Mitigated Negative Declaration

Name of Project

Sandraya Heights Land Division

Lead Agency

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

Contact

Jonathan Kwan
Contract Planner
jonathank@csgengr.com

Project Applicant

Granite Ridge Properties
225 Demeter Street
East Palo Alto, CA 94303
408-799-7395

Project Location

The project site is on one parcel (APN 023-113-36) located north of the Casa Way and Sandraya Heights Road intersection.

Project Description

The proposed Sandraya Heights Land Division project (the project) is a Planned Development (minor subdivision) to create nine single-family residential lots, on an existing 5.88-acre lot (the project site).

The project site is located within the R-1-20 Single-Family Residential Zoning District, which requires a minimum lot density of 20,000 square feet. The residential lots would range in size from 20,053 sf to 22,852 sf.

Six of the proposed lots would be accessed via a new access road that would connect to Grace Way and Casa Way and would include a cul de sac and concrete drive aprons. The remaining three lots would be accessed from a new cul de sac at the end of San Augustine Way.

Public Review and Comment Period

July 24, 2023 through August 24, 2023

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. All comments received by 5:00 PM on August 24, 2023 will be considered by the City of Scotts Valley.

Findings and Reasons

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

With respect to biological resources, the Biological Resources Section identified potentially significant impacts to special status species. Implementation of MM BIO-1.1 through MM BIO-1.5 would reduce these impacts to less than significant.

The following reasons 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 mitigated negative declaration reflects the independent judgment of the City of Scotts Valley.

City of Scotts Valley

Sandraya Heights Land Division Initial Study

Kimley»Horn

Table of Contents

Initial Study 1

Background & Project Description 1
Environmental Setting 2
Environmental Checklist 3
Aesthetics 3
Agriculture and Forestry Resources 4
Air Quality 6
Biological Resources 11
Cultural Resources 21
Energy 24
Geology and Soils 25
Greenhouse Gas Emissions 28
Hazards and Hazardous Materials 30
Hydrology and Water Quality 33
Land Use and Planning 36
Mineral Resources 37
Noise 38
Population and Housing 40
Public Services 41
Recreation 42
Transportation 43
Tribal Cultural Resources 45
Utilities and Service Systems 47
Wildfire 49
Mandatory Findings of Significance 50
Determination 53

List of Figures

Figure 1: Regional Location
Figure 2: Project Vicinity
Figure 3: Site Plan
Figure 4: Grading Plan
Figure 5: Biotic Habitats
Figure 6: Scotts Valley Spineflower Critical Habitat
Figure 7: Landscape Plan

Note: All figures and appendices are inserted at the end of the document.

List of Appendices

Appendix A: Biological Evaluation Report
Appendix B: Arborist Report
Appendix C: Archeological Review and Field Inventory
Appendix D: Geotechnical Investigation
Appendix E: Stormwater Control Plan
Appendix F: Focused Transportation Study

Initial Study

Background & Project Description

Project Title

Sandraya Heights Land Division

Lead Agency Name and Address

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

Contact Person and Phone Number

Jonathan Kwan
Contract Planner
jonathank@csgengr.com

Project Location

As shown in Figure 1: Regional Location, and Figure 2: Project Vicinity, the project site is on one 5.88-acre parcel (APN 023-113-36) located north of the Casa Way and Sandraya Heights Road intersection.

Project Applicant

Granite Ridge Properties
225 Demeter Street
East Palo Alto, CA 94303
408-799-7395

General Plan Designation

Residential Low Density: 2 du/acre

Zoning

Residential Single-Family (R-1-20)

Project Description

As shown in Figure 3: Site Plan, the proposed Sandraya Heights Land Division (the project) is a Land Division to create nine single-family residential lots, on an existing 5.88-acre lot (the project site).

The project site is located within the R-1-20 Single-Family Residential Zoning District, which requires a minimum lot density of 20,000 square feet. The residential lots would range in size from 20,053 sf to 22,852 sf.

Six of the proposed lots would be accessed via a new access road that would connect to Grace Way and Casa Way and would include a cul de sac and concrete drive aprons. The remaining three lots would be accessed from a new cul de sac at the end of San Augustine Way.

As shown in Figure 4: Grading Plan, grading for the project would require a cut of 2,300 cubic yards of soil, and fill of 9,700 cubic yards, for a net import of 7,400 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 curbs and gutter to channelized surface flow and direct runoff into a series of collector storm drainpipes to three underground storage and infiltration chambers located under the new access road that extends from Casa and one chamber located between Lots 8 and 9.

Water and sewer services would connect to an existing six-inch sanitary sewer and eight-inch water main located on Sandraya Heights Road.

Project-Related Approvals and Permits

Approvals and permits required for the project include:

- Land Division
- Environmental Assessment

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 9) and the construction of nine single-family residential units.

Project Site and Existing Facilities

The project site (APN 023-113-36) is currently vacant. The General Plan designation is Residential Low Density, and the zoning designation is Residential Single-Family (R-1-20). Surrounding the project are single-family residences, a church to the northeast, and the Scotts Valley Fire Department to the northeast.

Environmental Checklist

This analysis uses the Appendix G of the CEQA Guidelines as a framework to address each environmental resource.

Aesthetics

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Except as provided in Public Resources Code Section 21099, would the project:				
a) Have a substantial adverse effect on a scenic vista?				X
a) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?				X
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 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?				X
c) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			X	

Discussion

Scenic Vista

The project site vacant 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 residential development that currently exists in the area and is consistent with the policies related to visual resources in the General Plan.

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 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 typical of a residential development.

The project design incorporates low-level lighting fixtures that would minimize lighting affects the adjacent properties. Furthermore, as a condition of approval, the project applicant would be required to use no pole lights and utilize down-directed fixtures on building exteriors with concealed light sources. Consistent with City building regulations, lighting will need to be controlled for security, aesthetics, safety, and identification without interfering with adjacent land uses. Implementation of these standard conditions of approval would reduce potential off-site light impacts to a less than significant level.

Findings

The project would not 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide				X

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				X
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				X
d) Result in the loss of forest land or conversion of forest land to non-forest use?				X
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?				X

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 Single-Family (R-1-20). 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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:				
a) Conflict with or obstruct implementation of the applicable air quality plan?			X	
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?			X	
c) Expose sensitive receptors to substantial pollutant concentrations?			X	
d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people?				X

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 ppm[1].

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 three minutes in any one 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 significant air pollutants. The proposed use would not conflict with the AQMP for the Monterey Bay Region and would not make a

[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.

considerable contribution to this existing, cumulatively significant ozone 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.

Furthermore, standard conditions of approval would 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 as part of its construction operations. 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:

- Limit grading to 8.1 acres per day, and grading and excavation to 2.2 acres per day.
- Water graded/excavated areas and active unpaved roadways, unpaved staging areas, and unpaved parking areas at least twice daily or apply non-toxic chemical soil stabilization materials per manufacturer's recommendations. Frequency should be based on the type of operations, soil and wind exposure.
- Prohibit all grading activities during periods of high wind (more than 15 mph).
- Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).
- All disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or gravel for temporary roads and any other methods approved in advance by MBARD.
- Exposed ground areas that are planned to be reworked for durations longer than 1 month after initial grading shall be sown with a fast germinating, non-invasive grass seed and watered until vegetation is established.
- Plant vegetative ground cover in disturbed areas as soon as possible.
- Use street sweepers, water trucks, or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the project site. Reclaimed (non-potable) water should be used whenever possible;
- Spray dirt stockpile areas daily as needed.

- Place gravel on all roadways and driveways as soon as possible after grading. In addition, construct building pads as soon as possible after grading unless seeding, soil binders, or frequent water application are used.
- Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
- All trucks hauling dirt, sand, soil, or other loose materials shall be covered or shall maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with California Vehicle Code Section 23114.
- Unpaved road travel shall be limited to the extent possible, for example, by limiting the travel to and from unpaved areas, by coordinating movement between work areas rather than to central staging areas, and by busing workers where feasible.
- Install wheel washers where vehicles enter and exit unpaved roads onto streets or wash off trucks and equipment leaving the project site and inspect vehicle tires to ensure they are free of soil prior to carry-out to paved roadways.
- Sweep streets at the end of each day, or as needed, if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water shall be used where feasible.

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 development project. However, based on the single-family residential development proposed, emissions associated with operation of the project would not exceed any applicable MBARD thresholds. 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 single-family residential uses located adjacent to the project site.

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 and the emissions would remain below levels of significance. Potential exposure of sensitive receptors to diesel emissions and associated risks is considered a less-than-significant impact, and no mitigation measures are required.

Additionally, standard conditions of approval require that prior to issuance of a 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 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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?		X		
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?			X	
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				X
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?			X	
e) Conflict with any local policies or ordinances protecting biological			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
resources, such as a tree preservation policy or ordinance?				
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?				X

Discussion

A Biological Evaluation Report was prepared for the project site in February of 2023 by Live Oaks Associates (see Appendix A). Live Oak Associates also prepared an Arborist Report for the project in November 2019 (see Appendix B). The analysis below is based on a peer review and findings as described in these reports.

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

The site is currently used for multi-recreational purposes and has trails heavily used by dirt bikers, dog-walkers, and walkers. As shown in Figure 5: Biotic Habitats, habitats identified on the project site include: 1) California annual grassland, 2) coast live oak woodland, 3) Arroyo willow woodland, and 4) coyote brush scrub. These vegetation communities provide habitats small mammals, birds, and reptiles that are commonly found in the region.

Special Status Plants

The California Natural Diversity Database (CDFW 2021) and the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021) were queried for special status species occurrences in the Felton USGS 7.5-minute quadrangle in which the project site occurs and for the seven surrounding quadrangles (Big Basin, Castle Rock Ridge, Los Gatos, Davenport, Laurel, Santa Cruz, and Soquel). These species and their potential to occur on the project site are summarized in Tables 1 and 2 in Appendix A. Other factors considered in this evaluation include the capacity of the on-site habitats and microhabitats to support the species, geographical distance of the project site from known populations or occurrences of the species, and ability of the species to travel from areas of known occurrences to the project site. Figures 3a and 3b in Appendix A display the general locations of special status species reported in the California Natural Diversity Data Base (CNDDB) (CDFW 2021).

As explained in the Biological Evaluation Report, because serpentine and alkaline soils are absent from the site, those species that are uniquely adapted to these soil conditions are also considered to be absent including the serpentine leptosiphon (*Leptosiphon ambiguus*), Santa Clara valley dudleya (*Dudleya ambramsii ssp. setchellii*), and phlox-leaf serpentine bedstraw (*Galium andrewsii ssp. gatense*). One species, Scott's Valley polygonum (*Polygonum hickmanii*), could occur within the open, unshaded grasslands on sandstone-derived soils of the site. This species is absent from the Project site as noted in Appendix A and it was not detected during the June survey that was appropriately timed for this species blooming period.

Appendix A explains why other special status plant species that occur in specific habitats are not present on the project site and not discussed further. Special status plant species occurring in multiple habitats found on the site, including those found in valley and foothill grassland and cismontane woodland, are listed in Tables 1a and 1b in Appendix A.

Arroyo Willow Woodland

A small grove of Arroyo willows (*Salix lasiolepis*) occurs at the southeastern corner of the site and is considered a rare and sensitive natural community and association (CDFW 2021, South Environmental 2021). Arroyo willows typically occur on wetlands and form dense thickets along drainages (CNPS 2021). The Arroyo woodlands on the site likely collect run-off from the adjacent residences and roads. A culvert parallel to Sandraya Heights Road collects run-off into a ditch that drains into a grassland swale (Section 2.3.1) and these willow-dominated woodlands.

The U.S. National Wetland Plant list (USACE 2018) identifies arroyo willows as a facultative wetland plant, that is, plants that usually occur in wetlands but rarely occurs (1-33% probability) in uplands. Historic aerial photos indicate no presence of wetlands and these arroyo willow woodlands prior to the onset of residential development surrounding the site. In general, these historical aerial photos show the change in vegetation composition of the site over the amount of time that development has increased in Scotts Valley. It is likely that the arroyo woodlands of the site were influenced and developed over time by hydrological changes (e.g., increased run-off) resulting from surrounding development. Mitigation for impacts to the Arroyo Woodland would be accommodated through the mitigation of tree removal, described below.

Scotts Valley Spineflower

The Scotts Valley Spineflower was observed on the site during the March, April and May 2022 rare plant surveys. Specifically, this species was observed near the confluence of trails on the grasslands at the northwestern section of the site. [2] As shown in Figure 5: Biotic Habitats, two colonies consisting of approximately 185 individual species and spanning approximately 140 sf.

[2] These surveys did not detect the Scotts Valley polygonum, which often co-occurs with the spineflower (Live Oak Associates, 2023).

were observed. These rare plant surveys were timed to coincide with the species blooming period when they would be evident and most identifiable.

The USFWS often designates areas of critical habitat when it lists species as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species which may require special management and protection. For the Scotts Valley spineflower, essential features include the presence of thin soils formed over Purisima sandstone or Santa Cruz mudstone, wildflower field habitat, stable grasslands over time, and an area to allow populations to survive catastrophic events and re-colonize suitable sites (USFWS 2002). Other features also include pollination and seed dispersal between colonies, as well as adequate watershed protection to protect spineflower habitat and maintain soil and hydrologic conditions necessary to support species growth and reproduction (USFWS 2002, WRA et al., 2017). More importantly, designated critical habitat has to be large enough to maintain ecological functions which the species depends on (USFWS 2002).

As shown in Figure 6: Scotts Valley Spineflower Critical Habitat, occurrence of Scotts Valley spineflower on the project site is located outside the critical habitat for the Scotts Valley Spineflower. The USFWS has designated critical habitat for the spineflower and the Scotts Valley polygonum in two units: Glenwood and Polo Ranch. The Glenwood unit consists of the Glenwood Preserve, Scotts Valley High School Preserve and Salvation Army property. The Polo Ranch unit consists of the Polo Ranch Open Space Preserve situated within the city limits of Scotts Valley. The designated critical habitat for both units cover 287 ac, where the Glenwood Unit covers 74.6% (214 ac) and the Polo Ranch unit covers 25.4 % (73 ac) of total critical habitat. Although the site is outside of critical habitat, on-site spineflower coverage is .001% of total known habitat for the Scotts Valley spineflower.

Development of the project would cause a significant impact to the 185 individual Scotts Valley Spineflower located on the project site. Mitigation for significant impacts to rare plants usually takes the form of avoidance, minimization, and/or compensation measures to reduce impacts to a less-than-significant level. Given the project's objectives to construct nine residential lots and associated infrastructure, avoidance for such a small population of Scotts Valley spineflower is not practical on the project site. Furthermore, the on-site vegetation communities, including the coyote brush scrub, arroyo willow woodlands, and coast live oak woodlands, do not serve as suitable habitat for the spineflower.

Considering the lack of other on-site habitat for the spineflower and the documented low success rate of transplanting rare plants (CNPS 1991), particularly for the spineflower (Kofron and Lyons 2014), it is not expected that on-site preservation will result in the full mitigation of replacing impacted plants at a 2:1 ratio and enhancing the value and ecological function of spineflower habitat.

Off-site mitigation would involve compensating additional conservation efforts that benefit existing off-site spineflower populations to increase habitat value, reduce threats to

spineflower populations, and ensure that species will persist and thrive on managed and permanently secured spineflower habitat. As such, off-site mitigation was determined to be more practical. Implementation of mitigation measure MM BIO -1.1: Spineflower Off-site Mitigation and Plant Resource Conservation Plan would reduce this impact to less than significant.

Special Status Animals

The Biological Evaluation Report identified wildlife that would be treated as absent from the site including those species requiring specific habitats, including breeding and upland habitats, that do not exist on the site. These include the California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylii*), and western pond turtle (*Emys marmorata*). Finally, the marbled murrelet (*Brachyramphus marmoratus*) would not occur on the site due to the lack of suitable habitat, including old growth redwood forests.

Two special status species, the San Francisco dusky-footed woodrat and the Monarch butterfly, are present on the site. However, the Monarch butterfly overwintering habitats are absent from the site. Therefore, the project is not expected to have a substantial adverse effect on monarch overwintering habitat.

The pallid bat, a California state species of special concern, has some potential to forage and roost on the site. Although project development would result in the loss of a small amount of habitat for the San Francisco dusky footed woodrat and pallid bat, the site's residential setting, routine mowing, and disturbance from unregulated recreational activities limits its habitat value for these species. Regardless, impacts to individual Monarch butterflies, pallid bats, San Francisco dusky-footed woodrats would be significant, and mitigation would be required.

Although project development would result in the loss of a small amount of habitat for the San Francisco dusky footed woodrat and pallid bat, the site's residential setting, routine mowing, and disturbance from unregulated recreational activities limits its habitat value for these species. Habitats of much higher quality are relatively abundant north of the site in the Glenwood Preserve as well as west of the site. These areas will remain available to these species following project implementation. Therefore, the project does not have the potential to substantially impact these species through loss of habitat and impacts would be less-than-significant.

If individuals of any of these special status species are present at the time of construction, they may be at risk of construction-related injury or mortality. Foraging individuals would not be particularly vulnerable to construction-related injury or mortality, as they are capable of simply flying away from construction disturbance. Regardless, construction-related impacts to individual pallid bats, San Francisco dusky-footed woodrats, the monarch butterfly, and nesting migratory birds and raptors would be potentially significant. Mitigation measures MM BIO 1.2 through 1.5 would reduce these construction-related impacts to less than significant.

Wildlife Corridors / Nursery Site

As an urban infill site, 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. As documented in the Biological Evaluation Report by Live Oaks Associates (February 2023, see Appendix A), there are no jurisdictional waters, 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.

As described in the Arborist Report (see Appendix B, a total of 105 trees representing nine different species were documented on the project site. In order of abundance these include; 71 coast live oak (*Quercus agrifolia*); 10 box elder (*Acer negundo*); 10 arroyo willow (*Salix lasiolepis*); three Monterey cypress (*Hesperocyparis macrocarpa*); three Northern California black walnut (*Juglans hindsii*); two mayten (*Maytenus boaria*); two cherry plum (*Prunus cerasifera*); one fruiting pear (*Pyrus communuis*); and one blue elderberry (*Sambucus nigra ssp. caerulea*).

Eighty-one (81) of the 105 trees documented qualify as protected trees under the City of Scotts Valley Tree Protection Ordinance. These include: 57 coast live oaks; 10 arroyo willows; six box elders; three Monterey cypress; three Northern California black walnuts; one mayten; and one blue elderberry. No Heritage trees were identified on the project site.

As shown in Figure 7: Landscape Plan, the project would plant 26 California Redwoods, 26 Coast Love Oaks, and 26 Conifers. 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.

Furthermore, no known habitat conservation plans are in effect for this project site. Therefore, the 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 consistent with the City's Tree Protection Regulations (17.44.080).

The project as designed would impact the Scotts Valley Spineflower, San Francisco Dusky-Footed Woodrats, and pallid bats on site. These impacts to the special status species would be potentially significant. Mitigation for significant impacts to special status species below would reduce impacts to a less than significant level.

Mitigation

MM Bio – 1.1: Spineflower Mitigation

Off-Site Spineflower Mitigation Plan

Prior to any ground disturbance requiring issuance of a grading permit by the City of Scotts Valley associated with the project site, the project applicant shall submit documentation (an Off-Site Spineflower Mitigation Plan) to the satisfaction of the Community Development Department demonstrating acceptance by a third party (i.e., the Scotts Valley School District, the Salvation Army, Land Trust Santa Cruz County, or other appropriate entity) of off-site mitigation for the replacement of the 140 square feet of impacted spineflower on the project site at a minimum ratio of 2:1. Mitigation could include, but is not limited to; restoration and/or conservation efforts that benefit existing off-site spineflower populations to increase habitat value, reduce threats to spineflower populations, and ensure that the species will persist and thrive on managed and permanently secure protected spineflower habitat.

The Off-site Spineflower Mitigation Plan shall be reviewed by an independently qualified third-party biologist (paid for by the project applicant) and reviewed for comment by the U. S. Fish & Wildlife Service.

On-site Spineflower Mitigation Plan

If an Off-site Spineflower Mitigation Plan cannot be achieved, the project applicant shall prepare an On-site Spineflower Mitigation Plan prior to any ground disturbance requiring issuance of a grading permit by the City of Scotts Valley associated with the project site. The On-site Spineflower Mitigation Plan shall avoid disturbance to the 140 square feet existing spineflower habitat and include an appropriate buffer. It shall also include measures to ensure long term protection of the spineflower habitat such as a conservation easement and the

establishment of an endowment fund to manage and monitor the preserved habitat areas in perpetuity.

The On-site Spineflower Mitigation Plan shall be reviewed by an independently qualified third-party biologist (paid for by the project applicant) and reviewed for comment by U. S. Fish & Wildlife Service.

MM BIO-1.2: Focused Surveys and Relocation Plan for Roosting Bats

Conduct Habitat Assessment and Preconstruction Survey

A bat habitat assessment will be conducted by an independently qualified biologist to identify all trees on the site that have the potential to support roosting bats. Trees and structures determined not to support bat roosting habitat may be removed at any time of year without harm to individual bats. However, any trees identified as providing potential bat roosting habitat will be visually surveyed during a pre-construction survey, as described below.

A pre-construction visual survey of all trees that were determined to provide potential roosting habitat will be conducted no more than seven days prior to any tree/vegetation removal activities to determine whether roosting bats are present. If the biologist determines that no bats are present, then the tree can be removed at any time of year and will not require a two-step removal process. If bats are determined to be present or if use of the tree by bats cannot be determined during the pre-construction survey, then additional measures including night-time emergence surveys, construction-free buffers and/or a two-step tree removal will be implemented, as described below.

Two-Step Tree Removal

Two-step removal of trees may be utilized to remove trees identified as currently supporting roosting bats or to remove trees that were determined to provide potential habitat but could not be adequately visually surveyed during the pre-construction survey. However, a two-step tree removal can only be conducted outside of the maternity and over-wintering seasons, i.e., can only be conducted during the periods from March 1 to April 15 or from August 15 to October 15, and only when fair-weather nights are forecasted.

The two-step removal process consists of two consecutive days of work. On Day 1, a qualified biologist would direct a tree trimming crew to trim the tree in such a way as to make the tree less suitable/attractive for bats. To the degree practicable, removed branches should be chipped nearby. The disturbance caused by the noise and vibration of the tree trimming and chipping during Day 1 would serve to encourage any bats using the tree to vacate their roosts. The following day, the tree would be completely removed. A qualified biologist does not need to be present during the Day 2 tree removal activities. To the extent practicable, Day 1 activities should occur in the afternoon or early evening and Day 2 activities should occur during morning hours.

Nighttime Emergence Survey

Alternately, for any trees that could not be adequately visually surveyed during the pre-construction survey, a nighttime emergence survey can be conducted by an independently qualified biologist on a fair-weather night during the volant season (March 1-October 15) to determine if bats are present. If bats are found to be absent, the tree can be removed; if bats are found to be present, and it is within the maternity season (April 15-August 15), further investigation must occur to determine whether a maternity colony is roosting in the tree. If bats are found to be present and it is outside of the maternity season (March 1 through April 14 or August 16 through October 15), the two-step removal process could be utilized to remove the tree, as described above.

Construction-free Buffers

If a maternity colony or overwintering colony is identified on the site, then a construction-free buffer will be established around the tree(s) and remain in place until it has been determined that the colony is no longer active. Tree removal should occur between March 1 and April 14 or between August 16 and October 15, as described above, utilizing the two-step removal method to avoid interfering with an active nursery and/or overwintering bats.

