING PROCEDURES

A-6. Classification

Soils were classified in accordance with the Unified Soil Classification System. Moisture content and in-situ density determinations were made from relatively undisturbed soil samples. The results are presented in the Logs of Exploratory Borings and in the Summary of Laboratory Test Results, Figure A-6.

A-7. Direct Shear

Direct shear strength tests were performed on representative samples of the on-site soils in accordance with laboratory test standard ASTM D 3080-98. Samples were relatively undisturbed, or remolded as specified. To simulate possible adverse field conditions, the samples were saturated prior to testing unless otherwise noted. A saturating device was used which permitted the samples to absorb moisture while preventing volume change. The direct shear test results are presented in Figures A-7 and A-8.

A-8. Consolidation

Consolidation tests were performed on representative, relatively undisturbed samples of the underlying soils to determine compressibility characteristics. The samples were saturated during the tests to simulate possible adverse field conditions. The test results are presented in Figures A-9 and A-10.

A-9. Expansion Index

Expansion tests were performed on representative, remolded samples of the on-site soils in accordance with laboratory test standard ASTM D 4829-11. The test results are presented in Figure A-6.

A-10. Soluble Sulfates

The soluble sulfate content was determined for samples considered representative of the on-site soils likely to come in contact with concrete in accordance with test method California 417. The test results are presented in Figure A-6.
### KEY TO LOGS

#### UNIFIED SOIL CLASSIFICATION SYSTEM

<table>
<thead>
<tr>
<th>PRIMARY DIVISIONS</th>
<th>GROUP SYMBOL</th>
<th>SECONDARY DIVISIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COARSE GRAINED SOILS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GRAVELS</td>
<td>GW</td>
<td>Well graded gravels, gravel-sand mixtures, little or no fines</td>
</tr>
<tr>
<td>More than half of the coarse fraction is larger than the No. 4 sieve</td>
<td>GP</td>
<td>Poorly graded gravels, gravel-sand mixtures, little or no fines</td>
</tr>
<tr>
<td>Sands</td>
<td>GM</td>
<td>Silty gravels, gravel-sand-silt mixtures, non-plastic fines</td>
</tr>
<tr>
<td>More than half of the coarse fraction is smaller than the No. 4 sieve</td>
<td>GC</td>
<td>Clayey gravels, gravel-sand-clay mixtures, plastic fines</td>
</tr>
<tr>
<td><strong>FINE GRAINED SOILS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Silts and clays</td>
<td>SW</td>
<td>Well graded sands, gravelly sands, little or no fines</td>
</tr>
<tr>
<td>Liquid limit less than 50</td>
<td>SP</td>
<td>Poorly graded sands, gravelly sands, little or no fines</td>
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<td></td>
<td>SM</td>
<td>Silty sands, sand-silt mixtures, non-plastic fines</td>
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<tr>
<td></td>
<td>SC</td>
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<td></td>
<td>ML</td>
<td>Inorganic silts and very fine sands, silty or clayey fine sands or clayey silts with slight plasticity</td>
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<tr>
<td></td>
<td>CL</td>
<td>Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays</td>
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<td></td>
<td>OL</td>
<td>Organic silts and organic silty clays of low plasticity</td>
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<td></td>
<td>MH</td>
<td>Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts</td>
</tr>
<tr>
<td></td>
<td>CH</td>
<td>Inorganic clays of high plasticity, fat clays</td>
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<tr>
<td></td>
<td>OH</td>
<td>Organic clays of medium to high plasticity, organic silts</td>
</tr>
<tr>
<td>Highly organic soils</td>
<td>Pt</td>
<td>Peat and other highly organic soils</td>
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#### GRAIN SIZE LIMITS

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<thead>
<tr>
<th>SILT AND CLAY</th>
<th>SAND</th>
<th>GRAVEL</th>
<th>COBBLES</th>
<th>BOULDERS</th>
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<tbody>
<tr>
<td>FINE</td>
<td>MEDIUM</td>
<td>COARSE</td>
<td>FINE</td>
<td>COARSE</td>
</tr>
<tr>
<td>No. 200</td>
<td>No. 40</td>
<td>No. 10</td>
<td>No. 4</td>
<td>3/4 in.</td>
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#### RELATIVE DENSITY

<table>
<thead>
<tr>
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<th>BLOWS/FT*</th>
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<tr>
<td>VERY LOOSE</td>
<td>0 - 4</td>
</tr>
<tr>
<td>LOOSE</td>
<td>4 - 10</td>
</tr>
<tr>
<td>MEDIUM DENSE</td>
<td>10 - 30</td>
</tr>
<tr>
<td>DENSE</td>
<td>30 - 50</td>
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<tr>
<td>VERY DENSE</td>
<td>OVER 50</td>
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#### CONSISTENCY

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<tr>
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<tr>
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<td>2 - 4</td>
</tr>
<tr>
<td>FIRM</td>
<td>4 - 8</td>
</tr>
<tr>
<td>STIFF</td>
<td>8 - 16</td>
</tr>
<tr>
<td>VERY STIFF</td>
<td>16 - 32</td>
</tr>
<tr>
<td>HARD</td>
<td>OVER 32</td>
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#### MOISTURE CONDITION

<table>
<thead>
<tr>
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<th>DAMP</th>
<th>MOIST</th>
<th>WET</th>
</tr>
</thead>
</table>

* Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 inch I.D.) split spoon (ASTM D-1586).
**LOG OF EXPLORATORY BORING**

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Soil Type</th>
<th>Undisturbed</th>
<th>Bulk</th>
<th>2&quot; DIA Sample</th>
<th>2.5&quot; DIA Sample</th>
<th>Bulk Sample</th>
<th>Description</th>
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<tr>
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<td></td>
<td></td>
<td>Very dark yellowish brown Silty SAND, fine grained, slightly moist, non-plastic, loose</td>
</tr>
<tr>
<td>10</td>
<td>SM</td>
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<td></td>
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<td>increased drilling resistance at 7 ft. onwards</td>
</tr>
<tr>
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<td>SANTA MARGARITA SANDSTONE</td>
</tr>
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<td>Yellowish white SANDSTONE, weakly cemented, slightly moist, medium dense</td>
</tr>
<tr>
<td>20</td>
<td>SM</td>
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<td></td>
<td></td>
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<td></td>
<td>material consistent</td>
</tr>
</tbody>
</table>

**Boring Terminated @ 21.5 ft.**

Groundwater Not Encountered.

Boring Backfilled With Cuttings.

---

**Material:**
- **SM:** Black Silty SAND, fine grained, slightly moist, non-plastic, loose
- **SM:** Very dark yellowish brown Silty SAND, fine grained, slightly moist, non-plastic, loose
- **SM:** Yellowish white SANDSTONE, weakly cemented, slightly moist, medium dense

**Testing:**
- **Blows:**
  - 10: 102.7  7.8  110.8  230  37  Chem.
  - 12: 105.6  7.4  113.5
- **Dry Density (pcf):**
  - 36: 114.6  7.9  123.7
- **Wet Density (pcf):**
  - 28: 9.5
- **Miscellaneous Laboratory Testing:**
  - Terzaghi Split Spoon Sample
  - Static Water Table
  - 2" DIA Sample
  - 2.5" DIA Sample
  - Bulk Sample

---

**Project No.:** 06058  
**Boring:** B1  
**Project:** 4303 Scotts Valley Drive  
**Location:** eastern edge of property  
**Scotts Valley, California**  
**Elevation:** ~567'  
**Date:** January 9, 2007  
**Method of Drilling:** Truck Mounted Drill Rig, 6in. Solid Stem Auger, 140lb. Safety Hammer  
**Logged By:** DSG