MM BIO-1.3: Focused Surveys and Relocation Plan for Dusky-Footed Woodrats

Pre-Construction Survey

An independently qualified biologist will conduct a pre-construction survey for San Francisco dusky-footed woodrat nests no more than 30 days and no less than 14 days prior to the onset of construction activities. This survey timing allows for the scheduling of woodrat nest deconstruction. The survey will encompass all construction zones and surrounding lands within 50 feet. If the results of focused surveys for are negative, no further mitigation is required. If surveys do find the San Francisco dusky-footed woodrat present, the applicant shall prepare a plan to avoid and minimize impacts of the project on the San Francisco dusky-footed woodrat, as described below.

Nest Deconstruction and Relocation

Identified nests will be avoided, where possible. If avoidance is not possible, an independently qualified biologist shall prepare and submit a nest relocation plan to the CDFW for approval prior to the deconstruction and relocation of any nest(s). The project applicant shall submit documentation to the satisfaction of the Community Development Department demonstrating approval by the California Department of Fish and Wildlife (CDFW) of the relocation plan for the San Francisco dusky-footed woodrat.

The CDFW approved plan would likely include manually deconstructing any nests that cannot be avoided. This deconstruction will be conducted by a qualified biologist (approved by CDFW) likely when helpless young are not present, typically during the non-breeding season (October-January). If practicable, any woodrat nests that are deconstructed as per the above shall be reconstructed on the site within appropriate habitat that will not be impacted by the project.

Construction-free Buffers

If it is determined during the pre-construction survey that young may be present, a suitable buffer depending on the timing within the breeding season (ranging from 15-50 feet) will be established around the nest and maintained during construction until the young are independent and have successfully moved from the nest on their own.

MM BIO-1.4: Focused Surveys and Relocation Plan for Monarch Butterfly

Pre-construction Surveys and Avoidance

While a few individual monarch butterflies were observed in October and November of 2021 foraging on coyote brush flowers, no aggregates have been observed during surveys conducted on-site in the Fall of 2021 and Spring of 2022. Additionally, while aggregates are conspicuous, no occurrences have ever been reported for this site. Nonetheless, as a prudent measure, seven days prior to any construction activities, a monarch butterfly aggregates survey, conducted in favorable weather conditions, shall be conducted by a qualified biologist over the project site, and within 100 feet where access is possible.

If an active aggregation is present on the project site, all construction, grading, and construction-related noise shall be seasonally timed to avoid impacts to aggregating monarch butterflies. Alternatively, a temporary fence may be installed along the outer boundary of an adequate buffer zone (as determined by a qualified biologist) of an aggregation prior to any grading and construction activities on the project site. With authorization of an approved biologist, construction may occur within 100 feet of aggregations under the direction of a qualified biologist monitoring conditions on the project site.

If no aggregations are observed, no further mitigation is required.

Survey Requirements and Timing

Before the City issues grading or building permits, the project applicant shall submit written documentation that construction and grading is occurring outside the winter roosting season, or that monarch surveys have been conducted, and buffer requirements specified above are in place (if applicable). The designated biologist shall prepare and submit a written report of the findings of the pre-construction survey to Scotts Valley for review prior to finalization. This measure, including the fencing location, shall be incorporated into the grading plans for the Project.

Monitoring

The project applicant shall provide written compliance before the City issues any grading or building permit(s) and designate an independently qualified biological monitor to conduct recurrent site inspections to ensure compliance throughout the construction period if monarch butterflies are present.

MM BIO -1.5: Focused Survey and Buffers for Nesting Migratory Birds and Raptors

The applicant shall schedule all on-site tree removal and grading to occur between August 15th and February 1st of any given year to avoid the bird nesting season. If this schedule is not practical, the applicant shall hire a qualified biologist to conduct preconstruction nesting bird surveys no more than two weeks prior to removal of trees and grading. If nesting birds are observed, the biologist will establish a buffer zone where no tree removal or grading will occur until the biologist confirms that all chicks have fledged. The buffer zone may vary from 50 to 250 feet, depending upon the species of bird and exposure of the nest site.

Cultural Resources

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to in § 15064.5?			X	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?			X	
c) Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

Discussion

An Archeological Review and Field Inventory was prepared for the project site by Basin Research Associates in March 2023 (see Appendix C). The analysis below is based on a peer review and findings as described in this report. See comments

Cultural Resources

On May 3, 2023, the City sent notifications via email to the Indian Canyon Mutsun Band of Costanoan and Muwekma Ohlone Indian Tribe of the San Francisco Bay Area. Follow-up letters to both tribes were sent via certified mail on May 10, 2023. The City received one response from the Amah Mutsun Tribal Band of San Juan Bautista on May 15, 2023, stating that all construction staff be trained for culturally sensitive construction activities, and that a qualified

California trained archaeological monitor and qualified native American monitor be present during any grading.

The project site and immediate area are mapped within a High And Moderate Sensitivity Zone based on information available in the early 1990s and as shown in Figure OS Archaeological Sensitivity Zones. Research over the past 30 years suggests a low or low-moderate sensitivity for the project site and vicinity based on completed and ongoing development and the lack of significant reported discoveries.

As part of their background research, Basin Research Associates initiated a prehistoric and historic site record and literature search that was completed by the California Historical Resources Information System, Northwest Information Center, Sonoma State University, Rohnert Park (CHRIS/NWIC File No. 22-1225 dated 2/24/2023 by Murazzo). Reference material from the Bancroft Library, University of California, Berkeley and Basin Research Associates, San Leandro was also consulted.

Research results found that there are three studies on or adjacent to the project site with negative results. Thirty-three (33) additional studies are within 0.25 mile of the project area and the majority of the studies are negative for cultural resources.

There are no historic resources (archaeological and/or built environment) within or adjacent to the project. There are two prehistoric sites, one prehistoric isolate, one historic structure, and two historic buildings within approximately 1,000 feet of the project site. A non-significant prehistoric isolated find is at least 200 feet north the project site.

The Native American Heritage Commission (NAHC) was contacted for a review of the Sacred Lands File (SLF) (Busby 2023a) and the review was negative (Campagne 2023). The seven Native American tribes/individuals recommended for further outreach were contacted by Basin Research Associates on February 21, 2023 (Busby 2023b-h). No responses were received as of March 13, 2023, by Basin Research Associates (see Appendix C). No other agencies, departments or local historical societies were contacted regarding landmarks, potential historic sites or structures.

A systematic archaeological survey of the project site was conducted by Mr. Christopher Canzonieri (MA, RPA), with Basin Research Associates on February 14, 2023. No evidence of prehistoric or historic cultural material and/or culturally modified sediments was observed during the survey.

Basin Research Associates concluded that the project could proceed as planned as it would not affect any recorded historic properties or potentially unique archaeological resources or known tribal cultural resources. Subsurface testing for buried archaeological resources was not recommended. While the discovery of subsurface archeological resources or tribal cultural resources is low, the City's standard conditions of approval would reduce potential impacts to less than significant.

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. Implementation of the following City's standard conditions of approval would reduce this impact to less than significant.

1. The project applicant shall ensure that notes on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources including prehistoric Native American burials.
2. The project applicant shall retain a Professional Archaeologist on an "on-call" basis during ground disturbing construction to review, identify and evaluate any potential cultural resources that may be inadvertently exposed during construction. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under the California Environmental Quality Act (CEQA).
3. If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource or tribal cultural resource under CEQA, he/she shall notify the City of Scotts Valley and other appropriate parties of the evaluation and recommend mitigation measures to mitigate to a less-than significant impact in accordance with California Public Resources Code Section 15064.5. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery among other options.
4. The completion of a formal Archaeological Monitoring Plan (AMP) and/or Archaeological Treatment Plan (ATP) that may include data recovery may be recommended by the Professional Archaeologist if significant archaeological deposits are exposed during ground disturbing construction. Development and implementation of the AMP and ATP and treatment of significant cultural resources will be developed in consultation with any regulatory agencies and culturally affiliated Native American tribes who have expressed interest with tribal cultural resources for Scotts Valley.

Energy

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?				X
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
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:			X	
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.			X	
ii) Strong seismic ground shaking?			X	
iii) Seismic-related ground failure, including liquefaction?			X	
iv) Landslides?			X	
b) Result in substantial soil erosion or the loss of topsoil?			X	
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?			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?			X	
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?				X
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	

Discussion

A geotechnical investigation was prepared for the project site by Earth Systems in March 2022 (see Appendix D). The analysis below is based on a peer review and findings as described in this report.

The approximate eastern half of the site is mapped as (Tsc) Santa Cruz Mudstone (upper Miocene) which is described as medium to thick-bedded and faintly laminated, blocky-weathering, pale-yellowish-brown siliceous organic mudstone. The western half of the site is mapped as (Tp) Purisima Formation (Pliocene and upper Miocene) which is described as very thick-bedded yellowish-gray tuffaceous and diatomaceous siltstone containing thick interbeds of bluish gray, semi friable, fine-grained andesitic sandstone (Geologic Map of Santa Cruz Compiled by Earl E Brabb, 1997).

The site is located within a seismically active area but is outside an Alquist-Priolo Earthquake Fault Rupture Zone as delineated by the State of California. The site is not located within a liquefaction hazard zone as delineated by Santa Cruz County GIS.

The entire Central Coast Area is considered to be an active seismic region due to the presence of several active faults. Three northwest-trending major earthquake faults that are responsible for the majority of the movement on the San Andreas fault system extend through the San Francisco Bay Area. They include the San Andreas fault, the Calaveras fault and the Hayward fault, which are respectively located approximately 5.9 miles, 23.6 miles, and 28.3 miles to the northeast. Other faults closer to the site are the Zayante-Vergeles fault, Butano, and Sargent

fault which are respectively located approximately 2.5 miles, 5.3 miles, and 6.0 miles to the northeast.

As part of their investigation, Earth Systems conducted nine borings on the project site in December 2021 and February 2022. The borings drilled within the property encountered surficial soils consisting of sandy lean clay, clayey silt, and clayey sand of variable thickness. They were underlain by very dense clayey sand which is interpreted as the Purissima Formation. Groundwater was encountered as shallow as four feet.

In general, Earth Systems concluded that the project site is geotechnically suitable for the proposed residential development provided the recommendations contained herein are incorporated in the design and implemented during site grading and foundation construction.

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 the building permit application submitted to the City of Scotts Valley, the project applicant would be required to submit plans that comply 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 will 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") indicates 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.

The geotechnical investigation 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. This includes City standard conditions of approval requiring compliance with these laws should paleontological resources be encountered. 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
have a significant impact on the environment?				
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			X	

Discussion

Construction

Construction of the project would result in direct emissions of CO_2, N_2O, and CH_4 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 $MTCO_2e$) 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 $MTCO_2e$ 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 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 as the project is consistent with the General Plan 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
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?			X	
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
one-quarter mile of an existing or proposed school?				
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?			X	
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?				X
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				X
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				X

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 accidently 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 less than significant, and no mitigation is required.

Release of Substances Near Schools

Scotts Valley High School is located approximately 940 feet north of the project site. However, project construction and operation would not involve the emission of hazardous materials, therefore impacts would be 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 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?				X
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?				X
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:			X	
i. Result in substantial erosion or siltation on- or off-site?			X	
ii. Substantially increase the rate or amount of surface runoff in a			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
manner which would result in flooding on- or offsite?				
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?			X	
iv. Impede or redirect flood flows?			X	
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?				X

Discussion

A stormwater control plan was prepared for the project site by C2G/Civil Consultants Group, Inc. in March 2023, refer to Appendix E (C2G/Civil Consultants Group, March 2023). The analysis below is based on the findings of the prepared report.

Groundwater Demand

According to the project plans, the project would use approximately 1,320 gallons per day of water. [3] 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 March 2, 2022). Therefore, there would be no impact.

[3] Daily Water Use Factor for High Density Residential is 55 (gallons per capita/day). (24 residents x 55 gallons/day) = 1,320 (gallons/day)

Groundwater Recharge

The project is not located in an area designated on the Scotts Valley General Plan Hydrological Resources Map, Figure OS-5, as a Potential Groundwater Recharge Area. According to the Stormwater Control Plan (C2G, March 2023), the project site does not contain impervious surface area as it is currently undeveloped. Redevelopment would increase the amount of impervious surface area by 56,963 sf. To offset the potential loss of groundwater infiltration, the project would include the use of curb and gutter to channelize surface flow and direct runoff into area drains and catch basins. Area Drains and catch basins would be used to collect runoff and convey it via underground pipes into four underground storage and infiltration chambers. This system would be designed to accommodate the relatively low infiltration rates found at this site. Therefore, there would be no impact and no mitigation is required.

Stormwater Runoff

The project applicant prepared a Stormwater Control Plan (SCP) (C2G/Civil Consultants Group, March 2022) 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 project applicant 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 accidently 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.

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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Physically divide an established community?				X
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?				X

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 zoned Residential Single-Family (R-1-20). The project site is designated in the City of Scotts Valley General Plan as Low Density Residential, which allows for 2 residential units per acre. 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?				X
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?				X

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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?			X	
b) Generation of excessive groundborne vibration or groundborne noise levels?			X	
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?				X

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 65dBA. 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				X
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

Discussion

The project would result in a relatively small increase in population (24 persons [4]) 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 2022 Regional Growth Forecast for the City of Scotts Valley population of 12,010 by 2045. 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.

[4] . The average household size for Scotts Valley is 2.67 persons which estimates 24 persons for a project with 9 units.

Public Services

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project result in:				
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 to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
i) Fire protection?				X
ii) Police protection?				X
iii) Schools?				X
iv) Parks?				X
v) Other public facilities?				X

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 20 feet northeast 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 1.30 miles south of the project site. Therefore, there would be no impact.

Schools

The project would add approximately 24 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 24 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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?				X
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities				X

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
which might have an adverse physical effect on the environment?				

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 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 off-set the project's incremental increase in the demand for recreation.

Transportation

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?				X
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?				X
c) Substantially increase hazards due to a geometric design feature				X

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
(e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				
d) Result in inadequate emergency access?				X

Discussion

A Focused Transportation Study was prepared for the project site by W-Trans in July 2022, refer to Appendix F (W-Trans, July 2022). The analysis below is based on the findings of prepared report.

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

Six of the proposed lots would be accessed via a new access road that would connect to Grace Way and Casa Way and would include a cul de sac and concrete drive aprons. The remaining three lots would be accessed from a new cul de sac at the end of San Augustine Way.

The design of the roadway would be consistent with City standards 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 project would be required to pay City traffic impact fee.

Based on the Focused Transportation Study for the Casa Way Subdivision Project (W-Trans, July 2022, see Appendix F), the project would generate an estimated 94 daily trips. Because this is less than the 110 trip threshold for small projects, the project would qualify for the screening criteria 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 from further analysis. Therefore, there would be no impacts to transportation and no mitigation is required.

Tribal Cultural Resources

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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:				X
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?				X
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				X

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
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?				
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				X

Discussion

An Archeological Review and Field Inventory was prepared for the project site by Basin Research Associates, in March 2023, refer to Appendix C. (Basin Research Associates, March 2023). The analysis below is based on the findings of prepared report.

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 (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.

The Native American Heritage Commission (NAHC) was contacted for a review of the Sacred Lands File (SLF) (Busby 2023a) and the review was negative (Campagne 2023). The seven Native American tribes/individuals recommended for further outreach were contacted by Basin Research Associates on February 21, 2023 (Busby 2023b-h). No responses were received as of March 13, 2023, by Basin Research Associates (see Appendix C).

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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:				
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?			X	
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
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?			X	
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?			X	

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?				X

Discussion

Water Treatment Facilities

The two proposed residential units would result in a daily water demand of 1,320 gallons per day or approximately 0.004-acre feet per year (AFY).[5] Therefore, the proposed residential use would cause only a minimal increase on the demand for water and wastewater service and this additional demand is well within the future increase in water demand as identified in the 2020 Urban Water Management Plan for the Scotts Valley Water District and San Lorenzo Water District. The Scotts Valley Water District has reviewed the application issued a Will Serve letter for the project (March 2022). Thus, impacts would be 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 nine residential units. Thus, impacts would be 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.

5 Daily Water Use Factor for High Density Residential is 55 (gallons per capita/day). (24 residents x 55 gallons/day) = 1,320 (gallons/day)

Solid Waste

The project would generate approximately 110 pounds of daily solid waste.[6] The 110 pounds of daily solid waste generated by the project would represent less than one percent of the daily permit capacities of the Monterey Peninsula landfill[7], respectively. Thus, impacts would be 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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?				X
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?				X
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				X

6 Daily Solid Waste Generation Rate for Residential Use is 12.23 pounds per day/unit (CalRecycle, 2019). (9 residential units x 12.23 pounds/day) = 110.1 pounds/day
7 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 Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
may result in temporary or ongoing impacts to the environment?				
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?				X

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

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
Does the project:				
a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish		X		

ENVIRONMENTAL IMPACTS Issues	Potentially Significant Issues	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact
or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of 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 plants, with the implementation of identified Mitigation Measures.

With respect to biological resources, the Biological Resources Section identified potentially significant impacts to special status species. Implementation of MM BIO-1.1 through MM BIO-1.5 would reduce these impacts to less than significant.

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:

I find that the project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.	
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.	X
I find that the project MAY have a significant effect on the environment and an ENVIRONMENTAL IMPACT REPORT is required.	
I find that the project MAY 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.	
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.	

Jonathan Kwan _____ 7/21/23 _____

Jonathan Kwan
Contract Planner

Date



Source: USGS, 2023

Kimley»Horn
Expect More. Experience Better.

Not to scale

Figure 1: Project Location
Casa Way Residential Subdivision

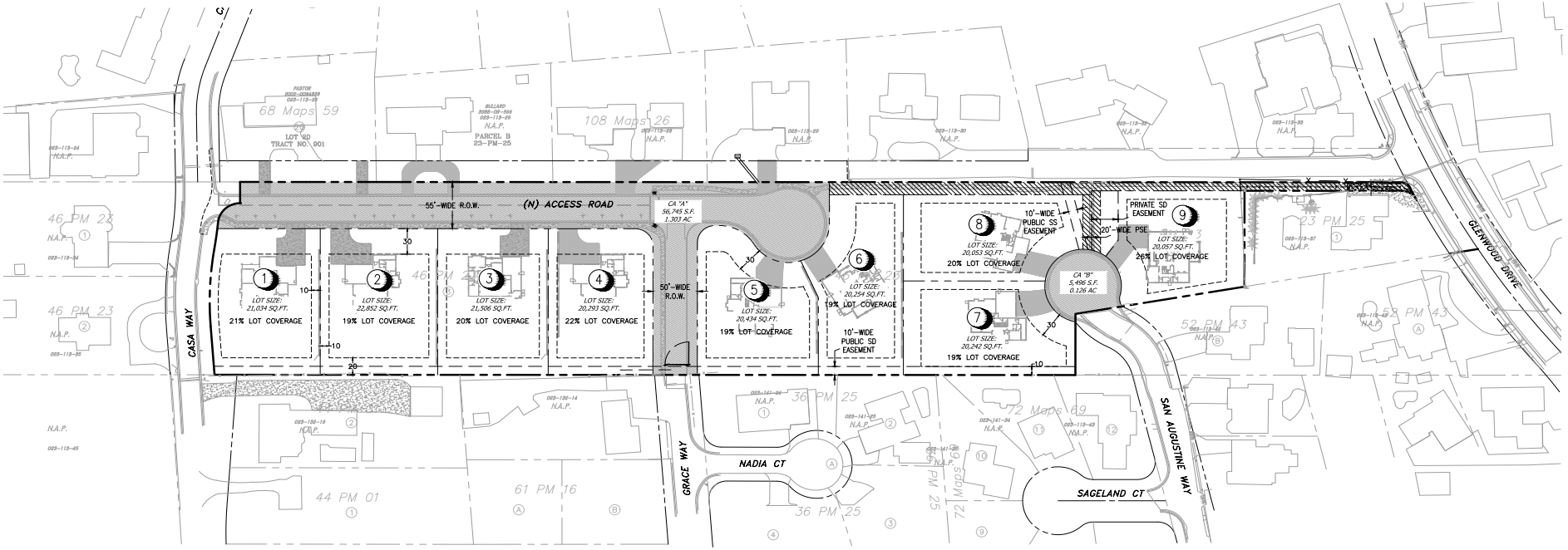


Source: Nearmaps, 2023

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Not to scale

Figure 2: Project Vicinity
Casa Way Residential Subdivision

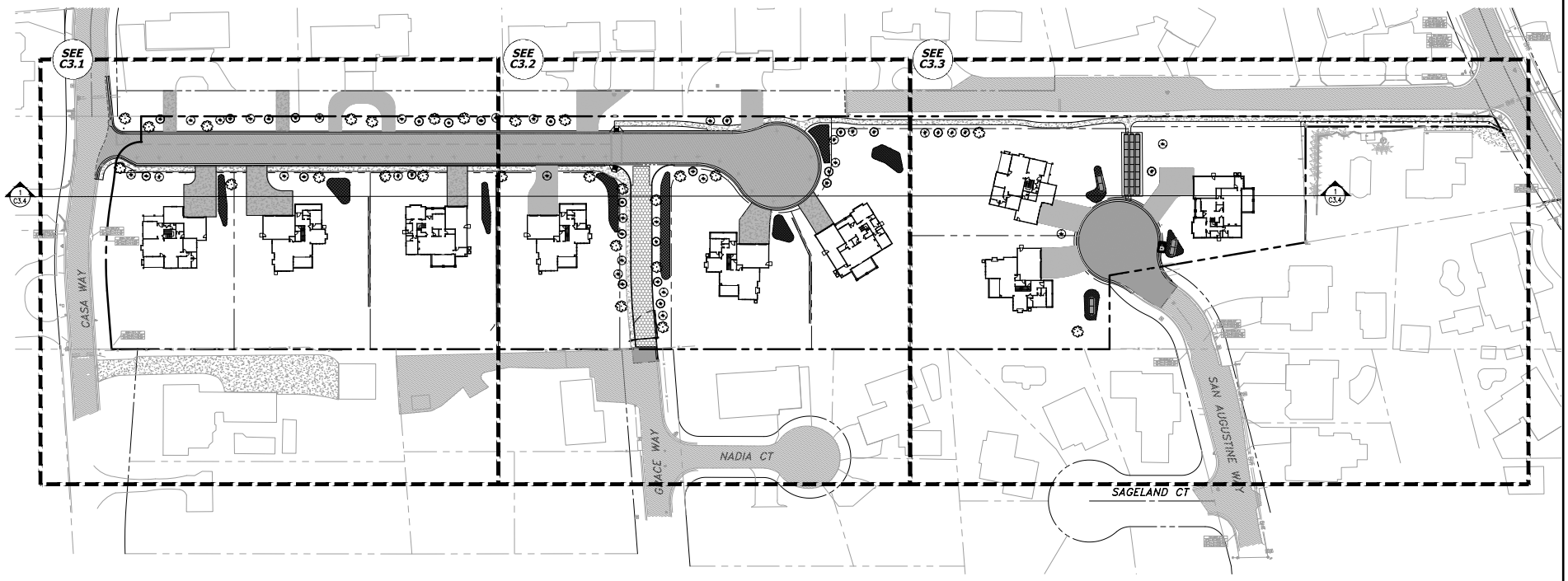


Source: C2G, 2023.

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Not to scale

Figure 3: Site Plan
Casa Way Residential Subdivision



EARTHWORK QUANTITIES

NOTE: THE EARTHWORK QUANTITIES SHOWN HEREON ARE EXCLUSIVE OF WALL FOOTINGS, EXISTING PAVEMENT REMOVAL AND OVER EXCAVATION AND RECOMPACTION, UTILITY TRENCH SPOILS & SOIL EXPANSION AND CONTRACTION FACTORS.