---

**Figure A-3**

**R**OC**K** **SOLID** **ENGINEERING, INC.
## LOG OF EXPLORATORY BORING

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Soil Type</th>
<th>Description</th>
<th>Blows</th>
<th>Dry Density (pcf)</th>
<th>Moisture Content (%)</th>
<th>Wet Density (pcf)</th>
<th>Direct Shear</th>
<th>Miscellaneous Laboratory Testing</th>
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<tbody>
<tr>
<td>0</td>
<td>SM</td>
<td>Native, forest duff and organic debris</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td>SM</td>
<td>Black very Silty SAND, fine grained, slightly moist, non-plastic, slightly moist, non-plastic, loose</td>
<td>9</td>
<td>99.5</td>
<td>8.0</td>
<td>107.4</td>
<td>Consol.</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>SM</td>
<td>Very dark brown Silty SAND, fine grained, slightly moist, non-plastic, loose</td>
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<td>106.4</td>
<td>8.4</td>
<td>115.3</td>
<td>110 41</td>
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<tr>
<td>15</td>
<td>SM</td>
<td>Increased drilling resistance at 7 ft. onwards</td>
<td></td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>20</td>
<td>SM</td>
<td>SANTA MARGARITA SANDSTONE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>SM</td>
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<td>47</td>
<td>3.4</td>
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<td>30</td>
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Boring Terminated @ 21.5 ft. Groundwater Not Encountered. Boring Backfilled With Cuttings.

Project No.: 06058  
Boring: B2  
Project: 4303 Scotts Valley Drive  
Location: west central area of the property  
Scotts Valley, California  
Elevation: ~565'  
Date: January 9, 2007  
Method of Drilling: Truck Mounted Drill Rig, 6in. Solid Stem Auger, 140lb. Safety Hammer  
Logged By: DSG
Project No.: 06058  
Project: 4303 Scotts Valley Drive  
Location: southeast area of property  
Date: January 9, 2007  
Method of Drilling: Truck Mounted Drill Rig, 6in. Solid Stem

Logged By: DSG  
Auger, 140lb. Safety Hammer

### LOG OF EXPLORATORY BORING

<table>
<thead>
<tr>
<th>Depth (ft.)</th>
<th>Soil Type</th>
<th>Undisturbed Bulk</th>
<th>Description</th>
<th>Blows</th>
<th>Dry Density (pcf)</th>
<th>Moisture Content (%)</th>
<th>Wet Density (pcf)</th>
<th>Direct Shear c (psi)</th>
<th>Direct Shear φ °</th>
<th>Miscellaneous Laboratory Testing</th>
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<tbody>
<tr>
<td>0.6</td>
<td>GP</td>
<td></td>
<td>Grey 3/4&quot; diameter GRAVEL</td>
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<td>105.8</td>
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<td>4.8</td>
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<td></td>
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</tr>
<tr>
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<td>(SM)</td>
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<td>SANTA MARGARITA SANDSTONE</td>
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<td>8.5</td>
<td>124.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.0</td>
<td></td>
<td></td>
<td>Yellowish white Silty SANDSTONE, fine grained, weakly cemented, slightly moist, non-plastic, medium dense</td>
<td>30</td>
<td>114.3</td>
<td>8.5</td>
<td>124.0</td>
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<td>25.0</td>
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Boring Terminated @ 21.5 ft.  
Groundwater Not Encountered.  
Boring Backfilled With Cuttings.
<table>
<thead>
<tr>
<th>BORING</th>
<th>DEPTH</th>
<th>SOIL TYPE</th>
<th>IN-SITU</th>
<th>DIRECT SHEAR</th>
<th>GRAIN SIZE (%)</th>
<th>EXPANSION INDEX</th>
<th>SOLUBLE SULFATES (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<td>DRY DENSITY (pcf)</td>
<td>MOISTURE CONTENT (%)</td>
<td>WET DENSITY (pcf)</td>
<td>COHESION (psf) (PEAK)</td>
<td>FRICTION ANGLE (PEAK)</td>
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<td>230</td>
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<tr>
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<td>SM</td>
<td>105.6</td>
<td>7.4</td>
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<tr>
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<td>10.0</td>
<td>(SM)</td>
<td>114.6</td>
<td>7.9</td>
<td>123.7</td>
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</tr>
<tr>
<td>B1</td>
<td>15.0</td>
<td>(SM)</td>
<td>114.6</td>
<td>7.9</td>
<td>123.7</td>
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<tr>
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<td>20.0</td>
<td>(SM)</td>
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<td>7.9</td>
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<td>115.3</td>
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<td>8.4</td>
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<td>8.4</td>
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<td>5.0</td>
<td>SM</td>
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<td>8.5</td>
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<tr>
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<td>8.5</td>
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<td>(SM)</td>
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<td>8.5</td>
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<td>8.5</td>
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**FIGURE A-6**
DIRECT SHEAR TEST RESULTS