ITEM	DESCRIPTION	CUT (cu.yds)	FILL (cu.yds)
1	EG VS. FG	2,550	9,800

NET VOLUME = 7,250 CU.YDS. OF FILL

THE ABOVE QUANTITIES ARE FOR INFORMATION PURPOSES ONLY. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE THE NECESSARY CUT AND FILL TO ACCOMPLISH FINISH GRADE SHOWN ON THESE PLANS.

ABBREVIATIONS

AB	AGGREGATE BASE	NG	NATURAL GROUND
AC	ASPHALT CONCRETE	P.O.T.	PATH OF TRAVEL
B/	BOTTOM OF ...	PL	PROPERTY LINE
BLDG	BUILDING	PVR	PERVIOUS PAVER
BS	BOTTOM OF STAIR	SD	STORM DRAIN
BW	BACK OF WALK	SDAD	STORM DRAIN AREA DRAIN
CONC	CONCRETE	SDDI	STORM DRAIN DROP INLET
DWY	DRIVEWAY	SDMH	STORM DRAIN MANHOLE
EC	EDGE OF CONCRETE	T/	TOP OF ...
EP	EDGE OF PAVEMENT	TG	TOP OF GRATE
EL	ELEVATION	TS	TOP OF STAIR
FF	FINISH FLOOR	TW	TOP OF WALL
FL	FLOWLINE	UG	UNDERGROUND
G	GROUND	W/	WITH
HP	HIGH POINT		
INV	INVERT ELEVATION		
LP	LOW POINT		

LEGEND

- PERF — PERFORATED PIPE
- SD — STORM DRAIN PIPE
- SD — PORTION OF (E) STORM DRAIN PIPE TO REMAIN
- STORM DRAIN INLET
- STORM DRAIN MANHOLE
- 250 — GRADING CONTOUR
- 250 — EXISTING CONTOUR
- RETAINING WALL

GENERAL GRADING NOTES

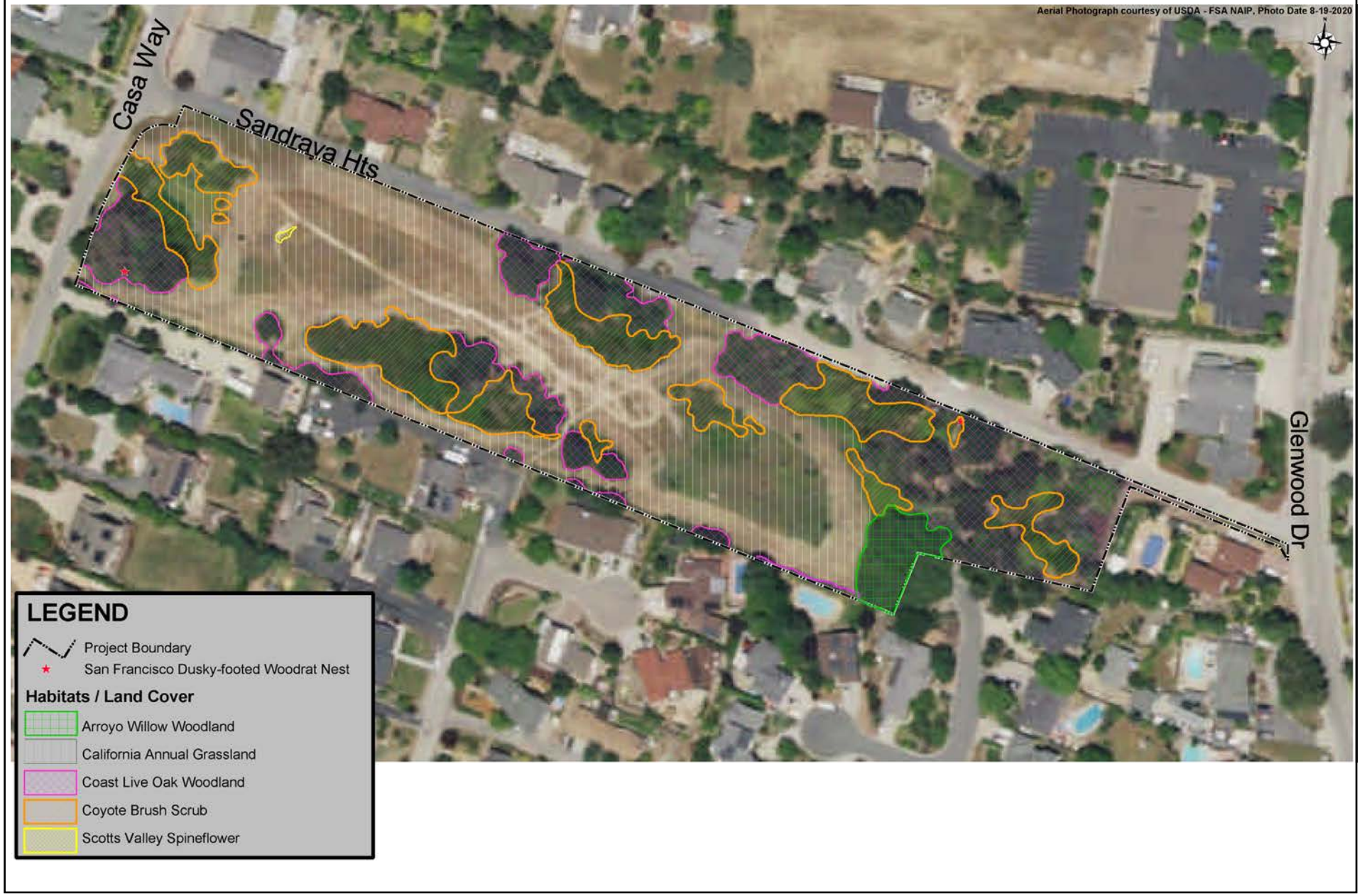
1. ALL AREAS TO RECEIVE FILL SHALL BE STRIPPED TO A DEPTH TO BE DETERMINED BY THE SOILS ENGINEER. ANY (E) A.C. OR P.C.C. PAVING SHALL BE SCARIFIED & REMOVED & SUBGRADE PREPARED & COMPACTED AS SHOWN IN THESE PLANS.
2. ALL MATERIAL TO BE USED AS FILL WITHIN BUILDING PAD AREAS & PARKING OR DRIVEWAY AREAS TO BE FREE OF ALL VEGETATION & FOREIGN MATTER AND SHALL BE APPROVED BY THE SOILS ENGINEER.
3. ALL BUILDING PADS TO BE COMPACTED TO 95% RELATIVE COMPACTION; DRIVEWAY & STREET AREAS TO BE COMPACTED TO 95% RELATIVE COMPACTION PER ASTM D1557-91.
4. BUILDING PADS TO BE LEVEL SIDE-TO-SIDE, FRONT-TO-REAR, UNLESS OTHERWISE SHOWN.
5. STRIPPINGS MAY BE PLACED IN PLANTING AREAS; ALL EXCESS STRIPPING SHALL BE HAULED OFF. PAVING DEBRIS SHALL BE HAULED OFF TO AN APPROVED DISPOSAL SITE.
6. ALL WORK SHOWN OR NOTED IN THESE PLANS SHALL BE IN STRICT ACCORDANCE WITH THE RECOMMENDATIONS OF THE SOILS ENGINEER, ALL LOCAL, STATE AND FEDERAL MINIMUM STANDARDS AND THE LATEST ADDITION OF THE UNIFORM BUILDING CODE.
7. CONTRACTOR SHALL PROTECT ALL EXISTING SITE IMPROVEMENTS NOT IDENTIFIED FOR REMOVAL DURING CONSTRUCTION AND SHALL REPAIR ANY DAMAGE TO NEW CONDITION AT THEIR EXPENSE.
8. CONTRACTOR SHALL VERIFY ALL EXISTING SITE CONDITIONS, SITE DIMENSIONS AND GRADES PRIOR TO THE START OF CONSTRUCTION.
9. ALL GRADING AND RELATED WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE STANDARD REQUIREMENTS OF THE CITY OF SANTA CRUZ AND THE PROJECT'S CONDITIONS OF APPROVAL.
10. GRADING SLOPES FOR BOTH CUT AND FILL SHALL NOT EXCEED 2(H):1(V) UNLESS OTHERWISE DIRECTED BY THE GEOTECHNICAL ENGINEER
11. ALL SOFTSCAPE GRADES ADJACENT TO (N) BUILDINGS SHALL BE 8" (MIN.) BELOW FINISH FLOOR.
12. CONTRACTOR SHALL GRADE TO ENSURE DRAINAGE FLOWS AWAY FROM NEW BUILDINGS

Source: C2G, 2023.

Kimley»Horn
Expect More. Experience Better.

Not to scale

Figure 4: Grading Plan
Casa Way Residential Subdivision

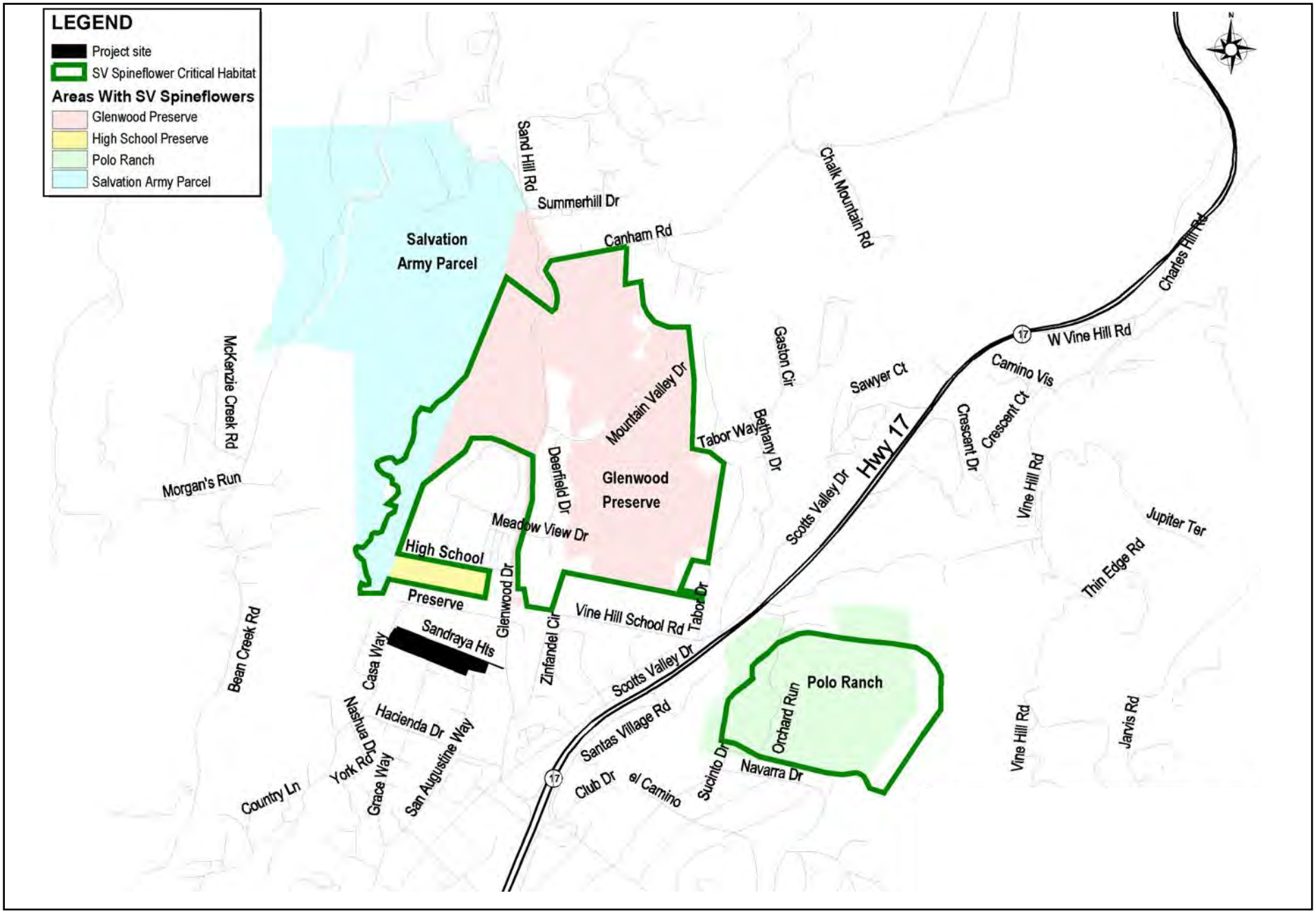


Source: Live Oak Associates, 2022.

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Figure 5: Biotic Habitats
Casa Way Residential Subdivision

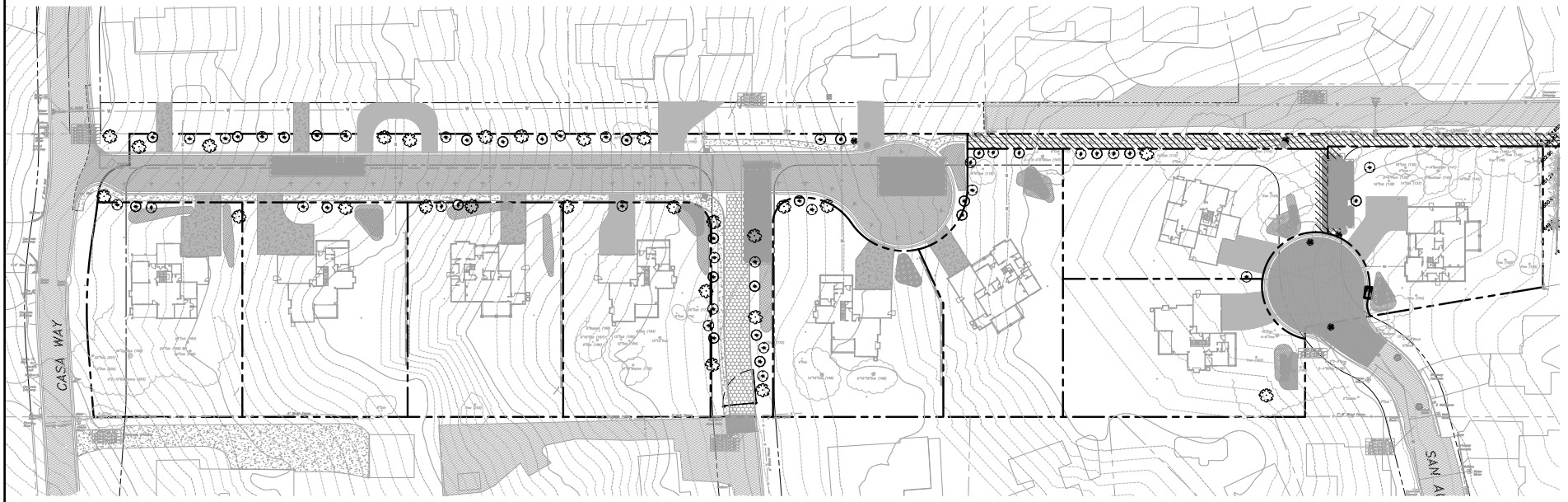


Source: Live Oak Associates, 2022.

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Expect More. Experience Better.

Not to scale

Figure 6: Scotts Valley Spineflower Critical Habitat
Casa Way Residential Subdivision



TREE SCHEDULE

TREES	BOTANICAL NAME	COMMON NAME	COUNT
	SEQUOIA SEMPERVIRENS	CALIFORNIA REDWOOD	26
	QUERCUS AGRIFOLIA	COAST LIVE OAK	26
	CONIFEROPHYTA	CONIFER	26

Source: C2G, 2023.

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Expect More. Experience Better.

Not to scale

Figure 7: Landscape Plan
Casa Way Residential Subdivision

Appendix A

Biological Evaluation Report

LIVE OAK ASSOCIATES, INC.

CASA WAY-SANDRAYA HEIGHTS ROAD PROPERTY
BIOLOGICAL EVALUATION REPORT
SCOTTS VALLEY, SANTA CRUZ COUNTY, CALIFORNIA

Prepared by
LIVE OAK ASSOCIATES, INC.

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Prepared for

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July 20, 2023 PN 2631-01

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TABLE OF CONTENTS

1 INTRODUCTION 1
1.1 PURPOSE AND OBJECTIVES 1
1.2 PROJECT LOCATION 1
1.3 PROJECT DESCRIPTION 1
1.4 STUDY METHODOLOGY 3

2 EXISTING CONDITIONS 5
2.1 REGIONAL SETTING 5
2.2 SOILS 5
2.3 BIOTIC HABITATS AND LAND USES 6
2.3.1 California Annual Grassland 6
2.3.2 Coyote Brush Scrub 7
2.3.3 Coast Live Oak Woodland 7
2.3.4 Arroyo Willow Woodland 8
2.4 SPECIAL STATUS PLANTS AND ANIMALS 10
2.5 SCOTTS VALLEY SPINEFLOWER 24
2.5.1 Regional Occurrence 24
2.5.2 Occurrence on the Site 24
2.5.3 Designated Critical Habitat 24
2.6 SENSITIVE NATURAL COMMUNITIES AND HABITATS 28
2.7 WILDLIFE MOVEMENT CORRIDORS 28
2.8 JURISDICTIONAL WATERS 29

3 IMPACTS AND MITIGATIONS 30
3.1 SIGNIFICANCE CRITERIA 30
3.2 RELEVANT GOALS, POLICIES, AND LAWS 30
3.2.1 Threatened and Endangered Species 30
3.2.2 Migratory Birds 31
3.2.3 Birds of Prey 31
3.2.4 Bats 31
3.2.5 Jurisdictional waters and wetlands 32
3.2.6 City of Scotts Valley Policies and Ordinances 34
3.3 IMPACTS AND MITIGATIONS SPECIFIC TO THE PROJECT SITE 35
3.3.1 Special Status Plants 35
3.3.2 Special Status Wildlife 39
3.3.3 Impacts to Roosting Bats 40
3.3.4 Impacts to San Francisco Dusky-Footed Woodrats 41
3.3.5 Impacts to Monarch Butterfly 41
3.3.6 Impacts to Nesting Migratory Birds and Raptors 42
3.3.7 Impacts to Sensitive Natural Communities 43
3.3.8 Impacts to Riparian Habitat or Wetlands 43
3.3.9 Degradation of Water Quality in Seasonal Drainages, Stock Ponds, and Downstream Waters 43
3.3.10 Interference with the Movement of Native Wildlife 44

3.3.11 Consistency with General Plan 44
3.3.12 Consistency with Tree Protection Regulations 44
3.3.13 Habitat Conservation Plans/ Natural Community Conservation Plans (HCP/NCCP) 45

4 LITERATURE CITED 47

APPENDIX A: VASCULAR PLANTS OF THE PROJECT SITE 51

APPENDIX B: PHOTOGRAPHS OF THE PROJECT SITE 56

1 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

Live Oak Associates, Inc. (LOA) investigated the biological resources of an approximately 5.9-acre site ("project site") proposed for residential development ("project") and evaluated potential impacts to those biological resources associated with project implementation. The following technical report summarizes the results of LOA's investigation and recommends measures to reduce the magnitude of impacts to biological resources as appropriate.

The primary objectives of this report are to:

- Summarize all site-specific information related to existing biological resources
- Make reasonable inferences about the biological resources that could occur onsite based on habitat suitability and the proximity of the site to a species' known range
- Summarize all local, state, and federal policies and laws regulating biological resources that may be relevant to the project
- Identify and discuss potential project impacts to biological resources
- Identify avoidance, minimization, and mitigation measures that would reduce the magnitude of any project-related impacts to biological resources

1.2 PROJECT LOCATION

The project site is approximately 5.9-acres (APN 023-113-36) located at the intersection of Casa Way and Sandraya Heights Road in the City of Scotts Valley, Santa Cruz County California (Figure 1). The site is completely bounded by single-family residences.

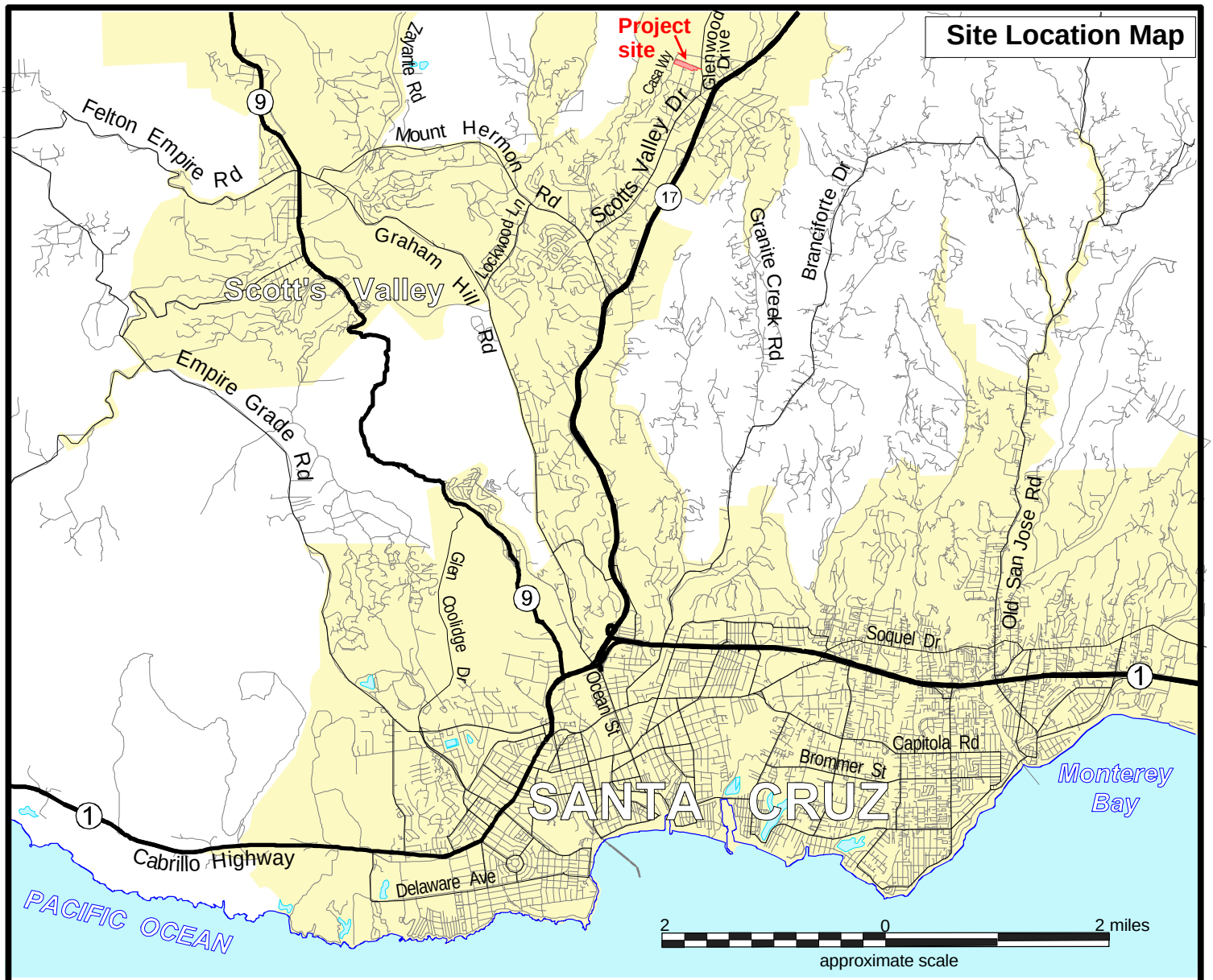
The site is located in the Diablo 7.5-minute U.S. Geological Survey (USGS) quadrangle in the northeast quarter of section 18, township 10 south, range 1 west on the Mount Diablo Base and Meridian.