BORING: B1
DEPTH (ft): 2.0
SOIL TYPE (USCS): SM

<table>
<thead>
<tr>
<th>COHESION (psf)</th>
<th>FRICITION ANGLE</th>
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<tr>
<td>PEAK 230</td>
<td>37</td>
</tr>
<tr>
<td>RESIDUAL 100</td>
<td>37</td>
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</table>

TEST SAMPLE TYPE: IN-SITU (SATURATED)
FIELD MOISTURE: 7.8%
SATURATED MOIST: 24.7%

SHEAR STRESS (psf) vs. NORMAL LOAD (psf) graph
BORING: B2
DEPTH (ft): 5.0
SOIL TYPE (USCS): SM

<table>
<thead>
<tr>
<th>COHESION (psf)</th>
<th>FRICTION ANGLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEAK 110</td>
<td>41</td>
</tr>
<tr>
<td>RESIDUAL 0</td>
<td>39</td>
</tr>
</tbody>
</table>

TEST SAMPLE TYPE: IN-SITU (SATURATED)
FIELD MOISTURE: 8.4%
SATURATED MOIST: 23.9%

**DIRECT SHEAR TEST RESULTS**
4303B Scotts Valley Drive, Scotts Valley, California
A-8
<table>
<thead>
<tr>
<th>BORING: B2</th>
<th>FIELD MOISTURE</th>
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<tbody>
<tr>
<td>DEPTH (ft): 2.0</td>
<td>-</td>
</tr>
<tr>
<td>SOIL TYPE (USCS): SM</td>
<td>-</td>
</tr>
</tbody>
</table>

**SEATING WEIGHT:** 220 psf

**FIELD MOISTURE:** 8.0%

**SATURATED MOIST:** 24.6%

---

**CONSOLIDATION TEST RESULTS**

![Graph showing consolidation results versus normal load (psf)](image-url)

**NORMAL LOAD (psf)**

-12%, -11%, -10%, -9%, -8%, -7%, -6%, -5%, -4%, -3%, -2%, -1%, 0%, 1%, 2%, 3%
BORING: B3
DEPTH (ft): 5.0
SOIL TYPE (USCS): SM
SEATING WEIGHT: 220 psf
FIELD MOISTURE: 4.8%
SATURATED MOIST: 21.4%

CONSOLIDATION
CONSOLIDATION TEST RESULTS

NORMAL LOAD (psf)

FIGURE A-10
Stormwater Control Plan
for
4303 Scotts Valley Drive MLD

07/28/2020

Rick Hochler

prepared by:

Cornerstone Civil
Ryan Haley, PE
(831)346-5446
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   I.B. Existing Site Features and Conditions .......................................................... 3
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   I.D. Optimization of Site Layout ......................................................................... 4
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Project Data

A completed project data form is included in Attachment A.

Table 1. Project Data

<table>
<thead>
<tr>
<th>Project Name/Number</th>
<th>4303 Scotts Valley Dr MLD</th>
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<tr>
<td>Application Submittal Date</td>
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<tr>
<td>Project Location</td>
<td>4303 Scotts Valley Drive</td>
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<tr>
<td>Project Phase No.</td>
<td>N/A</td>
</tr>
<tr>
<td>Project Type and Description</td>
<td>Construction of two (2) new residences and an attached garage to an existing residence. Construction of a shared access road, retaining walls, and a fire truck turnaround</td>
</tr>
<tr>
<td>Project Tier</td>
<td>2</td>
</tr>
</tbody>
</table>

I. Setting

I.A. Project Location and Description

The parcel is located at 4303 Scotts Valley Drive. The project will be the subdivision of three parcels; one existing residence is to remain and two new residences will be constructed.

I.B. Existing Site Features and Conditions

The site is currently developed with a house and a concrete driveway. Access to the parcel exists through a 24’ wide PUE and Right-of-way easement on a neighboring parcel. The terrain is sloping at an average of 15% towards the neighboring parcel to the south.

I.C. Opportunities and Constraints for Stormwater Control

This development design relies on the infrastructure of the neighboring parcel. There are currently design plans for this parcel which include stub outs for water, sewer and stormwater utilities. Construction of the site will require these utilities to be in place per the current design.

The two new residences, new garage and adjacent grades will flow to the new storm drain pipe provided by the neighboring development. There is a fire department turnaround placed near the entrance of the property that will be constructed of porous pavers for a retention system. On the south side of the property there is a landscaped area that will serve as a bioretention facility. These two water quality treatment measures will be used as a hybrid system to mitigate all new impervious areas. Both facilities will include an overflow pipe with will tie into the storm drain stubout from the neighboring development.
Low Impact Development Design Strategies

I.D. Optimization of Site Layout
The site currently flows to the east. The design has utilized this pattern and included two water quality treatment facilities at the lowest point of the site.

I.D.1. Preservation of natural drainage features
This site is being largely covered with impervious area. The slope at the far eastern portion of the site will remain untouched.

I.D.2. Setbacks from creeks, wetlands, and riparian habitats
N/A

I.D.3. Minimization of imperviousness
The roadway is designed to be a minimum width as required by the fire department. The only other impervious is that created by the construction of the new house.

I.E. Use of Permeable Pavements
The fire department turnaround will be constructed of a porous material

I.F. Dispersal of Runoff to Pervious Areas
Most of the proposed buildings will outlet the roof drainage to landscaping. There are a few instances where this is not feasible.

I.G. Stormwater Control Measures
   Tier 2 - Water Quality Treatment Facility
   One bioretention treatment facility and one porous paver retention facility.
   Tier 3 - Runoff Retention Facility  N/A
   Tier 4 - Flow Control Facility  N/A

I.H. Alternative Compliance Measures
If applicable provide BMP infeasibility documentation in an Appendix.

II. Documentation of Drainage Design

II.A. Descriptions of each Drainage Management Area
A Drainage Management Area Plan is included in Attachment B to accompany the descriptions herein.
II.A.1. Table of Drainage Management Areas

<table>
<thead>
<tr>
<th>DMA Name</th>
<th>Surface Type</th>
<th>Area (square feet)</th>
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<tr>
<td>DMA 1</td>
<td>Asphalt and Building roof</td>
<td>1,585 SF</td>
</tr>
<tr>
<td>DMA 2</td>
<td>Asphalt and Building Roof</td>
<td>6,506 SF</td>
</tr>
</tbody>
</table>

II.A.2. Drainage Management Area Descriptions

**DMA 1**, totaling 1,585 square feet, drains the structures of proposed lot 1 and the parking areas for the lot. DMA 1 drains to SCM 1 which is a bioretention facility 70 SF in plan area.

**DMA 2**, totaling 6,506 square feet, drains the shared access road, the roof drainage for lot 2 and the new garage on lot 3 and the parking areas for lots 2 and 3. DMA 2 drains to SCM 2, a retention system 1,140 SF in plan area.

II.B. Tabulation and Sizing Calculations

II.B.1. Information Summary for BMP Facility Design

<p>| | |</p>
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<td>Total Project Area (Square Feet)</td>
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<td>Design Storm Depth</td>
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<tr>
<td>Applicable Requirements</td>
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Design calculations are included in Attachment C. Design Calculations include Hydrologic Calculations, Stormwater BMP Facility Sizing, and Hydraulic Calculations.
II.B.2. Areas Draining to Bioretention Facilities (Tier 2 Projects)

<table>
<thead>
<tr>
<th>DMA Name</th>
<th>DMA Area (square feet)</th>
<th>Post-project surface type</th>
<th>DMA Runoff factor</th>
<th>DMA Area × runoff factor</th>
<th>SCM Name</th>
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<td>1585</td>
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</tr>
</tbody>
</table>

Total > 0.04 64 70

See attached calculation for retention system sizing.