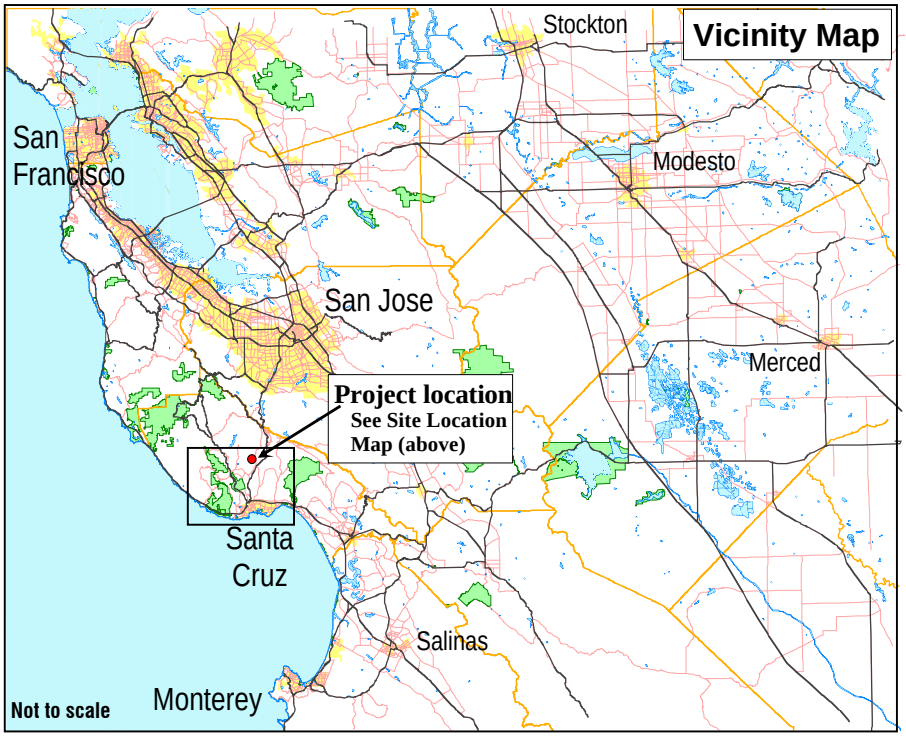
1.3 PROJECT DESCRIPTION

Granite Ridge properties plans to develop the site with multi-family housing units, associated parking, and drive aisles. Current site plans include subdividing the property into 9 smaller lots and avoiding development or impact to identified sensitive habitats on the property.

Based on the current design, the project will impact most of California annual grassland, coyote brush, coast live oak woodland, and Arroyo willow woodland because of residential development and associated infrastructure. Some small portions of the coyote brush and woodland habitat will be preserved on-site.

CNPS protocol plant surveys were conducted over the entire site in 2022. These surveys detected the occurrence of a small population of the Scotts Valley spineflower. This small population supported 185 individuals occurring over 140 ft^2. No other special status plant species were detected during these protocol surveys. For example, these surveys did not detect the Scotts Valley polygonum, which often co-occurs with the spineflower. Nonetheless, the Project has incorporated all of the offsite mitigation strategies for the Scotts Valley spineflower into their







Live Oak Associates, Inc.

Sandraya Heights, Scott's Valley
Site / Vicinity Map

Date	Project #	Figure #
10/26/2021	2631-01	1

Project (see the details of the Off-site Mitigation Strategy in Section 3.3.1 (Special Status Plants) below. While protocol surveys conducted over the entire site in 2022 failed to detect the Scotts Valley polygonum, the offsite mitigation proposed as part of the Project for the Scotts Valley spineflower will nonetheless, also benefit the polygonum; the polygonum co-occurs with all known off-site populations of the Scotts Valley spineflower (see Section 3.3.1).

Other potential impacts include construction impacts to roosting bats (Section 3.3.3), nests of the San Francisco dusky footed woodrat (Section 3.3.4), aggregates of monarch butterflies (Section 3.3.5), nests of breeding birds (Section 3.3.6). The project will also incorporate all of the avoidance measures into the Project Description as detailed in the respective Sections of 3.3.

1.4 STUDY METHODOLOGY

The analysis of potential project impacts, as discussed in Section 4 of this report, is based on the known and potential biotic resources of the site, discussed in Section 2, and the regulatory framework described in Section 3. Thus, the site's broader environmental setting is described to provide context for the discussion related to threatened and endangered species, wetlands, and other sensitive habitats. As such, the following were completed for this biological evaluation:

Background review. LOA reviewed resource agency data and literature, including, but not limited to, the following:

The California Natural Diversity Database Rarefind 5 (CNDDB; CDFW 2021);

The California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021);

United States Department of Agriculture (USDA) Natural Resource Conservation Service Custom Soil Resource Report for Santa Cruz County, California (NRCS 2021); and

Manuals and references related to plants and animals of Santa Cruz County.

Field survey. LOA plant and wetland ecologist Arren Allegretti conducted field surveys of the site on October 13, November 3 and 8, 2021. The field survey included the identification of biotic habitats and vegetation communities on the site. All identifiable plants and animals observed on the site were recorded.

A survey of all trees occurring on the site was completed by certified arborist Neil Kramer on November 3,5, and 8, 2021. Wetland ecologists Davinna Ohlson and Arren Allegretti conducted a wetland delineation of the site on December 1, 2021.

Focused special status plant species surveys were conducted by LOA botanist Neal Kramer and plant ecologists Arren Allegretti and Pamela Peterson. Surveys were conducted on March 8, April 23, and June 7, 2022. Neal Kramer visited a local reference population of the Scotts Valley spineflower on May 28, 2022 to compare and verify species observed on the site. All surveys were timed to coincide with the target species' known blooming period when they would be evident and most identifiable.

In summary, LOA ecologists walked the entire property ensuring 100% visual coverage. All vascular plant species observed were recorded in a field notebook. The survey was floristic; all

species were identified to the lowest taxonomic order or to the level of taxa needed to separate occurring species from the target special status species using the *Jepson Manual: Vascular Plants of California* (Baldwin et al. 2012) (Appendix A).

The rare plant survey methodology is consistent with the Endangered Species Recovery Program for rare plant survey guidelines (Cypher 2002) and the California Department of Fish and Wildlife's (2018) protocols for surveying and evaluating Impacts to special status native plant populations and sensitive natural communities.

2 EXISTING CONDITIONS

2.1 REGIONAL SETTING

The site is located within the watershed of the San Lorenzo River, a major rivershed basin of northern Santa Cruz County. The project site is located just south of the Scotts Valley High School Preserve and Glenwood Preserve.

The site is completely surrounded by residential and commercial development, particularly to the north, east, and south. Approximately one mile west of the site is forested property with sparse residential development. Highway 17 is approximately half a mile east and south of the site.

The Santa Cruz Mountains have a Mediterranean climate with warm to hot dry summers and cool winters. Annual precipitation in the general vicinity of the site is highly variable from year to year. Average annual rainfall is approximately 29 inches, most of which falls between November and March (WRCC 2021). Stormwater runoff readily infiltrates the site's soils; when field capacity has been reached, gravitational water drains into the site as shallow groundwater or as surface sheet flow.

The site's topography is slightly sloped, ranging in elevations from 724 ft to 650 ft National Geodetic Vertical Datum, and generally dropping in elevation from the western to eastern sections of the site.

2.2 SOILS

One soil mapping unit- the Bonnydoon loam- occupies approximately 85% of the site (USDA-NRCS 2021). The silt and sandstone derived Bonnydoon loam is somewhat excessively drained and have slopes of 5-85%. Bonnydoon soils are known as mollisols that develop under grasslands and are characterized by thick dark surface horizons from accumulations of organic vegetative material. Soil textures are typically heavy sandy loam, heavy fine sandy loam, loam, gravelly loam, sandy clay loam, or clay loam and has 18 to 30 percent clay (USDA-NRCS 2021).

Hydric soils are those that form under conditions of saturation, flooding, or ponding long enough to form unoxygenated conditions in the soil's upper horizon. Although the Bonnydoon series are predominantly non-hydric, hydric inclusions may occur on the site. The Watsonville loam series covers approximately 2% of the site and is considered to be a hydric soil (USDA-NRCS 2021). Other minor soil components that occur on the site, including the Aptos (4%), Elkhorn (3%), Los Osos (3%), and Tierra (3%), are not considered to be hydric (USDA-NRCS 2021).

The Bonnydoon soil series has a slightly acidic pH throughout its soil profile. Because Bonnydoon soils are not strongly alkaline, this soil type would preclude plant species adapted to alkaline soils from successfully maintaining populations on the site. Serpentine soils are also absent from the site, and plants adapted to such soils would not have colonized the site in the past or under current conditions.

2.3 BIOTIC HABITATS AND LAND USES

The site is currently used for multi-recreational purposes and has trails heavily used by dirt bikers, dog-walkers, and hikers. Habitats identified on the site included 1) California annual grassland, 2) coast live oak woodland, 3) Arroyo willow woodland, and 4) coyote brush scrub (Figure 2). These habitats and their constituent plant and animal species are described in more detail in the following subsections. A list of the vascular plant species observed on the project site is provided in Appendix A. Selected photographs of the project site are presented in Appendix B.

2.3.1 California Annual Grassland

California annual grassland covered approximately more than half of the site (Figure 2). The perimeter of these grasslands was mowed at the time of the October and November 2021 field surveys. Most of the recreational trails and associated disturbance occurred throughout these grasslands. Trash from unregulated recreational activities was commonly observed throughout this habitat.

These grasslands were dominated by a mix of non-native and native grasses and forbs. Naturalized and non-native grasses dominated upland portions of the site, which included several species of bromes (*Bromus* spp.), and oats (*Avena* spp.). Rattlesnake grass (*Briza maxima*), a non-native grass with a moderate level of invasion (Cal-IPC 2021), occurred at the edges of mowed areas near the southern section of the site.

Creeping wild-rye (*Elymus triticoides*), velvet grass (*Holcus lanatus*), and fuller's teasel (*Dipsacus sativus*) occurred in a mesic swale located at the southeastern section of the site. A ditch collecting run-off from Sandraya Heights Road transitions into this swale supporting a mix of upland and some wetland vegetation. Fuller's teasel is known to occur in uplands while creeping wild-rye and velvet grass are known to occur equally in uplands and wetlands (USACE 2020). Other herbaceous species in the mesic swale included Pacific rush (*Juncus effusus ssp. pacificus*) and dotted smartweed (*Persicaria punctata*), which are known to occur in wetlands (USACE 2020).

The trail junctions on these grasslands expose bare ground, sandy-silty bedrock, and open sunlit areas providing opportunities for native annuals to establish themselves. The federally endangered Scotts Valley spineflower (*Chorizanthe robusta* var. *hartwegii*) has been located by the trail junctions at the western section of the site (LOA 2022, R. Stiles 2021, personal communication, 6 Dec. 2021, M. Timmer 2021, personal communication, 7 Dec. 2021). Other observed annual species in these open areas included California poppy (*Eschscholzia californica*), Kellogg's tarweed (*Deinandra kellogii*), coast tarweed (*Deinandra corymbosa*), common madia (*Madia elegans*), and spanish lotus (*Acmispon americanus*).

Disturbed areas adjacent to residential roads supported invasive weeds such as stinkwort (*Dittrichia graveolens*) that dominated southeastern sections of the site and bull thistle (*Cirsium vulgare*) apparent in some of the northwestern sections of the site. Other non-native weeds such as vinegar weed (*Trichostema lanceolatum*) and red-stemmed filaree (*Erodium bothrys*) were common throughout the site. Wild radish (*Raphanus sativa*) was relatively common along areas adjacent to Sandraya Heights Road.

Grasslands also provide habitat for small mammals such as California ground squirrel *(Spermophilus beecheyi)* and Botta's pocket gopher (*Thomomys bottae*), whose burrows were observed near trail junctions. These small mammals serve as prey for raptors such as turkey vultures (*Cathartes aura*) and red-tailed hawks (*Buteo jamaicensis*) that were observed soaring over the site. Small mammals also serve as a prey base for coyotes, bobcats (*Lynx rufus*), and snakes such as common garter snake (*Thamnophis sirtalis*), gopher snake (*Pituophis melanoleucis*), and common king snake (*Lampropeltis getula*).

The annual grassland habitat on the site is fragmented by surrounding residential development and the continual disturbance from unregulated recreational activities lowers the grasslands' wildlife value.

2.3.2 Coyote Brush Scrub

The native shrub coyote brush (*Baccharis pilularis*) dominated this vegetation community that was commonly located adjacent to the coast live oak woodlands of the site. Other species that occurred in this community included poison oak (*Toxicodendron diversilobum*) in the overstory as well as non-native grasses such as rattlesnake grass and bromes in the understory.

Coyote brush scrub habitats provide cover and nesting habitat for a variety of wildlife. Small mammals occurring in this habitat include the California mouse (*Peromyscus californicus*) and brush rabbit (*Sylvilagus bachmani*). Numerous San Francisco woodrat nests (*Neotoma fuscipes*), a special status species, were observed throughout this habitat and coast live oak woodlands. Several monarchs (*Danaus plexippus*), a candidate for listing under the Endangered Species Act, were observed foraging on the nectar of coyote brush flowers.

Avian species known to occur in this habitat include the wrentit (*Chamae fasciata*), blue-gray gnatcatcher (*Polioptila caerulea*), and pine siskins (*Spinus pinus*) that often feed from the residential bird feeders adjacent to the site. Although an unlikely occurrence, a great egret (*Ardea alba*) was observed in this habitat near the intersection of Casa Way and Sandraya Heights road. This species was likely a transient whose occurrence was documented approximately 300 meters north of the site, at the Glenwood Preserve (iNaturalist 2021).

2.3.3 Coast Live Oak Woodland

Coast live oak (*Quercus agrifolia*) dominated this woodland that occurred throughout the site. Other California native species occurring in this woodland's overstory included the Monterey cypress (*Hesperocyparis macrocarpa*) and Northern California black walnut trees (*Juglans hindsii*). A grove of native boxelder maple (*Acer negundo*), a species known to occur in wetlands, occurred in the southeastern sections of the site along Sandraya Heights Road. Introduced trees such as silver wattle (*Acacia delbata*) and cherry plum (*Prunus cerasifera*) also occurred near the southeastern sections of the site. Other cultivated trees such as the mayten (*Maytenus boaria*.) and the European pear (*Pyrus communis*) occurred near the northwestern section of the site.

The oak woodlands shrub layer was commonly dominated by poison oak with occasional coyote brush. Cape ivy (*Delairea odorata*), a highly invasive species (Cal IPC 2021), was common in the northwestern sections of the site. Understory story species consisted of a mix of grasses and forbs similar to those found in the grasslands of the site.

Coast live oak woodlands provide important habitat for a variety of wildlife species. Coast live oaks provide nesting sites and cover for many birds, including raptors, and mammals. Cavity-bearing trees supply food, denning, nesting, and roosting sources. Root systems and woody debris contributes to the structural complexity of the woodland floor and provides foraging areas for small mammals as well as microclimates suitable for amphibians and reptiles. Acorns are a valuable food source for many animal species, including the observed California quail (*Callipepla californica*), California scrub jay (*Aphelocoma californica*), black-tailed deer (*Odocoileus hemionus columbianus*), and western gray squirrel (*Sciurus griseus*). Similar to the coyote brush habitats of the site, numerous dusky-footed woodrat (*Neotoma fuscipes*) nests were observed among the oak woodland's understory. Woodrats forage on acorns that are stored within their nests.

2.3.4 Arroyo Willow Woodland

A small grove of Arroyo willows (*Salix lasiolepis)* occurs at the southeastern section of the site (Figure 2). Arroyo willows typically occur in wetlands and form dense thickets around drainages (CNPS 2021). The Arroyo woodlands of the site likely collect run-off from the adjacent residences and roads. A culvert parallel to Sandraya Heights Road collects run-off into a ditch that drains into a grassland swale (Section 2.3.1) and these willow-dominated woodlands. Historical aerial imagery displays the absence of these Arroyo willow woodlands prior to the onset of surrounding development. It is likely that these Arroyo willow woodlands were influenced and developed by the hydrological changes (e.g., increased run-off) resulting from surrounding development that has increased over time.

Wildlife species expected to occur in this habitat would be similar to those found in the coast live oak woodlands of the site.

Aerial Photograph courtesy of USDA - FSA NAIP, Photo Date 8-19-2020

Casa Way

Sandraya Hts

Glenwood Dr

LEGEND

Project Boundary

San Francisco Dusky-footed Woodrat Nest

Habitats / Land Cover

Arroyo Willow Woodland

California Annual Grassland

Coast Live Oak Woodland

Coyote Brush Scrub

400' 0 200' 400 feet

Approximate Scale

Live Oak Associates, Inc.

Sandraya Heights, Scott's Valley
Biotic Habitats / Land Cover

Date	Project #	Figure #
11/03/2021	2631-01	2

2.4 SPECIAL STATUS PLANTS AND ANIMALS

Many plant and animal species in California have limited distributions and are vulnerable to extirpation as these species' habitats are converted to urban, agricultural, industrial, and residential land uses. Plant and wildlife species have also experienced a decline in population numbers due to habitat loss and degradation, climate change, the introduction of non-native competitors, hunting, and other anthropogenic factors.

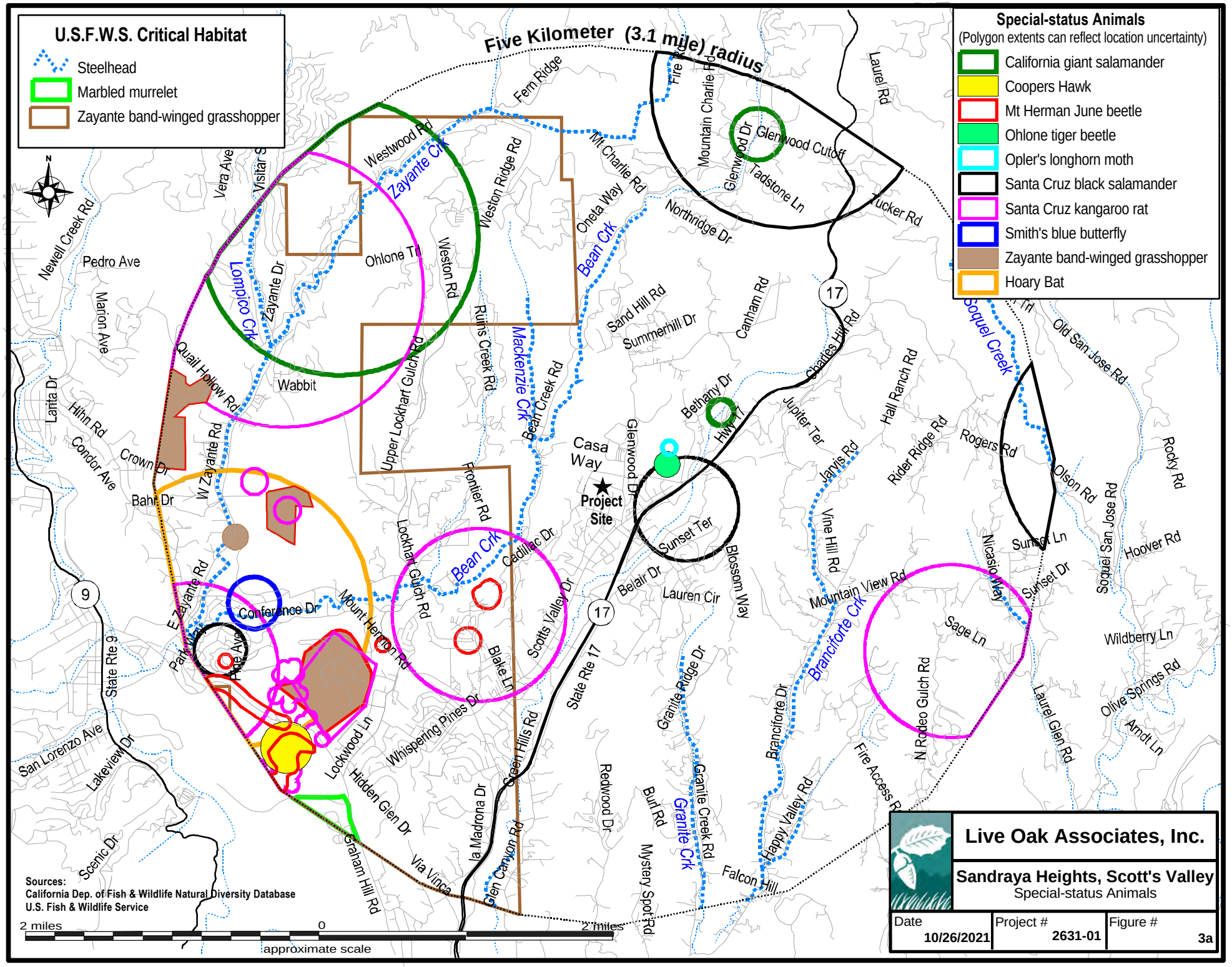
Federal and state endangered species legislation provides a legal mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. As described more fully in Section 3.2, state and federal laws provide the California Department of Fish and Wildlife (CDFW) and the U.S. Fish and Wildlife Service (USFWS) with a mechanism for conserving and protecting the diversity of plant and animal species native to the state. Many native plants and animals have been formally designated as threatened or endangered under state and federal endangered species legislation. Other native plants and animals have been designated as candidates for such listing under California Endangered Species Act (CESA) and the Federal Endangered Species Act (FESA). Still other plants and animals have been designated as "species of special concern" by the CDFW. The California Native Plant Society (CNPS) in collaboration with the CDFW, have developed the California Rare Plant Rank (CRPR) assigned to rare, threatened, or endangered plants which fall under Section 15380 of CEQA (CDFW, 2018) . Collectively, these plants and animals are referred to as "special status species."

The California Natural Diversity Database (CDFW 2021) and the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California (CNPS 2021) were queried for special status species occurrences in the Felton USGS 7.5-minute quadrangle in which the project site occurs and for the seven surrounding quadrangles (Big Basin, Castle Rock Ridge, Los Gatos, Davenport, Laurel, Santa Cruz, and Soquel). These species and their potential to occur on the project site are summarized in Tables 1 and 2. Other factors considered in this evaluation include the capacity of the onsite habitats and microhabitats to support the species, geographical distance of the project site from known populations or occurrences of the species, and ability of the species to travel from areas of known occurrences to the project site. Figures 3a and 3b display the general locations of special status species reported in the California Natural Diversity Data Base (CNDDB) (CDFW 2021).

Because serpentine and alkaline soils are absent from the site, those species that are uniquely adapted to these soil conditions are also considered to be absent. These include the serpentine leptosiphon (*Leptosiphon ambiguus*), Santa Clara valley dudleya (*Dudleya ambramsii ssp. setchellii*), and phlox-leaf serpentine bedstraw (*Galium andrewsii ssp. gatense*). Other special status plant species occur in specific habitats that are not present on the site (e.g., coastal dunes, swamps, maritime chaparral) are also considered absent from the project site and not discussed further. These include Blasdale's bent grass (*Agrostis blasdalei*), coast rockcress (*Arabis blepharophylla*), marsh sandwort (*Arenaria paludicola*), Mexican mosquito fern (*Azolla microphylla*), short-leaved evax (*Hesperevax sparsiflora var. brevifolia*), and coast iris (*Iris longipetala*). Special status moss and plant species occurring in broadleaved forests and coniferous forests are also considered absent due to the lack of these habitats on the site. These moss species include slender silver moss (*Anomobryum julaceum*), tear drop moss

(*Dacryophyllum falcifolium*), and minute pocket moss (*Fissidens pauperculus*); and plant species include the Ohlone manzanita (*Arctostaphylos ohloneana*), Santa Cruz monkeyflower (*Mimulus rattanii spp. decurtatus*) and white-flowered rein orchid (*Piperia candida*). Special status plant species occurring in multiple habitats found on the site, including those in found in valley and foothill grassland and cismontane woodland, are retained in Tables 1a and 1b.

Wildlife that would be treated as absent from the site would be those species requiring specific habitats, including breeding and upland habitats, that do not exist on the site. These include the California red-legged frog (*Rana draytonii*), foothill yellow-legged frog (*Rana boylii*), and western pond turtle (*Emys marmorata*). Finally, the marbled murrelet (*Brachyramphus marmoratus*) would not occur on the site due to the lack of suitable habitat, including old growth redwood forests.


U.S.F.W.S. Critical Habitat
Steelhead
Marbled murrelet
Zayante band-winged grasshopper
Five Kilometer (3.1 mile) radius
Special-status Animals
(Polygon extents can reflect location uncertainty)
California giant salamander
Coopers Hawk
Mt Herman June beetle
Ohlone tiger beetle
Opler's longhorn moth
Santa Cruz black salamander
Santa Cruz kangaroo rat
Smith's blue butterfly
Zayante band-winged grasshopper
Hoary Bat
Project Site
Casa Way
Zayante Crk
Bean Crk
Mackenzie Crk
Lompico Crk
Branciforte Crk
Granite Crk
Boquel Creek
Wabbit
Ohlone Trl
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
Sandraya Heights, Scott's Valley
Special-status Animals
Date 10/26/2021
Project # 2631-01
Figure # 3a

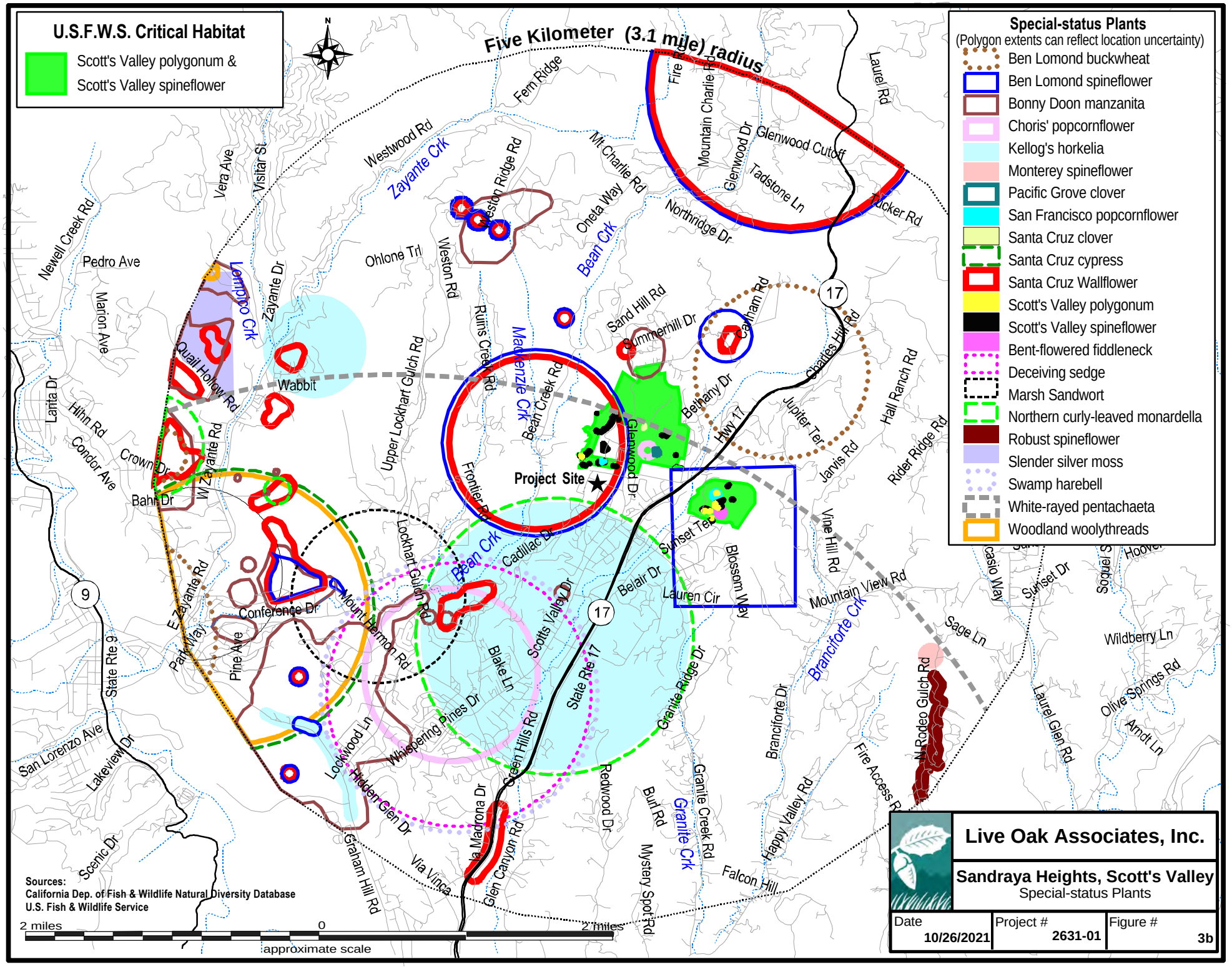

U.S.F.W.S. Critical Habitat
Scott's Valley polygonum &
Scott's Valley spineflower
Five Kilometer (3.1 mile) radius
Special-status Plants
(Polygon extents can reflect location uncertainty)
Ben Lomond buckwheat
Ben Lomond spineflower
Bonny Doon manzanita
Choris' popcornflower
Kellog's horkelia
Monterey spineflower
Pacific Grove clover
San Francisco popcornflower
Santa Cruz clover
Santa Cruz cypress
Santa Cruz Wallflower
Scott's Valley polygonum
Scott's Valley spineflower
Bent-flowered fiddleneck
Deceiving sedge
Marsh Sandwort
Northern curly-leaved monardella
Robust spineflower
Slender silver moss
Swamp harebell
White-rayed pentachaeta
Woodland woolythreads
Project Site
Zayante Crk
Bean Crk
Mackenzie Crk
Lompico Crk
Branciforte Crk
Granite Crk
Fern Ridge
Westwood Rd
Mt Charlie Rd
Mountain Charlie Rd
Glenwood Cutoff
Glenwood Dr
Tadstone Ln
Laurel Rd
Tucker Rd
Northridge Dr
Oneta Way
Weston Ridge Rd
Vera Ave
Visitar St
Newell Creek Rd
Pedro Ave
Marion Ave
Ohlone Trl
Weston Rd
Ruins Creek Rd
Sand Hill Rd
Summerhill Dr
Carnham Rd
Charles Hill Rd
Hall Ranch Rd
Rider Ridge Rd
Bean Creek Rd
Upper Lockhart Gulch Rd
Zayante Dr
Quail Hollow Rd
Wabbit
Lanita Dr
Hihn Rd
Condor Ave
Crown Dr
Bahia Dr
W Zayante Rd
E Zayante Rd
Park Way
Pine Ave
Conference Dr
Mount Hermon Rd
Lockhart Gulch Rd
Frontier Rd
Glenwood Dr
Bethany Dr
Hwy 17
Jupiter Ter
Jarvis Rd
Cadillac Dr
Sunset Ter
Blossom Way
Vine Hill Rd
Belair Dr
Lauren Cir
Mountain View Rd
Casio Way
Sunset Dr
Sequel Dr
Hoover
Sage Ln
Wildberry Ln
Olive Springs Rd
Arndt Ln
Laurel Glen Rd
N Rodeo Gulch Rd
Fire Access R
Branciforte Dr
Granite Ridge Dr
Scotts Valley Dr
Blake Ln
Whispering Pines Dr
Lockwood Ln
Hidden Glen Dr
Graham Hill Rd
Via Vinca
La Madrona Dr
Glen Canyon Rd
Green Hills Rd
Redwood Dr
Burl Rd
Mystery Spot Rd
Granite Creek Rd
Happy Valley Rd
Falcon Hill
San Lorenzo Ave
Lakeview Dr
Scenic Dr
State Rte 9
State Rte 17
9
17
Sources:
California Dep. of Fish & Wildlife Natural Diversity Database
U.S. Fish & Wildlife Service
2 miles
0
2 miles
approximate scale
Live Oak Associates, Inc.
Sandraya Heights, Scott's Valley
Special-status Plants
Date
10/26/2021
Project #
2631-01
Figure #
3b

TABLE 1A. SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2021, CDFW 2021b and CNPS 2021)

SPECIES LISTED AS THREATENED OR ENDANGERED UNDER THE STATE AND/OR FEDERAL ENDANGERED SPECIES ACTS

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Ben Lomond spineflower *Chorizanthe pungens var. hartwegiana*	FE, CRPR 1B.1	Habitat: lower montane coniferous forest, openings in sandhill chaparral, maritime ponderosa pine sandhills. Although this species is typically found in sandy Zayante soils, this species is not restricted to sandy soils and is intolerant of shade resulting from competing species (Rutherford 2008). Elevation: 90 - 610 meters. Blooms: April-July Life form: annual herb	**Absent.** Although the openings near the junction of trails onsite and the sandstone-derived soils provide potential habitat for this species, this species was not observed during the April and June surveys timed for this species' blooming season. The *Chorizanthe* species observed on the site was identified to be the Scotts Valley spineflower (*C. robusta var. hartwegii*).
Monterey spineflower *Chorizanthe pungens var. pungens*	FT, CRPR 1B.1	Habitat: coastal dunes, sandy openings in coastal chaparral, cismontane woodland, coastal scrub, valley and foothill grassland Elevation: 3 - 450 meters Blooms: April-July Life form: annual herb	**Absent.** This species was not observed during our April and June surveys appropriately timed for this species' blooming season. The Bonnydoon loam soils of the site are not known to support this species. Lastly, there are no documented occurrences of this species within the site's USGS quadrangle (i.e., Felton). The nearest known occurrence is in Watsonville, more than 10 km southeast of the site.
Scotts Valley spineflower *Chorizanthe robusta var. hartwegii*	FE, CRPR 1B	Habitat: typically, on sandy soils, valley and foothill grassland on Santa Cruz mudstone and Purissima outcrops; microhabitats include bedrock of different composition than Purissima sandstone that is mixed with scree or a thin soil layer supporting herbs and grasses Elevation: 230-245 meters Blooms: April–September Life form: annual herb	**Present.** This species was detected during the April and June 2022 rare plant surveys (LOA 2022). Specifically, this species was located by the junction of trails on the ruderal grasslands onsite. Other observations of this species have been confirmed in these specific locations (Stiles, R 2021, Timmer, M 2021). The sandy bedrock openings adjacent to the junction of trails onsite and the sandy inclusions within the sandstone-derived soils provide suitable habitat for this species.
Robust spineflower *Chorizanthe robusta var. robusta*	FE, CRPR 1B	Habitat: maritime chaparral, openings of cismontane woodlands, coastal dunes, and coastal scrub sometimes on sandy or gravelly soils Elevation: 3-300 meters Blooms: April–September Life form: annual herb	**Absent.** This species was not observed during the April and June 2022 surveys appropriately timed for this species' blooming season. The dense coast live oak woodlands on the site also do not provide suitable habitat for this species.

TABLE 1A. SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2021, CDFW 2021b and CNPS 2021)

SPECIES LISTED AS THREATENED OR ENDANGERED UNDER THE STATE AND/OR FEDERAL ENDANGERED SPECIES ACTS

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Santa Cruz wallflower *Erysimum teretifolium*	FE, CE, CRPR 1B.1	Habitat: inland marine sands within chaparral and lower montane coniferous forest. Elevation: 120 - 610 meters. Life form: perennial herb Blooms: March - July	**Absent.** This species was not observed during our April and June 2022 surveys appropriately timed for this species' blooming season. This species is associated with the Ben Lomond spine flower which was also not detected on the site.
Santa Cruz tarplant *Holocarpha macradenia*	FT, CE, CRPR 1B	Habitat: coastal prairie, coastal scrub, and valley and foothill grasslands, often on clay or sandy soils Elevation: 10-220 meters. Life form: annual herb Blooms: June–October	**Absent.** This species was not observed during the October 2016 survey, which occurred within the species blooming period. The presence of the Santa Cruz tarplant was ruled out after all tarplants were identified to be other non-listed species.
White-rayed Pentachaeta *Pentachaeta bellidiflora*	CE, FE, CRPR 1B	Habitat: sparsely vegetated sites in coastal prairie or serpentine bunchgrass grasslands, cismontane woodland Elevation: 35-620 meters. Life form: annual herb Blooms: March-May	**Absent.** This species was not detected during our 2022 rare plant surveys. The site lacks suitable habitat for this species, especially the lack of serpentine bunchgrass woodlands. This species is presumed to be extirpated in Santa Cruz County (CNPS 2021).
San Francisco popcorn-flower *Plagiobothrys diffusus*	CE, CRPR 1B	Habitat: sparsely vegetated, mesic sites in coastal prairie, valley and foothill grasslands. Elevation: 30-150 meters. Life form: annual herb Blooms: March–June	**Absent**. This species was not detected during our March, April, and June 2022 surveys appropriately timed for this species blooming season. No species of popcorn flower was detected during the rare plant surveys.
Scotts Valley polygonum *Polygonum hickmanii*	FE, CE, CRPR 1B.1	Habitat: Mudstone and sandstone soils within valley and foothill grasslands; occur on gently sloping to nearly level, fine-textured shallow soils (Rutherford 1998) Elevation: 210 - 250 meters. Life form: Annual herb Blooms: May –October	**Absent.** Although this species may occur within the open, unshaded grasslands on sandstone-derived soils of the site, this species was not detected during the June survey that was appropriately timed for this species blooming period.

TABLE 1B. SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2021a, CDFW 2021b, CDFW 2018, and CNPS 2021)

OTHER SPECIAL STATUS PLANTS WITH CALIFORNIA RARE PLANT RANKS

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Anderson's manzanita *Arctostaphylos andersonii*	CRPR 1B.2	Habitat: openings and edges of broad-leaved upland forest, chaparral and North Coast coniferous forests Elevation: 60 – 700 meters Life form: Evergreen shrub Blooms: November - April	**Absent.** No manzanita species were observed on the site during the October 2021 survey and this woody perennial shrub would have been identifiable if present even outside of its blooming season.
Shreiber's manzanita *Arctostaphylos glutinosa*	CRPR 1B.2	Habitat: chaparral, closed cone coniferous forest Elevation: 170 – 685 meters Life form: Evergreen shrub Blooms: November - April	**Absent.** No manzanita species were observed on the site during the October 2021 survey and this woody perennial shrub would have been identifiable if present even outside of its blooming season.
Kings Mountain manzanita *Arctostaphylos regismontana*	CRPR 1B.2	Habitat: broadleaved upland forest, chaparral, and north coast coniferous forest typically on granitic and sandstone soils Elevation: 305 – 730 meters Life form: Evergreen shrub Blooms: December - April	**Absent.** No manzanita species were observed on the site during the October 2021 survey and this woody perennial shrub would have been identifiable if present even outside of its blooming season.
Bonny Doon manzanita *Arctostaphylos silvicola*	CRPR 1B.2	Habitat: Inland marine sands within chaparral, closed-cone coniferous forest, and lower montane coniferous forest. Elevation: 120-600 meters. Life form: Evergreen shrub Blooms: February - March.	**Absent.** No manzanita species were observed on the site during the October 2021 survey and this woody perennial shrub would have been identifiable if present even outside of its blooming season.
Santa Cruz Mountains pussypaws *Calyptridium parryi var. hesseae*	CRPR 1B.2	Habitat: Chaparral and cismontane woodland with sandy or gravelly openings. Elevation: 305-1530 meters. Blooms: May–August Life form: annual herb	**Absent.** Marginal habitat is present on the site and species was not detected during the June 2022 survey that was appropriately timed for this species blooming season. The most recent documented occurrence of this species is from 1954 in the Loma Prieta area.
Swamp harebell *Campanula californica*	CRPR 1B.2	Habitat: Bogs and marshes in a variety of habitats. Elevation: 1-405 meters. Blooms: June–October Life form: annual herb	**Absent.** Although the disturbed and seasonal mesic areas within the site's grasslands provides some habitat for this species, this species was not detected during the June 2022 survey that was appropriately timed for this species blooming season. Furthermore, no species with the *Campanula* genus was detected during the October 2021 survey. The nearest documented occurrence of this species is from 1944 more than 10 km southwest of the site.

TABLE 1B. SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.
PLANTS (adapted from CDFW 2021a, CDFW 2021b, CDFW 2018, and CNPS 2021)
OTHER SPECIAL STATUS PLANTS WITH CALIFORNIA RARE PLANT RANKS

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Bristly sedge *Carex comosa*	CRPR 2	Habitat: Marshes and swamps, lake margins, valley and foothill grasslands, bogs in redwood forests Elevation: 0-625 meters Blooms: May–September Life form: perennial rhizomatous herb	**Absent.** Most of the site lacks suitable habitat and this species was not detected during the June 2022 survey that was appropriately timed for this species blooming season. *Carex* species identified on the site were *C. densa* and *C. harfordii.* The nearest documented occurrence of this species is more than 10 km southeast was of the site near Nisene Marks State Park in Santa Cruz County. The nearest documented occurrence of this species is more than 10 km southeast of the site near Nisene Marks State Park in Santa Cruz County.
Deceiving sedge *Carex saliniformis*	CRPR 1B.2	Habitat: Mesic sites in a variety of habitats. Elevation: 3-230 meters Blooms: May-July Life form: perennial rhizomatous herb	**Absent.** This species not detected during the June 2022 survey that was appropriately timed for this species blooming season. Most of the site lacks suitable habitat for this species. *Carex* species identified on the site were *C. densa* and *C. harfordii.* The nearest documented occurrence of this species is from 1944 more than 10 km southwest of the site.
Santa Clara red ribbons *Clarkia concinna ssp. automixa*	CRPR 4	Habitat: Chaparral and cismontane woodland on slopes and near drainages Elevation: 90-1500 meters Blooms: April–July Life form: annual herb	**Absent.** This species was not detected on the April and June 2022 surveys appropriately timed for this species blooming season. Marginal habitat for this species is present onsite. The nearest documented occurrence of this species is approximately 15 km north of the site.
Lewis Clarkia *Clarkia lewisii*	CRPR 4	Habitat: Chaparral and cismontane woodland on slopes and near drainages Elevation: 30-1195 meters Blooms: May-June Life form: annual herb	**Absent.** This species was not detected on the June 2022 surveys appropriately timed for this species blooming season. Marginal habitat for this species is present on the site. The nearest documented occurrence of this species is more than 10 km southeast of the site.
San Francisco collinsia *Collinsia multicolor*	CRPR 1B	Habitat: Closed-cone coniferous forest and coastal scrub occasionally on serpentinite Elevation: 30-250 meters Blooms: March–May Life form: annual herb	**Absent.** This species was not observed during the rare plant surveys timed for this species blooming season. The site does not provide suitable habitat for this species. The nearest documented occurrence of this species is more than 15 km north of the site.

TABLE 1B. SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.
PLANTS (adapted from CDFW 2021a, CDFW 2021b, CDFW 2018, and CNPS 2021)
OTHER SPECIAL STATUS PLANTS WITH CALIFORNIA RARE PLANT RANKS

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Ben Lomond buckwheat *Eriogonum nudum var. decurrens*	CRPR 1B.2	Habitat: openings in sandhill chaparral or understory of Pacific ponderosa pine forests. Elevation: 50-800 meters Blooms: June–October Life form: annual herb	**Absent.** This species was not observed during the rare plant surveys timed for this species blooming season. The most recent (2021) and nearest documented occurrence is approximately 4 km southwest of the site, in the Yellow Pine Forest of the Zayante sandhills.
Fragrant fritillary *Fritillaria liliacea*	CRPR 1B.2	Habitat: cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grasslands. Approximately half of this species' occurrences are on serpentine soils (Calflora 2021). Elevation: 3-410 meters Blooms: February–April Life form: annual herb	**Absent.** This species was not observed during the rare plant surveys timed for this species blooming season. The site lacks serpentine soils where these species have been previously observed. The nearest documented occurrence of this species is more than 10 km northeast of the site.
Loma Prieta hoita *Hoita strobilina*	CRPR 1B.2	Habitat: chaparral, cismontane woodland, and riparian woodland. Usually occurs on serpentinitic or mesic soils Elevation: 30-860 meters Blooms: May–October Life form: annual herb	**Absent.** This species was not observed during the rare plant surveys timed for this species blooming season. The site also lacks serpentine soils known to support this species. The most recent and nearest occurrence of this species is approximately 10 km west of the site, near Hinkley Ridge in Aptos, CA.
Kellogg's horkelia *Horkelia cuneata var. sericea*	CRPR 1B.2	Habitat: openings in closed-cone coniferous forest, coastal scrub, coastal dunes, and maritime chaparral Elevation: 10-200 meters Blooms: April–September Life form: annual herb	**Absent.** This species was not observed during the rare plant surveys timed for this species blooming season. The most recent and nearest occurrence of this species is over 10 km east of the site, at the Bonny Doon Ecological preserve recorded in April 2021. Other closer but dated records are from 1935 located between Scotts Valley and Felton.
Indian Valley bush-mallow *Malacothamnus aboriginum*	CRPR 1B.2	Habitat: chaparral and cismontane woodland on granitic outcrops and sandy, bare soil. Often occurs in disturbed soils and burned areas Elevation: 150-1700 meters Blooms: April–October Life form: annual herb	**Absent.** Although the site's disturbed oak woodlands provide marginal habitat for this species, this species was not detected during the rare plant surveys timed appropriately for this species blooming season. The closest occurrence of this species is more than 10 km north of the site. There are no documented occurrences of this species within Santa Cruz County (CalFlora 2021).

TABLE 1B. SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2021a, CDFW 2021b, CDFW 2018, and CNPS 2021)

OTHER SPECIAL STATUS PLANTS WITH CALIFORNIA RARE PLANT RANKS

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Arcuate bush-mallow *Malacothamnus arcuatus*	CRPR 1B.2	Habitat: chaparral and cismontane woodland Elevation: 15-355 meters. Blooms: April–September Life form: annual herb	**Absent.** This species was not observed during the rare plant surveys timed for this species blooming season. The closest occurrence of this species is approximately 6 km east of the site in Soquel, CA.
Marsh microseris *Microseris paludosa*	CRPR 1B.2	Habitat: closed-cone coniferous forest, cismontane woodland, coastal scrub, and valley and foothill grasslands Elevation: 5-300 meters. Blooms: April–June Life form: annual herb	**Absent.** Although the mesic swale within the site's grasslands could provide habitat for this species, this species was not detected on the site during the rare plant surveys appropriately timed for this species blooming season. The closest known occurrence is approximately 5 km (3 mi) southwest of the site in Santa Cruz, CA. All other nearby occurrences are found in sloped grasslands and detected between mid-April-May
Dudley's lousewort *Pedicularis dudleyi*	CR, CRPR 1B.2	Habitat: redwood forest, chaparral, cismontane woodland, valley and foothill grassland; Prefers low density of understory plants and reduced cover of competing herbs and shrubs (Hauser 2019) Elevation: 60-900 meters. Life form: Perennial herb Blooms: April-June	**Absent.** This species was not detected on the site during the rare plant surveys appropriately timed for this species blooming season. Most the site lacks suitable habitat (e.g., redwood forests) for this species. The dense coast live oak woodlands and onsite grasslands provide only marginal habitat for this species. This species is presumed to be extirpated in Santa Cruz County (Hauser et al 2019).
Santa Cruz Mountains beardtongue *Penstemon rattanii var. kleei*	CRPR 1B.2	Habitat: chaparral, lower montane coniferous forest, and North Coast coniferous forest Elevation: 400-1100 meters Blooms: May–June Life form: annual herb	**Absent.** This species was not detected on the site during the rare plant surveys appropriately timed for this species blooming season. The most recent documented occurrence of this species in the region is from 2019, more than 10 km east of the site.
Rock Sanicle *Sanicula saxatilis*	CR, CRPR 1B.2	Habitat: rocky ridges or talus in chaparral, woodlands, broadleaved upland forest, valley and foothill grassland Elevation: 620 -1175 meters. Life form: perennial herb Blooms: April-May	**Absent.** This species was not detected on the site during the rare plant surveys appropriately timed for this species blooming season. The site does not contain the microhabitats that this species is known to occur in. The nearest known occurrence is more than 10 km northeast of the site, near the Mt. Umunhum area.