III. Source Control Measures

III.A. Site activities and potential sources of pollutants

III.B. Source Control Table

<table>
<thead>
<tr>
<th>Potential source of runoff pollutants</th>
<th>Permanent source control BMPs</th>
<th>Operational source control BMPs</th>
<th>Storm drain inlets</th>
<th>Maintenance of marking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marked “No dumping flows to bay”</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plans state that interior drains will be plumbed to sanitary sewer.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

III.C. Ownership and Responsibility for Maintenance in Perpetuity

“The applicant accepts responsibility for the operation and maintenance of stormwater treatment and flow control facilities for the life of the project. Any future change or alteration, or the failure to maintain any feature described herein can result in penalties including but not limited to fines, property liens, and other actions for enforcement of a civil judgment.”

III.D. Summary of Maintenance Requirements for Each Stormwater Facility

<table>
<thead>
<tr>
<th>ITEM</th>
<th>INTERVAL</th>
<th>INSPECTION</th>
<th>REPAIR</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRASS LINED SWALES</td>
<td>ANNUAL</td>
<td>1. OBSTRUCTIVE VEGETATION 2.</td>
<td>1. REPAIR STRUCTURAL</td>
</tr>
<tr>
<td>Facility</td>
<td>Frequency</td>
<td>Accumulation of Trash and Debris</td>
<td>Deficiencies</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------</td>
<td>-----------------------------------</td>
<td>---------------------------------------</td>
</tr>
<tr>
<td>INLETS</td>
<td>ANNUAL</td>
<td>1. “NO DUMING...” MARKING</td>
<td>1. REPLACE/CLEAN MARKINGS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. ACCUMULATED TRASH AND DEBRIS</td>
<td>2. REMOVE TRASH AND DEBRIS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. ACCUMULATED SEDIMENT</td>
<td>3 REMOVE SEDIMENT</td>
</tr>
<tr>
<td>BIO-RETENTION FACILITIES</td>
<td>ANNUAL</td>
<td>1. ACCUMULATED TRASH OR DEBRIS</td>
<td>1. REMOVE TRASH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. EXCESSIVE/INVADE PLANTS</td>
<td>2. REMOVE/MOW AND REPLACE PLANTS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. CLOGGED SUBDRAIN</td>
<td>3 CLEAN THROUGH OVERFLOW STRUCTURE.</td>
</tr>
</tbody>
</table>

**IV. Certifications**

The preliminary design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the City of Scotts Valley Stormwater Technical Guide.
1. Project Information

<table>
<thead>
<tr>
<th>Project name:</th>
<th>Hochler MLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project location:</td>
<td>4303 Scotts Valley Drive</td>
</tr>
<tr>
<td>Tier 2/Tier 3:</td>
<td>Tier 2 - Treatment</td>
</tr>
<tr>
<td>Design rainfall depth (in):</td>
<td>2.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total project area (ft²):</th>
<th>18969</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total new impervious area (ft²):</td>
<td>6052</td>
</tr>
<tr>
<td>Total replaced impervious in a USA (ft²):</td>
<td>2039</td>
</tr>
<tr>
<td>Total replaced impervious not in a USA (ft²):</td>
<td>0</td>
</tr>
<tr>
<td>Total pervious/landscape area (ft²):</td>
<td>7147</td>
</tr>
</tbody>
</table>

2. DMA Characterization

<table>
<thead>
<tr>
<th>Name</th>
<th>DMA Type</th>
<th>Area (ft²)</th>
<th>Surface Type</th>
<th>New, Replaced?</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMA 1</td>
<td>Drains to SCM</td>
<td>1585</td>
<td>Concrete or asphalt</td>
<td>New</td>
<td>SCM-1</td>
</tr>
</tbody>
</table>