TABLE 1B. SPECIAL STATUS PLANT SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

PLANTS (adapted from CDFW 2021a, CDFW 2021b, CDFW 2018, and CNPS 2021)

OTHER SPECIAL STATUS PLANTS WITH CALIFORNIA RARE PLANT RANKS

Common and scientific names	Status	General habitat description and blooming period	*Occurrence in the study area
Pacific Grove clover *Trifolium polyodon*	CR, CRPR 1B.2	Habitat: closed-cone coniferous forest, coastal prairie, meadows and seeps, valley and foothill grassland Elevation:5-425 meters. Life form: Annual herb Blooms: April-June	**Absent.** Although the mesic areas within the site's grasslands provides potential habitat for this species, this species was not detected on the site during the April and June 2022 surveys that were appropriately timed for this species blooming season. Trifolium species identified on the site included *T. angustofoium, T. dubium, T. grayi, T hirtum*, and *T. subterraneum*.
Santa Cruz clover *Trifolium buckwestiorum*	CRPR 1B.2	Habitat: vernally most swales to saturated clay-rich upland soils in grasslands and coastal prairie, edges of humid soil-openings in broadleaved upland forest, and cismontane woodland Elevation: 105-610 meters Blooms: April–October Life form: annual herb	**Absent.** Although the mesic areas within the site's grasslands provides potential habitat for this species, this species was not detected on the site during the April and June 2022 surveys that were appropriately timed for this species blooming season. Trifolium species identified on the site included *T. angustofoium, T. dubium, T. grayi, T hirtum*, and *T. subterraneum*. There are only three documented occurrences of this species. The nearest occurrence s is approximately 6 km southwest of the site, in Henry Cowell State Park, CA documented in May 1991. The remaining two occurrences were detected in April and May 2008, located in Fort Ord, Monterey County, CA.

Present: Species observed on the site at time of field surveys or during recent past.
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the site, but it could occur there from time to time.
Unlikely: Species not observed on the site, and would not be expected to occur there except as a transient.
Absent: Species not observed on the site and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CR	California Rare
FC	Federal Candidate	CSC	California Species of Special Concern
CRPR	California Rare Plant Rank	CFP	California Fully Protected

TABLE 2A: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.

ANIMALS (adapted from CDFW 2021 and USFWS 2021)

SPECIES LISTED AS THREATENED OR ENDANGERED UNDER THE STATE AND/OR FEDERAL ENDANGERED SPECIES ACTS

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Mount Hermon June beetle *Polyphylla barbata*	FE	Zayante Sandhills of Santa Cruz County. Habitat includes sand parkland and sandy areas in chaparral and ponderosa pine stands.	**Absent.** Suitable habitat for this species does not occur on this site due to the absence of Zayante sands and its indigenous plant communities (Arnold 2021).
Ohlone tiger beetle (OTB) *Cicindela ohlone*	FE	California native grasslands with California oatgrass and purple needlegrass; prefers sunlit barren or sparsely vegetated grasslands with mima mound topography.	**Absent.** The site does not support habitat for this species. No potential OTB larval burrows were observed in any portion of the site during Arnold's August 2021 habitat assessment for the OTB (Arnold 2021).
Zayante band-winged grasshopper *Trimerotropis infantilis*	FE	Endemic to the Zayante Sandhills of Santa Cruz County. Habitat includes sand parkland and sandy areas in chaparral and ponderosa pine stands. Co-occurs with the plant *Erysimum teretifolium*.	**Absent.** Suitable habitat for this species does not occur on this site due to the absence of Zayante sands and its indigenous plant communities (Arnold 2021).
Monarch butterfly *Danaus plexippus*	FT (candidate)	Overwinter on the California coast in relatively dense grove of trees, such as Monterey pine, Monterey cypress, or eucalyptus. Host plant is the milkweed.	**Present.** Although several monarchs were observed foraging on nectar from the coyote brush flowers during the October and November 2021 surveys, overwintering habitat for this species is absent from the site. Previous habitat assessments of the site have also noted the absence of overwintering habitat (Arnold 2021).
California tiger salamander *Ambystoma californiense*	FT, CT	Breeds in vernal pools and stock ponds of central California. Adults aestivate in grassland habitats adjacent to the breeding sites.	**Absent.** No historic or current records of this species are known within this part of the Santa Cruz range. The nearest recorded observation is more than 10 km to the northeast of the site (CNDDB 2012).
Santa Cruz long-toed salamander *Ambystoma macrodactylum croceum*	FE, CE, CP	Endemic to the coast of Monterey Bay in southern Santa Cruz County and the northern edge of Monterey County. Occurs in dense riparian vegetation, thick coastal scrub, and oak woodland. Breeds in ponds, drying triggers transformation. Non-breeding adults occur under wood, logs, rocks, bark, rotten logs, and moist places underground such as burrows near breeding ponds.	**Absent.** The site is not within the limited range of the Santa Cruz long-toed salamander.

TABLE 2A: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY. *ANIMALS (adapted from CDFW 2021 and USFWS 2021)* *SPECIES LISTED AS THREATENED OR ENDANGERED UNDER THE STATE AND/OR FEDERAL ENDANGERED SPECIES ACTS*			
Tricolored Blackbird *Agelaius tricolor*	CT, CSC	Breeds near fresh water, primarily emergent wetlands, with tall thickets. Forages in grassland and cropland habitats.	**Unlikely.** The site does not provide breeding and nesting habitat for this species. The disturbed onsite grasslands provide marginal foraging habitat. While this species is known to forage up to 5 km from its colony (Meese 2017), the closest colony or documented occurrence is more than 10 km southwest of the site in Santa Cruz.
Bank Swallow *Riparia riparia*	CT	Occurs in open areas near flowing water, nests in steep banks along inland water or coast. State-wide.	**Absent.** The site does not provide breeding nor foraging habitat for this species.
Cougar (Central Coast ESU) *Puma concolor*	CT (Candidate)	Occurs in a wide range of habitats including, but not limited to, conifer forest, chaparral and riparian and oak woodlands.	**Unlikely**. The site does not offer habitat of suitable size and quality for this species. While suitable habitat exists throughout the region (woodland/grassland/scrub habitats), this site is extremely small and insular, surrounded by dense residential development. The site represents 0.03% of a female home range and considerably less for a male. Cougars are known to statistically avoid human dominated landscapes, but do at times pass through neighborhoods that border suitable habitat.

TABLE 2B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY. **ANIMALS (adapted from CDFW 2021 and USFWS 2021)** **SPECIES CONSIDERED CALIFORNIA STATE SPECIES OF SPECIAL CONCERN OR FULLY PROTECTED**			
Common and scientific names	**Status**	**General habitat description**	***Occurrence in the study area**
Coast horned lizard *Phrynosoma blainvillii*	CSC	Occur in grasslands, scrublands, oak woodlands, etc. of central California. Common in sandy washes with scattered shrubs and along dirt roads	**Unlikely.** The site provides marginal habitat for this species. The closest documented occurrence is more than 10 km northwest of the site documented in May 2019 (iNaturalist 2021).
American peregrine falcon (nesting) *Falco peregrines anatum*	CP	Individuals breed on cliffs in the Sierra or in coastal habitats; occurs in many habitats of the state during migration and winter.	**Absent.** Nesting habitat is absent from the site and foraging habitat is very marginal for this species. The closest known occurrence is more than 10 km northwest of the site (CNDDB Occurrence #15).
White-tailed Kite (nesting) *Elanus leucurus*	CP	Open grasslands and agricultural areas throughout central California.	**Unlikely.** The site does not offer suitable nesting habitat; limited foraging habitat is available in the grasslands of the site.

TABLE 2B: SPECIAL STATUS SPECIES THAT COULD OCCUR IN THE PROJECT VICINITY.
ANIMALS (adapted from CDFW 2021 and USFWS 2021)
SPECIES CONSIDERED CALIFORNIA STATE SPECIES OF SPECIAL CONCERN OR FULLY PROTECTED

Common and scientific names	Status	General habitat description	*Occurrence in the study area
Black swift (nesting) *Cypseloides niger*	CSC	Migrants found in many habitats of state; in Sierra nests are often associated with waterfalls.	**Absent.** The site does not provide suitable breeding or foraging habitat for this species.
Burrowing owl *Athene cunicularia*	CSC	Open, dry grasslands, deserts and ruderal areas. Requires suitable burrows. Often associated with California ground squirrels.	**Unlikely.** Ground squirrel burrows on the site could serving as nesting habitat for this species. However, the ongoing disturbance from dirt biking and the routine mowing that occurs on the site make it unlikely for this species to utilize the burrows on the site. The closest documented occurrence of this species is more 10 km southwest of the site, by UC Santa Cruz.
Purple martin *Progne subis*	CSC	Cavity nester, nests widely in man-made birdhouses.	**Unlikely.** The trees of the site may provide potential nesting habitat; however, these birds are known to nest near open water, which is not present onsite or in the vicinity of the site. The purple martin may be expected to fly over or forage on the site from time to time.
Pallid bat *Antrozous pallidus*	CSC	Grasslands, chaparral, woodlands, and forests of California; most common in dry rocky open areas that provide roosting opportunities; buildings, bridges, live trees, and snags are also used for roosts (Gervais 2016).	**Possible.** Foraging habitat is present on the site. The woodlands of the site offer potential roosting habitat.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	CSC	Hardwood forests, oak riparian and shrub habitats.	**Present.** Numerous woodrat nests were observed during the October and November 2021 surveys. These nests occurred throughout the coast live oak woodland and coyote brush scrub habitats of the site.
American badger *Taxidea taxus*	CSC	Found in drier open stages of most shrub, forest and herbaceous habitats with friable soils.	**Unlikely.** The site offers marginal habitat for this species. The ongoing disturbance from routine mowing and dirt biking make it unlikely for badgers to use the site for denning habitat. The closest known occurrence is more than 10 km southwest of the site.
Ringtail *Bassariscus astutus*	CP	Occurs in riparian and heavily wooded habitats near water. Denning areas include rock crevices, boulder piles, underground cavities, hollow trees or underground in hollow roots of trees (CDFG 1980)	**Unlikely.** The site lacks riparian habitat and rocky areas preferred by this species. The site only offers marginal habitat for this species.

Present: Species observed on the site at time of field surveys or during recent past.
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the site, but it could occur there from time to time.
Unlikely: Species not observed on the site and would not be expected to occur there except as a transient.
Absent: Species not observed on the site and precluded from occurring there because habitat requirements not met.

STATUS CODES

FE	Federally Endangered	CE	California Endangered
FT	Federally Threatened	CT	California Threatened
FPE	Federally Endangered (Proposed)	CR	California Rare
FC	Federal Candidate	CSC	California Species of Special Concern
CRPR	California Rare Plant Rank	CFP	California Fully Protected

2.5 SCOTTS VALLEY SPINEFLOWER

2.5.1 Regional Occurrence

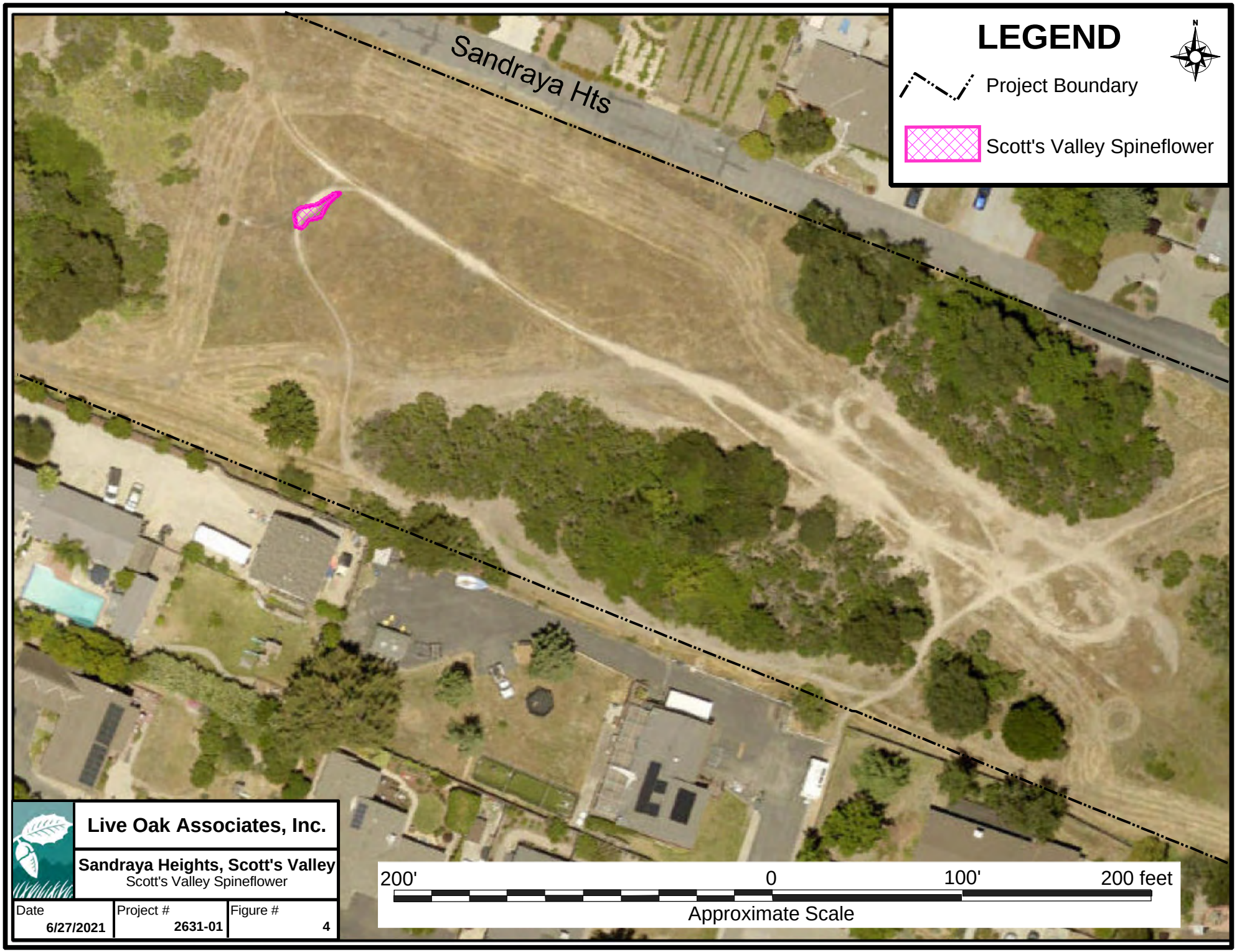
The Scotts Valley spineflower is documented to occur in four properties at the northern edge of Scotts Valley (Kofron and Lyons 2014). The western occurrence is located on three contiguous properties: Glenwood Preserve, Scotts Valley Highschool Preserve, Salvation Army properties. These properties occur west of State Highway 17, which limits the movement of pollinators and wildlife dispersal agents critical to the Scotts Valley spineflower growth and adaptation. The fourth property, Polo Ranch, is located east of State Highway 17. This occurrence is on the Polo Ranch Open Space Preserve that is privately owned and a conservation easement has been established on this area. The remaining properties where Scotts Valley spineflower populations and other threatened species occur, while under management, are not protected with a conservation easement.

2.5.2 Occurrence on the Site

The Scotts Valley Spineflower was observed on the site during the March, April and May 2022 rare plant surveys. Specifically, this species was observed near the confluence of trails on the grasslands at the northwestern section of the site (Figure 4). Two colonies consisting of approximately 185 individual species and spanning approximately 140 ft^2 were observed. These rare plant surveys were timed to coincide with the species blooming period when they would be evident and most identifiable.

2.5.3 Designated Critical Habitat

The USFWS often designates areas of critical habitat when it lists species as threatened or endangered. Critical habitat is a specific geographic area(s) that contains features essential for the conservation of a threatened or endangered species which may require special management and protection. For the Scotts Valley spineflower, essential features include the presence of thin soils formed over Purisima sandstone or Santa Cruz mudstone, wildflower field habitat, stable grasslands over time, and an area to allow populations to survive catastrophic events and re-colonize suitable sites (USFWS 2002). Other features also include pollination and seed dispersal between colonies, as well as adequate watershed protection to protect spineflower habitat and maintain soil and hydrologic conditions necessary to support species growth and reproduction (USFWS 2002, WRA et al., 2017). More importantly, designated critical habitat has to be large enough to maintain ecological functions which the species depends on (USFWS 2002).

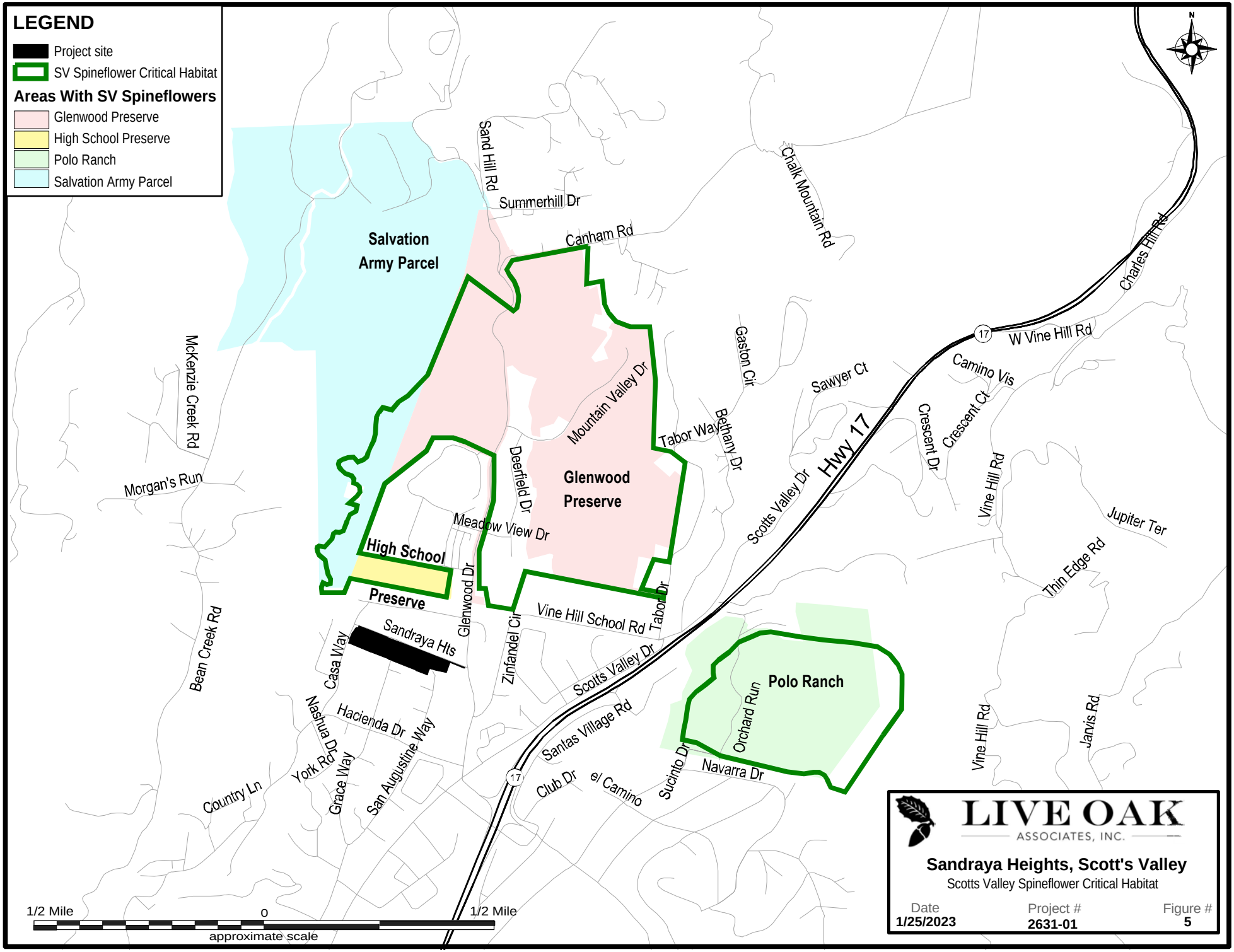

Sandraya Hts
LEGEND
Project Boundary
Scott's Valley Spineflower
N
200'
0
100'
200 feet
Approximate Scale
Live Oak Associates, Inc.
Sandraya Heights, Scott's Valley
Scott's Valley Spineflower
Date
6/27/2021
Project #
2631-01
Figure #
4

The site is situated outside the critical habitat for the Scotts Valley Spineflower (Figure 5). The USFWS has designated critical habitat for the spineflower and the Scotts Valley polygonum in two units: Glenwood and Polo Ranch. The Glenwood unit consists of the Glenwood Preserve, Scotts

Valley High School Preserve and Salvation Army property. The Polo Ranch unit consists of the Polo Ranch Open Space Preserve situated within the city limits of Scotts Valley. The designated critical habitat for both units cover 287 ac, where the Glenwood Unit covers 74.6% (214 ac) and the Polo Ranch unit covers 25.4 % (73 ac) of total critical habitat (Table 3). Although the site is outside of critical habitat, onsite spineflower coverage is .001% of total known habitat for the Scotts Valley spineflower.

Site	Coverage (ac)	Percentage (%)
Glenwood Unit*	214	74.6
Polo Ranch Unit*	73	25.4
Casa Way Site	.003	.001
Total:	287.003	

*Critical habitat acreages were approximated by the USFWS in 2002 (USFWS 2002)


LEGEND
Project site
SV Spineflower Critical Habitat
Areas With SV Spineflowers
Glenwood Preserve
High School Preserve
Polo Ranch
Salvation Army Parcel
N
Salvation Army Parcel
Glenwood Preserve
High School Preserve
Polo Ranch
Sand Hill Rd
Summerhill Dr
Canham Rd
Chalk Mountain Rd
Charles Hill Rd
W Vine Hill Rd
17
Hwy 17
Camino Vis
Crescent Ct
Crescent Dr
Sawyer Ct
Gaston Cir
Bethany Dr
Tabor Way
Mountain Valley Dr
Deerfield Dr
Meadow View Dr
Glenwood Dr
Vine Hill School Rd
Tabor Dr
Zinfandel Cir
Scotts Valley Dr
Vine Hill Rd
Jupiter Ter
Thin Edge Rd
Jarvis Rd
McKenzie Creek Rd
Morgan's Run
Bean Creek Rd
Sandraya Hts
Casa Way
Hacienda Dr
Nashua Dr
York Rd
Grace Way
San Augustine Way
Country Ln
Santas Village Rd
Club Dr
el Camino
Sucinto Dr
Navarra Dr
Orchard Run
1/2 Mile
0
1/2 Mile
approximate scale
LIVE OAK
ASSOCIATES, INC.
Sandraya Heights, Scott's Valley
Scotts Valley Spineflower Critical Habitat
Date
1/25/2023
Project #
2631-01
Figure #
5

2.6 SENSITIVE NATURAL COMMUNITIES AND HABITATS

California contains a wide range of natural communities, or unique assemblages of plants and animals. These communities have largely been classified and mapped by CDFW as part of its natural heritage program. Natural communities are assigned state and global ranks according to their rarity and the magnitude and trend of the threats they face. Sensitive natural communities are those that are listed by CDFW based on their range, limited distribution, rarity, and threats from development (CDFW 2021) (Figure 2). Natural communities with a state rank of 1 to 3 (based on a 1 to 5 scale) are considered sensitive and must be considered in CEQA review. Examples of sensitive natural communities include but are not limited to rare vegetation communities occurring around wetlands.

An arroyo willow woodland occurs at the southeastern corner of the site and is considered a rare and sensitive natural community and association (CDFW 2021, South Environmental 2021). Arroyo willows typically occur on wetlands and form dense thickets along drainages (CNPS 2021). The U.S. National Wetland Plant list (USACE 2018) identifies arroyo willows as a facultative wetland plant, that is plants that usually occur in wetlands but rarely occurs (1-33% probability) in uplands. Historic aerial photos indicate no presence of wetlands and these arroyo willow woodlands prior to the onset of residential development surrounding the site. In general, these historical aerial photos show the change in vegetation composition of the site over the amount of time that development has increased in Scotts Valley. It is likely that the arroyo woodlands of the site were influenced and developed over time by hydrological changes (e.g., increased run-off) resulting from surrounding development.

No other sensitive habitats or rare natural communities occur on the site. The overwintering monarch butterfly habitat, which is considered sensitive, was absent from the site.

2.7 WILDLIFE MOVEMENT CORRIDORS

Wildlife movement corridors are areas where regional wildlife populations regularly and predictably move during dispersal or migration. In California, movement corridors are typically associated with valleys, rivers and creeks supporting riparian vegetation, and ridgelines. The importance of an area as a movement corridor depends on the wildlife species being considered and their consistent use patterns. Animal movements generally can be divided into three major behavioral categories:

- Movements within a home range or territory;
- Movements during migration; and
- Movements during dispersal.

Movements on and across the site are expected to consist of typical movements associated with an individual animal's home range**.** There are no unique features on the site itself that would lend it to facilitating wildlife movements in a disproportionate way as to function as a wildlife movement corridor. Furthermore, there are no features or habitats on the site that serve as overwintering habitat for migrating species such as monarch butterfly. Existing residential development around the site may deter through-movements of wildlife.

2.8 JURISDICTIONAL WATERS

Jurisdictional waters include rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Jurisdictional waters also include, but are not limited to, lakes, ponds, reservoirs, and wetlands. Such waters may be subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE), the California Department of Fish and Wildlife (CDFW), and the California Regional Water Quality Control Board (RWQCB).

An approximately 84-foot-long ditch enters the site via a culvert midway along the site's northern boundary. This ditch collects run-off from Sandraya Heights Road and transitions to a swale that appears to terminate in the southeastern section of the site near the terminus of San Augustine Way. Based on a review of historical topographic maps and aerial photos, this man-made ditch does not appear to replace a historical tributary. The USACE and CDFW do not regulate ditches that do not replace tributaries (Sections 3.4.1 and 3.4.2). Therefore, this ditch would not be subject to the jurisdiction of the USACE and CDFW.

The swale in the southeastern part of the site exhibits some wetland characteristics, but a formal wetland delineation completed by LOA in December 1, 2021 determined that it did not meet all the criteria of a jurisdictional wetland. Visible soil saturation was present within the upper 12 inches of the soil profile, indicating that the hydrology in this area is likely sustained by water from the man-made ditch. The swale was dominated by Fuller's teasel, an upland plant, but also supported hydrophytic vegetation such as dotted smartweed, Arroyo willow, boxelder, and Pacific rush. Based on an examination of the soil profile from soil pits dug in the swale, hydric soil indicators were absent for the onsite soil type (i.e., mollisols). In particular, the soils lacked a depleted soil matrix immediately below a dark surface without observable redoximorphic features that are characteristic of hydric mollisols (USACE 2008; Thompson & Bell 2016).

Historical aerial imagery does not indicate wetland signatures and other hydrological features on the site. The absence of historical wetland signatures and hydrological features indicate that the onsite mesic swale is not replacing historical wetlands, natural drainages or tributaries that would be considered Waters of the U.S. These historical aerial images primarily show upland vegetation and the absence of hydrophytic vegetation such as the onsite Arroyo willow woodlands, prior to the onset of development. These images suggest that the swale was influenced by residential development and were likely man-made. The USFWS National Wetlands Inventory and current USGS topographic maps do not identify any wetlands or any other hydrological features on the site (USFWS 2021).

In sum, the anthropomorphic nature of the onsite swale, the absence of historical hydrological features or wetland signatures, and most importantly the failure of these areas to meet all the technical criteria of a wetland indicate the absence of wetlands and/or jurisdictional waters on the site. The swale also appears to be hydrologically isolated from other wetlands or known waters of the U.S.

No other jurisdictional waters or wetlands are present on the site.

3 IMPACTS AND MITIGATIONS

3.1 SIGNIFICANCE CRITERIA

General plans, area plans, and specific projects are subject to the provisions of the California Environmental Quality Act. The purpose of CEQA is to assess the impacts of proposed projects on the environment before they are constructed. For example, site development may require the removal of some or all existing vegetation. Animals associated with this vegetation could be destroyed or displaced. Animals adapted to humans, roads, buildings, pets, etc., may replace those species formerly occurring on a site. Plants and animals that are state and/or federally listed as threatened or endangered may be destroyed or displaced. Sensitive habitats such as wetlands and riparian woodlands may be altered or destroyed. These impacts may be considered significant. According to 2021 CEQA Status and Guidelines (2021), "Significant effect on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic interest. Specific project impacts to biological resources may be considered "significant" if they will:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service;
- 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 Wildlife or U.S. Fish and Wildlife Service;
- Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means;
- 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;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance; and
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

3.2 RELEVANT GOALS, POLICIES, AND LAWS

3.2.1 Threatened and Endangered Species

State and federal "endangered species" legislation has provided the CDFW and USFWS with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal Endangered Species Acts, candidate species for such listing, state species of

special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as "species of special status." Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the take of a listed species. To "take" a listed species, as defined by the state of California, is "to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture or kill" said species (California Fish and Game Code, Section 86). "Take" is more broadly defined by the federal Endangered Species Act to include "harm" of a listed species (16 USC, Section 1532(19), 50 CFR, Section 17.3). Furthermore, the CDFW and the USFWS are responding agencies under CEQA. Both agencies review CEQA documents to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

3.2.2 Migratory Birds

State and federal laws also protect most bird species. The State of California signed Assembly Bill 454 into law in 2019, which clarifies native bird protection and increases protections where California law previously deferred to Federal law. The Federal Migratory Bird Treaty Act (FMBTA: 16 U.S.C., scc. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

3.2.3 Birds of Prey

Birds of prey are protected in California under provisions of the State Fish and Game Code, Section 3503.5, which states that it is "unlawful to take, possess, or destroy any birds in the order Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "taking" by the CDFW.

Additionally, the Bald and Golden Eagle Protection Act (16 U.S.C., scc. 668-668c) prohibits anyone from taking bald or golden eagles, including their parts, nests, or eggs, unless authorized under a federal permit. The act prohibits any disturbance that directly affects an eagle or an active eagle nest as well as any disturbance caused by humans around a previously used nest site during a time when eagles are not present such that it agitates or bothers an eagle to a degree that interferes with or interrupts normal breeding, feeding, or sheltering habits, and causes injury, death or nest abandonment.

3.2.4 Bats

Section 2000 and 4150 of the California Fish and Game Code states that it is unlawful to take or possess a number of species, including bats, without a license or permit, as required by Section 3007. Additionally, Title 14 of the California Code of Regulations states it is unlawful to harass, herd, or drive a number of species, including bats. To harass is defined as "an intentional act which disrupts an animal's normal behavior patterns, which includes, but is not limited to, breeding, feeding or sheltering." For these reasons, bat colonies in particular are considered to be sensitive and therefore, disturbances that cause harm to bat colonies are unlawful.

3.2.5 Jurisdictional waters and wetlands

Jurisdictional waters include waters of the United States subject to the regulatory authority of the U.S. Army Corps of Engineers (USACE) and waters of the State of California subject to the regulatory authority of the California Department of Fish and Wildlife (CDFW) and the California Regional Water Quality Control Board (RWQCB).

3.2.5.1 Clean Water Act., Section 404

The USACE regulates the filling or grading of Waters of the U.S. under the authority of Section 404 of the Clean Water Act. Drainage channels and adjacent wetlands may be considered "waters of the United States" or "jurisdictional waters" subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations and clarified in federal courts.

The definition of waters of the U.S. have changed several times in recent years. In January 2020, the Environmental Protection Agency (EPA) and USACE jointly issued the Navigable Waters Protection Rule. The new rule was published in the Federal Register on April 21, 2020 and took effect on June 22, 2020.

On August 30, 2021, the U.S. District Court for the District of Arizona issued an order vacating and remanding the Navigable Waters Protection Rule. In light of this order, the EPA and USACE have halted implementation of the Navigable Waters Protection Rule and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime until further notice.

The pre-2015 regulatory regime defines waters of the U.S. as:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:
    a. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
    b. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
    c. Which are used or could be used for industrial purposes by industries in interstate commerce;
- All impoundments of waters otherwise defined as waters of the United States under this definition;
- Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;

- The territorial sea;
- Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

All activities that involve the discharge of dredge or fill material into waters of the U.S. are subject to the permit requirements of the USACE under Section 404 of the Clean Water Act. Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued without a CWA Section 401 Water Quality Certification (or waiver of such certification) verifying that the proposed activity will meet state water quality standards (Section 3.6.2).

3.2.5.2 Porter-Cologne Water Quality Act/Clean Water Act, Section 401

There are nine Regional Water Quality Control Boards (RWQCB) statewide; collectively, they oversee regional and local water quality in California. The RWQCB administers Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. The RWQCB for a given region regulates discharges of fill or pollutants into waters of the State through the issuance of various permits and orders.

Pursuant to Section 401 of the Clean Water Act, the RWQCB regulates waters of the State that are also waters of the U.S. Discharges into such waters require a Section 401 Water Quality Certification from the RWQCB as a condition to obtaining certain federal permits, such as a Clean Water Act Section 404 permit (Section 3.6.1). Discharges into all Waters of the State, even those that are not also Waters of the U.S., require Waste Discharge Requirements (WDRs), or a waiver of WDRs, from the RWQCB.

The Porter-Cologne Water Quality Control Act, Water Code Section 13260, requires that "any person discharging waste, or proposing to discharge waste, within any region that could affect the 'waters of the State' to file a report of discharge" with the RWQCB. Waters of the State as defined in the Porter-Cologne Act (Water Code Section 13050[e]) are "any surface water or groundwater, including saline waters, within the boundaries of the state." This gives the RWQCB authority to regulate a broader set of waters than the Clean Water Act alone; specifically, in addition to regulating waters of the U.S. through the Section 401 Water Quality Certification process, the RWQCB also claims jurisdiction and exercises discretionary authority over "isolated waters," or waters that are not themselves waters of the U.S. and are not hydrologically connected to waters of the U.S.

The RWQCB also administers the Construction Stormwater Program and the federal National Pollution Discharge Elimination System (NPDES) program. Projects that disturb one or more acres of soil must obtain a Construction General Permit under the Construction Stormwater Program. A prerequisite for this permit is the development of a Stormwater Pollution Prevention Plan (SWPPP) by a certified Qualified SWPPP Developer. Projects that discharge wastewater, stormwater, or other pollutants into a Water of the U.S. may require a NPDES permit.

3.2.5.3 California Fish and Game Code, Section 1602

The CDFW has jurisdiction over the bed and bank of natural drainages and lakes according to provisions of Section 1602 of the California Fish and Game Code. Activities that may substantially modify such waters through the diversion or obstruction of their natural flow, change or use of any material from their bed or bank, or the deposition of debris require a Notification of Lake or Streambed Alteration. If the CDFW determines that the activity may adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement will be prepared. Such an agreement typically stipulates that certain measures will be implemented to protect the habitat values of the lake or drainage in question.

3.2.6 City of Scotts Valley Policies and Ordinances

3.2.6.1 General Plan

Development in the City of Scotts Valley is guided by the General Plan. The City's 1994 General Plan is being updated so that it can create a comprehensive blueprint for development through 2040. The 2040 General Plan will address environmental conservation as it relates to state legislation regarding greenhouse gases, affordable housing, and energy and water conservation.

Although the project must be consistent with all goals of the current 1994 General Plan, goals that apply or may apply specifically to this project are listed and summarized below.

Goal OSG-316: Protect and conserve natural resources of the planning area including plant and animal habitats, mineral resources, water courses and air quality;

Goal OSG-360: To preserve and protect existing viewsheds and scenic open spaces and corridors;

Goal OSG-377: To achieve and maintain a harmonious relationship between the natural environment and man-made structures and land-uses.

In general, the above policies are implemented through the City's development review process and ordinances, and in some cases, through California Environmental Quality Act (CEQA) review.

3.2.6.2 Tree Preservation

The City of Scotts Valley has a tree protection regulation (Chapter 32, Section 40.080 of the Municipal Code) that regulates the removal and preservation of trees. The tree protection regulations apply to "protected trees" that included as standing or upright tree meeting the following:

a) Any tree having a main stem or trunk which measures eight (8) inches in diameter, measured fifty-four inches above natural grade, located in a hillside residential zone where the slope of the area within twenty feet of where the tree is located exceeds twenty percent;

b) Any tree which existed at the time of any approval granted under any zoning ordinance in effect prior to the adoption of the [tree] ordinance and which was required to the preserved as part of such approval;

c) Any tree required to be planted as condition of any approval under this title;

d) Any tree that was or is required to be planted as a replacement for any unlawfully removed tree;

e) Any oak tree having a main stem or trunk which measures twenty-five inches or greater in circumference (eight inches diameter, approximately) measure fifty-four inches above natural grade. Any multi-trunk oak with an individual trunk of over twelve inches in circumference (four inches diameter, approximately) measured fifty-four inches above the natural grade;

f) Any street tree regardless of size;

g) All trees which have a forty-inch or greater circumference of any trunk measured fifty-four inches above the natural grade or, in the case of multi-trunk tress, a total of above the natural grade. This provision shall not apply to the following trees: eucalyptus (blue gum), fruit trees and acacias. *It also shall not apply to any bay laurel below and located within the drip line of any established oak tree.*

Protected trees and heritage trees cannot be removed or destroyed without a City-approved tree removal permit and are subject to all other provisions of the City's tree preservation ordinance. Mitigation for removal of trees may be required and may include the on- or off-site planting of replacement trees "which are of a cumulative diameter necessary to equal the diameter of the tree(s) which are approved for removal."

3.2.6.3 Habitat Conservation Plans

No known habitat conservation plans are in effect for this project site. The site lies outside of the Santa Clara Valley Habitat Plan area and the Interim Programmatic Habitat Conservation Plan (IPHCP) area. The IPCHP is part of the collective effort to develop and finalize the Regional Sandhills Habitat Conservation Plan.

3.3 IMPACTS AND MITIGATIONS SPECIFIC TO THE PROJECT SITE

Site plans include subdividing the 5.9 acres property into 9 smaller lots and avoiding development or impact to identified sensitive habitats where possible. Any appreciable difference in either disturbance or general locations of the proposed development footprint on the Site would require an additional impact assessment to confirm that there are no additional unanticipated impacts to biotic resources.

Based on the current design, the project will impact most of California annual grassland, coyote brush, coast live oak woodland, and Arroyo willow woodland on the property due to the proposed residential development and associated infrastructure. Some small portions of the coyote brush (745 ft^2 or 0.017 acres) and coast live oak woodland (13,214 ft^2 or 0.3 acres) habitat will be preserved on-site.

The project will also impact 185 individual Scotts Valley spineflower occurring over 140 ft^2. While protocol surveys conducted over the entire site in 2022 failed to detect the Scotts Valley polygonum, the proposed off-site mitigation for the Scotts Valley spineflower that is incorporated into the Project will also benefit the polygonum as they occur on similar habitats. Potential impacts to rare plant species will be mitigated to a less than significant level. All known Scotts Valley polygonum co-occur at off-site locations with the Scotts Valley spineflower (see Section 3.3.1). Other potential impacts include construction impacts to roosting bats (Section 3.3.3), nests of the San Francisco dusky footed woodrat (Section 3.3.4), aggregates of monarch butterflies (Section 3.3.5), nests of breeding birds (Section 3.3.6).

3.3.1 Special Status Plants

Potential Impacts. The March, April, and June 2022 rare plant surveys identified the federally endangered Scotts Valley spineflower on the site. These rare plant surveys were timed appropriately to coincide with this species blooming season as well as other special status plants (Table 1). The occurrence of other special status plants was ruled out based on the rare plant surveys (LOA 2022) and the absence of habitat for these species. These species include the Ben Lomond spineflower, Santa Cruz wallflower, San Francisco popcorn flower, and the Scotts Valley Polygonum that are federally, or state listed as threatened or endangered.

Other species that are not federally, or state listed under CESA and FESA, but are on the California Rare Plant Rank (CRPR) List 1B, were also ruled out based on rare plant surveys (LOA 2022). These include the deceiving sedge, marsh microseris, Pacific grove clover, and Santa Cruz clover. Impacts to CRPR listed species may be considered significant under CEQA.

Mitigation. These impacts to the Scotts Valley spineflower would be considered significant under CEQA. Mitigation for significant impacts to rare plants usually takes the form of avoidance, minimization and/or compensation measures to reduce impacts to a less-than-significant level (see below).

Avoidance. The project's objectives of providing nine lots with associated infrastructure do not allow for avoidance of this extremely small population of the Scotts Valley spineflower.

Compensation. Therefore, the project should proportionally mitigate for these impacts. Compensation measures could involve replacing impacted plants at a 2:1 ratio (replacement plants: lost plants) through onsite preservation and/or off-site mitigation or by providing proportional benefit in managing and/or enhancing an existing population. The following compensatory measures, if implemented, would reduce impacts to a less than significant level.

Onsite Preservation. This alternative would involve replacing impacted plants through preserving other areas on the site with spineflower populations (i.e., on-site preservation). Because there are currently no other areas on the site with spineflower populations, onsite preservation would result in transplanting and/or seeding spineflowers in other areas onsite that serve as spineflower habitat. The 2022 rare plant surveys found that the spineflower occurred only within a small area of the site, an approximately 140-square foot area of disturbed grasslands. The other onsite vegetation communities, including the coyote brush scrub, arroyo willow woodlands, and coast live oak woodlands, do not serve as suitable habitat for the spineflower. Considering the

lack of other onsite habitat for the spineflower and the documented low success rate of transplanting rare plants (CNPS 1991), particularly for the spineflower (Kofron and Lyons 2014), it is not expected that onsite preservation will result in the full mitigation of replacing impacted plants at a 2:1 ratio and enhancing the value and ecological function of spineflower habitat.

*Off-site Mitigation and Enhancement***.** As onsite mitigation is unlikely to succeed, offsite mitigation for impacted spineflowers could be accommodated through restoration or conservation at an off-site location. Off-site mitigation would involve compensating with additional conservation efforts that benefit existing off-site spineflower populations to increase habitat value, reduce threats to spineflower populations, and ensure that species will persist and thrive on managed and permanently secure protected spineflower habitat. Furthermore, implementing additional conservation measures at an existing off-site mitigation site may facilitate ecological adaptive processes that could improve the resiliency of the species. These conservation measures may involve the conservation of wildflower field habitats that allow for the cross-pollination among different spineflower colonies occurring at different locations within a protected area. Other measures could include invasive species management that tackle the common and challenging threat of invasive species and thatch accumulation that prevent recolonization of spineflowers on suitable habitat (Kofron et al. 2014). The USFWS found that in some instances, conserving existing spineflower habitat and facilitating ecological processes may be sufficient to maintain populations coupled with active management (WRA et al. 2017).

To rely on an offsite preservation approach requires that the mitigation site must be confirmed to support populations of the impacted species and must be preserved in perpetuity via deed restriction, establishment of a conservation easement, or a similar preservation mechanism. Several sites may serve as potential mitigation sites (Table 4) that support the Scotts Valley spineflower and all occur on USFWS-designated critical habitat. Targeting one of these sites for mitigation would meet the aforementioned conditions.

Table 4. Potential Mitigation Site Features					
	Onsite	**Potential Mitigation Sites**			
		Glenwood Unit			**Polo Ranch Unit**
		Salvation Army Land	Scotts Valley HS Preserve	Glenwood Preserve	Polo Ranch
Total Site Area (ac)	6	201.2	8.4	170	83.4
USFWS Critical Habitat presence within parcel boundaries (ac)*	0	17.4	8.4	154.8	62.9
USFWS designation	Site not listed	No formal management	Formally managed; In a protected status	jointly managed by Santa Cruz County Land Trust and City of Scotts Valley	The conservation easement has been recorded.
Ownership/	Granite Ridge Properties	Salvation Army. The Scotts Valley Water District has an easement on paved road 20 m upslope of SV spineflower	Scotts Valley School District	City of Scotts Valley	Lennar Ranch (for developed portion);
Conservation entities responsible for Managing the site.	None	N/A; not currently a conservation easement	Santa Cruz Land Trust, SVHD, Biotic Resources Group	Santa Cruz Land Trust and City of Scotts Valley	Wildlife Heritage Foundation

*Approximations based on Santa Cruz County GIS map of recorded parcel boundaries. Critical habitat based on CNDDB shape files (2022). Critical habitat acreages were approximated by the USFWS in 2002 (USFWS 2002).

Common management needs among these potential mitigation sites include invasive species and thatch accumulation that threaten the persistence of spineflower populations and other special status plants. Management needs for the Glenwood Open Space Preserve also includes trail maintenance, particularly for protecting spineflower and other special status plants habitat.

Seedbank Salvage and Seed Bulking. These approaches use stored seeds and topsoil under existing spineflower populations to re-establish plants impacted by a project. Seedbank salvage involves leveraging a plant populations' seedbank (i.e., seed accumulations beneath topsoil of spineflower populations) by topsoil salvage (Dudek 2021). Similarly, seed bulking involves the collection of wild seed and propagation of plants in controlled nursery conditions where seeds

plants can thrive without limitations in invasive species competition, soils, and hydrological conditions. Bulked seeds can also be used to replenish depleted spineflower populations occurring in protected areas serving as mitigation sites (Table 4).

The USFWS Recovery Implementation team has used seedbank salvage and seed bulking for the Scotts Valley polygonum and Scotts Valley spineflower (Forbes 2021). The purpose of these approaches is to not only produce a conservation seed bank in case the overall population is depleted, but to amplify seed numbers for the reintroduction at conservation easements and more importantly suitable habitat where spineflowers once existed. These reasons align with the main goal of improving overall spineflower populations and habitat.

The USFWS has also approved seedbank salvage and seed bulking for the protected San Fernando spineflower (*Chorizanthe parryi* var. *fernandina*), where salvaged seeds and topsoil were propagated in a nursery and stored at the National Seed Lab (i.e., National Laboratory for Genetic Resources Preservation) (USFWS 2018). After successful seeding trials, the USFWS formalized conservation agreement plans to re-introduce the San Fernando spineflower.