DMA Summary Area C

| Total project impervious area (ft²): | 1585 |
| New impervious area (ft²): | 1585 |
| Replaced impervious within a USA (ft²): | 0 |
| Replaced impervious not in a USA (ft²): | 0 |
| Total pervious/landscape area (ft²): | 0 |

3. SCM Characterization

<table>
<thead>
<tr>
<th>Name</th>
<th>SCM Type</th>
<th>Safety Factor</th>
<th>SCM Soil Type</th>
<th>Infilt. Rate (in/hr)</th>
<th>Area (ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM-1</td>
<td>Bioretention</td>
<td>1</td>
<td>HSG A/B</td>
<td>0.75</td>
<td>150</td>
</tr>
</tbody>
</table>

4. Run SBUH Model

5. SCM Minimum Sizing Requirements

<table>
<thead>
<tr>
<th>SCM Name</th>
<th>Minimum SCM Area (ft²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCM-1</td>
<td>63</td>
</tr>
</tbody>
</table>

6. Self-Retaining Area Sizing Checks
Multi-Family, Commercial, and Others - Project Data Form

Project Name: Hochler MLD
Application/Permit No: N/A
APN: 022-902-11
Address: 4303 Scotts Valley Drive

A. Development Type:
- New Development ☐
- Redevelopment/Remodel ☐

B. Impervious & Pervious Data:

<table>
<thead>
<tr>
<th>Pre development</th>
<th>Impervious = 3,766 SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post development</td>
<td></td>
</tr>
<tr>
<td>Existing Impervious to Remain = 0 SF</td>
<td></td>
</tr>
<tr>
<td>Replaced Impervious = 2,039 SF</td>
<td></td>
</tr>
<tr>
<td>New Impervious = 6,052 SF</td>
<td></td>
</tr>
<tr>
<td>Total = 8,091 SF</td>
<td></td>
</tr>
<tr>
<td>Reduced Impervious Area Credit = 0 SF</td>
<td></td>
</tr>
<tr>
<td>Combined New &amp; Replaced Impervious = 8,091 SF</td>
<td></td>
</tr>
<tr>
<td>Net Impervious Area = 8,091 SF</td>
<td></td>
</tr>
</tbody>
</table>

Note: Net Impervious Area = (Replaced Impervious Area + New Impervious Area) - Reduced Impervious Area Credit

C. Performance Tier (Automatically determined from calculations above)

- Tier 1 - BMP & Runoff Reduction
- Tier 2 - Water Quality
- Tier 3 - Runoff Retention
- Tier 4 - Peak Management

D. BMP Requirements

WMZ= 9 (Enter Watershed Management Zone 1, 2, 3, 5, or 9: see map on 2nd page)

<table>
<thead>
<tr>
<th>WMZ</th>
<th>Tier 1 - BMP &amp; Runoff Reduction</th>
<th>Tier 2 - Water Quality</th>
<th>Tier 3 - Runoff Retention</th>
<th>Tier 4 - Peak Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Required</td>
<td>Required</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

E. Reporting Requirements

<table>
<thead>
<tr>
<th>Tier</th>
<th>Simple Stormwater Control Plan</th>
<th>Stormwater Control Plan</th>
<th>Operation &amp; Maintenance Plan</th>
<th>Maintenance Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>-</td>
<td>Required</td>
<td>Required</td>
<td>Required</td>
</tr>
</tbody>
</table>

Notes:
1. Tier 3 or 4 projects that require "Optimize Infiltration" shall design stormwater management facility to provide infiltration as the first priority method of mitigation. Compliance for the retention of the remaining volume must be achieved via storage, rainwater harvesting and/or evaportranspiration.
2. Where optimize infiltration is not required, compliance must be achieved via storage, rainwater harvesting, infiltration, and/or evaportranspiration.
3. 85th Percentile 24-hour rainfall depth = 1.5” and 95th Percentile 24-hour rainfall depth = 2.6”

F. Watershed Management Zone Map
Note: If the project cannot accurately be located on the map below, use the Google-Earth WMZ file available on the City’s website.
Scotts Valley Stormwater Post Construction Requirements.
Chapter 4 - 1 Retain 85\textsuperscript{th} percentile Storm 24 hr event

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rainfall Intensity (i)</td>
<td>1.5 in/24-hr RWQCB</td>
</tr>
<tr>
<td>Runoff Coefficient (C)</td>
<td>0.9 (Impervious)</td>
</tr>
<tr>
<td>Tributary Area (A\textsubscript{T})</td>
<td>6506 SF</td>
</tr>
<tr>
<td>Retention Area (A\textsubscript{R})</td>
<td>1140 SF</td>
</tr>
<tr>
<td>Soil Conductivity $K_{\text{SAT}}$</td>
<td>55 µm/s</td>
</tr>
<tr>
<td>$K_{\text{SAT}}$</td>
<td>7.79526 in/hr</td>
</tr>
</tbody>
</table>

Infiltration through paver area = $K_{\text{SAT}} \times \text{Plan Area} \times (0.75 \text{ Efficiency Factor})$

$$= \frac{7.79526 \times 1140 \times 0.75}{12 \text{ (in/ft)}}$$

$$= 555 \text{ CF/Hr}$$

Total flow to paver area (24 hr. 85\textsuperscript{th} Percentile Storm) = C * i * A

$$= \frac{0.9 \times 1.5 \times 6506}{12 \text{ (in/ft)}}$$

$$= 732 \text{ CF/24-Hr}$$

$$= 30 \text{ CF/Hr}$$

Calculate Delta Flow

$$= Q - Q_{\text{INFILTRATION}}$$

$$= 30 - 555$$

$$= -525 \text{ CF/Hr.}$$

** Negative value indicates that the porous paver area will infiltrate stormwater at a much greater rate than the 85TH percentile storm will create.

The permeable material layer will be just deep enough to allow for perforated pipe sub-drains.
Saturated Hydraulic Conductivity (Ksat)—Santa Cruz County, California
(Hochler MLD)

MAP LEGEND

Area of interest (AOI)
☐ Area of Interest (AOI)

Soils

Soil Rating Polygons
☐ <= 55.0000
☐ > 55.0000 and <= 92.0000
☐ Not rated or not available

Soil Rating Lines
☐ <= 55.0000
☐ > 55.0000 and <= 92.0000
☐ Not rated or not available

Soil Rating Points
☐ <= 55.0000
☐ > 55.0000 and <= 92.0000
☐ Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Santa Cruz County, California
Survey Area Data: Version 13, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 16, 2019—Apr 7, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
Saturated Hydraulic Conductivity (Ksat)

<table>
<thead>
<tr>
<th>Map unit symbol</th>
<th>Map unit name</th>
<th>Rating (micrometers per second)</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>130</td>
<td>Elder sandy loam, 2 to 9 percent slopes, MLRA 14</td>
<td>55.0000</td>
<td>0.4</td>
<td>72.3%</td>
</tr>
<tr>
<td>182</td>
<td>Zayante coarse sand, 5 to 30 percent slopes</td>
<td>92.0000</td>
<td>0.2</td>
<td>27.7%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td><strong>57.0000</strong></td>
<td><strong>0.6</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Description

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity is considered in the design of soil drainage systems and septic tank absorption fields.

For each soil layer, this attribute is actually recorded as three separate values in the database. A low value and a high value indicate the range of this attribute for the soil component. A "representative" value indicates the expected value of this attribute for the component. For this soil property, only the representative value is used.

The numeric Ksat values have been grouped according to standard Ksat class limits.

Rating Options

*Units of Measure*: micrometers per second

*Aggregation Method*: Dominant Component

*Component Percent Cutoff*: None Specified

*Tie-break Rule*: Fastest

*Interpret Nulls as Zero*: No

*Layer Options (Horizon Aggregation Method)*: Depth Range (Weighted Average)

*Top Depth*: 24

*Bottom Depth*: 48

*Units of Measure*: Inches