If seedbank salvage and seed banking are the mitigation alternative chosen, then an area containing existing spineflower populations (Table 4) would be selected. Funding for management entities currently conserving spineflower habitat and other special status plants would be needed to monitor re-established populations and maintain sites for eight years (CDFW 2020).

3.3.2 Special Status Wildlife

Potential Impacts. Most of the special status animal species known to occur in the region do not have the potential to occur on site because habitats on the site are not suitable for them, landscape barriers would block their access to the project site, and/or the site is located outside of their known range (Table 2). Species considered to be absent from, or unlikely to occur on, the project site have no appreciable potential to be affected by the project, and no avoidance, minimization, or mitigation measures are proposed.

Two special status species, the San Francisco dusky-footed woodrat and the Monarch butterfly, are present on the site. The pallid bat, a California state species of special concern, has some potential to forage and roost on the site (Table 2).

Monarch butterfly overwintering habitats are absent from the site. Furthermore, the site is not within the range of documented monarch overwintering sites (Pelton et al. 2016). Although the individual Monterey cypress on the site could serve as monarch overwintering habitat, this cypress alone is not sufficient to support a colony of overwintering Monarch butterflies. Finally, most of the trees on the site (e.g., coast live oak, box elder elm) are not known to provide overwintering roost habitat for this species. Therefore, the proposed project is not expected to have a substantial adverse effect on monarch overwintering habitat.

Although project development would result in the loss of a small amount of habitat for the San Francisco dusky footed woodrat and pallid bat, the site's residential setting, routine mowing, and disturbance from unregulated recreational activities limits its habitat value for these species. Habitats of much higher quality are relatively abundant north of the site in the Glenwood

Preserve as well as west of the site. These areas will presumably remain available to these species following project implementation. Therefore, the project does not have the potential to substantially impact these species through loss of habitat and would be considered less-than-significant.

If individuals of any of these special status species are present at the time of construction, they may be at risk of construction-related injury or mortality. Foraging individuals would not be particularly vulnerable to construction-related injury or mortality, as they are capable of simply flying away from construction disturbance. Regardless, construction-related impacts to individual pallid bats, San Francisco dusky-footed woodrats, and the monarch butterfly would be considered significant under CEQA. Potential impacts to these species are discussed in greater detail in Sections 4.2.3, 4.2.4, and 4.2.5.

Mitigation. Mitigation measures to compensate for habitat impacts are not warranted. Mitigation measures to specifically avoid and minimize potential impacts to individual pallid bats, San Francisco dusky-footed woodrats, and the monarch butterfly are discussed in Sections 4.2.3, 4.2.4, and 4.2.5.

3.3.3 Impacts to Roosting Bats

Potential Impacts. The site's mature trees have the potential to be used by roosting bats, including the special-status pallid bat. If roosting bats are present at the time of tree removal, individual bats could be injured or killed. Such an event would constitute a violation of state laws protecting bats.

Mitigation. The following avoidance and minimization measures would reduce impacts to roosting bats, including the pallid bat to a less-than-significant level.

Habitat Assessment and Preconstruction Survey. A habitat assessment should be conducted by a qualified biologist to evaluate onsite trees' potential to support roosting bats and identify potential habitat trees for roosting bats. The habitat assessment can be conducted in any time of year and may be conducted concurrently with the preconstruction survey if all potential roosting spots can be observed. If the qualified biologist is not able to visually inspect all potential roost areas, depending on the season, either the two-step removal or a nighttime emergence survey should be conducted for the potential roosting locations that could not be visually surveyed.

Two-Step Removal. Two-step removal of potential habitat trees which could not be fully visually surveyed would occur only during the volant season and outside of the maternity season. To avoid interfering with an active nursery and/or overwintering bats, the two-step removal of potential habitat trees may occur between March 1 and April 14 and between August 16 and October 15 when fair-weather nights are forecasted. Two-step removal of potential habitat trees consists of two days of work. On Day 1, a qualified biologist would direct a tree trimming company to conduct particular cuts to make the tree less suitable for bats and to provide suitable vibrations to encourage bats to leave. The following day (i.e., Day 2), the specific tree would be removed provided tree removal is in accordance with the Scotts Valley tree protection and removal policies (Section 4.2.12). A qualified biologist does not need to be preset during Day 2 activities.

Nighttime Emergence Survey. Alternately, a nighttime emergence survey can be conducted by a qualified biologist on a fair-weather night during the volant season (March 1-October 15). If bats are found to be absent, the tree can be removed provided that tree removal is in accordance with Scotts Valley tree protection and removal policies (Section 4.2.12). If bats are found to be present, and it is within the maternity season (April 15-August 15), further investigation must occur to determine whether a maternity colony is roosting in the tree. If bats are found to be present and it is outside the maternity season (March 1 through April 14 or August 16 through October 15), two-step removal could occur to remove the bat roosting habitat tree.

Construction-free Buffers. If a maternity colony or overwintering colony is identified on the site, then a construction-free buffer shall be established around the tree(s) and remain in place until it has been determined that the colony is no longer active.

3.3.4 Impacts to San Francisco Dusky-Footed Woodrats

Potential Impacts. Several San Francisco dusky-footed woodrat nests were observed on the project site during the October and November 2021 field surveys. The San Francisco dusky-footed woodrat is a state species of special concern and any construction activities that result in harm or mortality to this species, or in nest abandonment, may be considered a significant impact under CEQA.

Mitigation. The following measures will reduce impacts on individual San Francisco dusky-footed woodrats to a less-than-significant level under CEQA and will ensure compliance with state laws.

Pre-construction Survey. A qualified biologist will conduct a pre-construction survey for San Francisco dusky-footed woodrat nests no more than 30 days and no less than 14 days prior to the onset of construction activities. This survey timing allows for the scheduling of woodrat nest deconstruction. The survey will encompass all construction zones and surrounding lands within 50 feet.

Nest Deconstruction. Identified nests will be avoided, where possible. If avoidance is not possible, the nest(s) will be manually deconstructed by a qualified biologist when helpless young are not present, typically during the non-breeding season (October-January).

Construction-free Buffers. If it is determined during the nest deconstruction survey that young are present, a suitable buffer depending on the timing within the breeding season (ranging from 15-50 feet) will be established around the nest and maintained during construction until the young are independent and have successfully moved from the nest on their own.

3.3.5 Impacts to Monarch Butterfly

Potential impacts. Although no overwintering habitat and aggregations of monarchs were detected during the October and November 2021 field surveys, nor during the March to June 2022 surveys, several individual monarch butterflies were observed foraging on coyote brush flowers. Additionally, while aggregates are conspicuous, no occurrences have ever been reported for this site. The monarch butterfly is a candidate under the Federal Endangered Species Act (CDFW 2021). While the project will have no significant adverse effect to monarch overwintering

habitat, construction-related impacts to active monarch butterfly aggregations may be considered significant under CEQA.

Mitigation. The following measures will reduce potential impacts on Monarch butterflies to a less-than-significant level under CEQA and will ensure compliance with state laws.

Pre-construction surveys and Avoidance. While monarch butterfly aggregates are highly unlikely to occur on site, as a prudent measures, seven days prior to any construction activities, particularly tree removal, a survey for monarch butterfly aggregates should be conducted by a qualified biologist over the entire site, and within 100 feet of the site where access is possible. Surveys must be conducted in favorable weather conditions to identify any monarch aggregations within 100 feet of the area proposed for disturbance seven days before construction activities commence.

If an active aggregation is present on the project site, all construction, grading, and construction-related noise must be seasonally timed to avoid impacts to aggregating monarch butterflies. A temporary fence must be installed along the outer boundary of the buffer zone of an aggregation prior to and during any grading and construction activities on the site. With authorization of an approved biologist, construction activities may occur within 100 feet of aggregations under the direction of a biological monitor on the site.

If no aggregations are observed, no further mitigation is required.

Plan Requirements and Timing. Before the City issues grading or building permits, the Scotts Valley Planning Department, or designee, must verify that construction and grading is occurring outside the winter roosting season, or that monarch surveys have been conducted, and buffer requirements specified above are in place (if applicable). The designated biologist shall prepare and submit a written report of the findings of the pre-construction survey to resource agencies and Scotts Valley for review prior to finalization. This measure, including the fencing location, must be incorporated into the grading plans for the Project.

Monitoring. The Scotts Valley Planning Department, or designee, must verify compliance before the City issues any grading or building permit(s) and designate a biological monitor to conduct recurrent site inspections to ensure compliance throughout the construction period.

Implementation of these mitigation measures would reduce potential construction impacts to the monarch butterfly to a less than significant level.

3.3.6 Impacts to Nesting Migratory Birds and Raptors

Potential impacts. The project site has the potential to be used for nesting by a variety of birds and raptors. All nesting raptors and migratory birds, regardless of their status, are protected by state and federal laws. If construction is carried out during the avian nesting season, individual birds may be injured or killed by construction activities or be disturbed such that they would abandon their nests. Construction activities that result in mortality of individual birds or lead to the abandonment of active nests would violate state and federal laws.

Mitigation. The following avoidance and minimization measures are recommended:

Pre-construction surveys. If tree removal or ground disturbance activities are scheduled to commence during the avian nesting season (February 1 through August 31), pre-construction surveys should be conducted by a qualified biologist to identify possible nesting activity.

Construction-free buffers. A construction-free buffer of suitable dimensions should be established around any active raptor and migratory bird nests (typically up to 250 feet, depending on the location and species) for the duration of the project or until it has been determined that the chicks have fledged and are independent of their parents.

3.3.7 Impacts to Sensitive Natural Communities

Potential Impacts. An Arroyo willow woodland occupies a small section of the site (Section 2.3.4). This community is considered a sensitive natural community and association due to its limited distribution, extent, threats, and typical occurrence on wetlands (CDFW 2021). Construction-related impacts (e.g., tree removal) to rare and sensitive natural communities such as the Arroyo willow woodland may be considered significant under CEQA.

Mitigation. Mitigation for impacts to the Arroyo Woodland are accommodated through the mitigation of tree removal (Section 4.2.12).

3.3.8 Impacts to Riparian Habitat or Wetlands

Potential Impact. Riparian habitat does not exist on the site; therefore, the project will not impact riparian habitat. However, there is a mesic swale located in the southeastern section of the site that supported a mix of upland and some hydrophytic vegetation. A wetland delineation indicated that this swale only met one of the three criteria of a jurisdictional wetland (Section 2.8). A ditch that collects run-off from Sandraya Heights Road drains into this mesic swale. Furthermore, the absence of historical wetland and other hydrological features indicate that the onsite swale is not replacing historical natural drainages or tributaries that would be considered Waters of the U.S.

In sum, the project will not be impacting riparian habitat and areas that meet all the technical criteria of a jurisdictional wetland. Therefore, impacts to wetlands and riparian habitat are considered less-than-significant under CEQA.

Mitigation. No mitigation is required.

Regulatory Issues. The onsite ditch may fall under the jurisdiction of the RWQCB. Accordingly, the project proponent must comply with regulations related to the disturbance and/or discharges into all of Waters of the State (Section 3.4.2). If discharge into the onsite ditch affects groundwater or in a diffused manner (e.g., erosion from soil disturbance or waste discharges to land) (RWQCB 2021), then the project proponent will be required to file a Report of Waste Discharge with the appropriate RWQCB to obtain Waste Discharge Requirements (WDR).

3.3.9 Degradation of Water Quality in Seasonal Drainages, Stock Ponds, and Downstream Waters

Potential Impacts. Development of the site will require grading that leaves the soil barren of vegetation and, therefore, vulnerable to sheet, rill, or gully erosion. Eroded soil is generally carried as sediment in surface runoff to be deposited in natural creek beds, canals, and adjacent

wetlands. Furthermore, urban runoff is often polluted with grease, oil, pesticide and herbicide residues, heavy metals, etc. These pollutants may eventually be carried to sensitive wetland habitats used by a diversity of native wildlife species. The deposition of pollutants and sediments in sensitive riparian and wetland habitats would be considered a potentially significant adverse environmental impact.

The project proponent is expected to comply with the provisions of applicable permits, including standard erosion control measures that employ best management practices (BMPs). Compliance with the above permit(s) should result in no impact to water quality in seasonal creeks, reservoirs, and downstream waters from the proposed project. In addition, compliance with these permits should not result in the deposition of pollutants and sediments in sensitive riparian and wetland habitats.

Mitigation. Mitigation measures are not warranted.

3.3.10 Interference with the Movement of Native Wildlife

Potential Impacts. Although this site is not within any defined wildlife corridor or landscape linkage, native wildlife is expected to use the site for their daily movements and dispersal movements. However, the site is subject to routine mowing and unregulated multi-use recreational activities that impact how and when wildlife use the site. Considering that wildlife do not use the site as a significant movement corridor and the absence of onsite overwintering habitats for migrating species (i.e., monarchs), development of the site will not significantly impact overall wildlife migration and dispersal movements. Therefore, the proposed project would have a less-than-significant impact on movements of native wildlife.

Mitigation. Mitigation measures are not warranted.

3.3.11 Consistency with General Plan

Assuming the project is carried out as described in this report, and assuming the recommended avoidance, minimization, and mitigation measures for impacts described above are implemented, the project appears to be consistent with the City of Scotts Valley General Plan's goals and policies related to natural resources.

3.3.12 Consistency with Tree Protection Regulations

The project has the potential to impact a large number of trees on the site, most of which are protected by the City of Scott's Valley tree protection regulations. Tree removal requires avoidance, minimization, and compensatory mitigation (see below). In addition, these impacted trees should still be surveyed for the presence of nesting birds or roosting bats (Sections 4.2.3 and 4.2.6, respectively).

A formal survey of trees on the site was conducted by Neil Kramer (LOA, 2021), at which time the species, location, diameter at 54 inches above grade, health and structural condition, and suitability for preservation of all such trees occurring within and adjacent to the proposed development footprint were recorded. In total, 203 trees representing nine species were surveyed. All surveyed trees (203) were considered protected trees because they met the criteria of the City of Scotts Valley tree protection regulations. Trees that did not meet the criteria of a

protected tree (e.g., Acacia) were noted in the tree survey and can be found in the species list of this report (Appendix A).

Mitigation. Per the Scotts Valley Tree protection regulations, a tree removal request shall be included as part of the development application, including an arborist's report that shall be approved by the planning department or city council. The development review process shall seek to preserve healthy and significantly sized trees that are important to the landscape and contribute to the overall aesthetic quality of the area. The following specific avoidance, minimization, and mitigation measures are recommended:

Tree protection regulation compliance. Removal and preservation of protected trees should be carried out in compliance with the City of Scott's Valley tree protection regulations (Section 17.44.080(E)(4)). Where removal of a tree has been specifically authorized as part of any development application approved by the planning department or city council, no additional permit shall be required for removal of such tree. Tree removal request shall be included as part of the development application that should include the following information and shall be subject to the following process for review:

a. All development plans as well as landscaping and irrigation plans.

b. The city arborist shall perform a tree survey and/or impact report and make recommendations for trees requiring removal or preservation using development plans provided by the applicant. The report shall include preconstruction treatment and alternative construction methods. Appropriate conditions for long term maintenance of preserved trees shall be evaluated by the city arborist.

c. Tree preservation measures shall be incorporated as conditions of permit approval.

d. The city arborist shall place a monetary value on trees preserved on development sites and a surety bond in an amount equal to the value of the preserved trees shall be deposited with the city. If damaged occurs to the preserved trees during development and/or construction, funds will be drawn from the deposited amount. Funds remaining in the account will be returned to the applicant upon final inspection of the project.

e. During the pre-construction phase of development, the city arborist shall inspect tree protection fencing and the completion of pre-construction treatments. This inspection shall be completed prior to the issuance of any grading or building permits.

f. The city arborist shall routinely inspect the development site through the term of the project.

g. The cost of the city arborist review and implementation of conditions, site inspection and related work shall be borne by the applicant.

3.3.13 Habitat Conservation Plans/ Natural Community Conservation Plans (HCP/NCCP)

Potential Impacts. No known HCPs or NCCPs are in effect for this site.

Mitigation. Mitigation measures are not warranted.

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APPENDIX A: VASCULAR PLANTS OF THE PROJECT SITE

The plants species listed below were observed on the site during the field survey conducted by Live Oak Associates, Inc. on October 13, November 3 and 8, 2021, and March 8, April 23 and June 7, 2022. The wetland indicator status of each plant as listed in the U.S. Army Corps of Engineers 2020 National Wetland Plant list for the Arid West region is shown following its common name (USACE 2020).

OBL - Obligate
FACW - Facultative Wetland
FAC - Facultative
FACU - Facultative Upland
UPL – Upland
- – Not Listed

ACERACEAE – MAPLE FAMILY	**COMMON NAME**	**INDICATOR**
Acer negundo	Boxelder maple	FACW
ADOXACEAE- MOSCHATEL FAMILY		
Sambucus nigra ssp. caerulea	Blue elderberry	FACU
AMARANTHACEAE - Amaranth Family		
*Amaranthus albus**	White amaranth	FACU
AMARYLLIDACEAE - Amaryllis Family		
*Amaryllis belladonna**	Naked lady	-
ANACARDIACEAE – SUMAC FAMILY		
Toxicodendron diversilobum	Poison oak	UPL
APIACEAE – CARROT FAMILY		
Conium maculatum	Poison hemlock	FACW
Sanicula crassicaulis	Pacific sanicle	UPL
*Torilis arvensis**	Hedge parsley	-
APOCYNACEAE – DOGBANE FAMILY		
Vinca major	Greater periwinkle	FACU
ARACACEAE – ARUM FAMILY		
*Arum italicum**	Italian arum	-
*Zantedeschia aethiopica**	Cala lily	OBL
ASTERACEAE - SUNFLOWER FAMILY		
*Anthemis cotula**	Mayweed	FACU
Baccharis pilularis	Coyote brush	-
*Carduus pycnocephalus**	Italian thistle	-
*Centaurea solstitialis**	Yellow star thistle	-
*Cirsium vulgare**	Bull thistle	FACU
Deinandra cormbosa	Coast tarweed	UPL
Deinandra kelloggii	Kellogg's tarweed	-

*Dittrichia graveolens**	Stinkwort	-
*Lactuca serriola**	Prickly lettuce	FACU
Erigeron canadensis	Horseweed	FACU
*Hedypnois rhagadioloides**	Crete Weed	UPL
*Hypochaeris glabra**	Smooth cat's ear	FACU
*Hypochaeris radicata**	Rough cat's ear	-
*Lactuca serriola**	Prickly lettuce	FACU
Lasthenia gracilis	Common goldfields	-
*Logfia gallica**	Narrow leaved filago	-
Madia elegans	Common madia	-
*Matricaria discoidea**	Pineapple weed	FACU
*Pseudognaphalium luteoalbum**	Weedy cudweed	FAC
Silybum marianum	Milk thistle	-
*Soliva sessilis**	Common soliva	FACU
*Sonchus asper ssp. asper**	Prickly sow-thistle	FAC
*Sonchus oleraceus**	Common sow thistle	UPL
Senecio vulgaris	Common groundsel	FACU
Symphyotrichum chilense	Pacific aster	FAC
*Tragopogon dubius**	Yellow salsify	UPL
BRASSICACEAE – MUSTARD FAMILY		
Cardamine oligosperma	Bitter cress	FAC
*Hirschfeldia incana**	Summer mustard	-
*Brassica nigra**	Black mustard	-
*Brassica rapa**	Field mustard	FACU
*Lepidium didymum**	Lesser wortcress	UPL-
*Raphanus sativus**	Wild radish	-
*Raphanus raphanistrum**	Wild radish	-
CARYOPHYLLACEAE – PINK FAMILY		
*Polycarpon tetraphyllum var. tetraphyllum**	Four-leaved allseed	UPL
*Silene gallica**	Common catchfly	-
*Spergularia rubra**	Red sandspurry	FAC
*Stellaria media**	Common chickweed	FACU
CELASTRACEAE – Staff Tree Family		
*Maytenus boaria**	Mayten	-
CONVOLVULACEAE - MORNING-GLORY		
*Convolvulus arvensis**	Field bindweed	UPL
CRASSULACEAE – STONECROP FAMILY		
*Crassula ovata**	Jade plant	-
CUPRESSACEAE – CYPRESS FAMILY		
Hesperocyperis macrocarpa	Monterey cypress	-

CYPERACEAE – SEDGE FAMILY		
Carex densa	Dense sedge	OBL
Carex harfordii	Monterey sedge	OBL
Cyperus eragrostis	Tall flatsedge	FACW
Eleocharis parishii	Parish's spikerush	FACW
DIPSACACEAE – TEASEL FAMILY		
*Dipsacus sativus**	Fuller's teasel	-
EUPHORBIACEAE- SPURGE FAMILY		
Croton setiger	Dove weed	FAC
*Euphorbia characias ssp. wulfenii**	Wulfen's spurge	-
*Euphorbia maculata**	Spotted spurge	
*Euphorbia peplus**	Petty spurge	-
FABACEAE – LEGUME FAMILY		
*Acacia delbata**	Silver wattle	-
Acmispon americanus	Spanish lotus	UPL
Delairea odorata	Cape Ivy	FAC
*Lotus corniculatus**	Bird's foot trefoil	FAC
Lupinus nanus	Sky lupine	-
*Medicago polymorpha**	Burclover	FACU
*Trifolium angustifolium**	Narrow-leaved clover	-
*Trifolium dubium**	Little hop clover	-
Trifolium grayi	Gray's clover	FACW
*Trifolium hirtum**	Rose clover	-
*Trifolium subterraneum**	Subterranean clover	-
*Vicia sativa**	Vetch	FACU
*Vicia tetrasperma**	Sparrow vetch	-
Vicia villosa ssp. villosa	Winter vetch	-
FAGACEAE – OAK FAMILY		
Quercus agrifolia	Coast live oak	-
*Quercus ilex**	Holly oak	-
GERANIACEAE – GERANIUM FAMILY		
*Erodium botrys**	Broadleaf filaree	FACU
*Erodium cicutarium**	Red-stemmed filaree	-
*Geranium dissectum**	Dissected geranium	-
IRIDACEAE- IRIS FAMILY		
Sisyrinchium bellum	Blue-eyed grass	FACW
JUGLANDCEAE – WALNUT FAMILY		
Juglans hindsii	Northern California Black Walnut	FAC
JUNCACEAE – RUSH FAMILY		
Juncus bufonius var. bufonius	Common toad rush	FACW

Juncus pacificus	Pacific rush	-
Juncus patens	Spreading rush	FACW
Juncus phaeocephalus var. phaeocephalus	Brownhead rush	FACW
LAMIACEAE – MINT FAMILY		
Lavendula sp.	Lavender	-
Trichostema lanceolatum	Vinegar weed	FACU
LYTHRACEAE - LOOSESTRIFE FAMILY		
LYTHRUM HYSSOPIFOLIA*	Hyssop loosestrife	OBL
MALVACEAE – MALLOW FAMILY		
*Malva parviflora**	Mallow	-
*Modiola caroliniana**	Carolina bristlemallow	FAC
MYSINACEAE- MYRSINE FAMILY		
*Lysimachia arvensis**	Scarlet pimpernel	FAC
ONAGRACEAE – EVENING PRIMROSE FAMILY		
Epilobium brachycarpum	Annual fireweed	FAC
Epilobium ciliatum	Fringed willowherb	FACW
PAPAVERACEAE – POPPY FAMILY		
Eschscholzia californica	California poppy	-
PLANTAGINACEAE – Plantain Family		
Plantago exerta ssp. exerta	Purple owl's clover	-
*Plantago lanceolata**	English plantain	FAC
POACEAE - GRASS FAMILY		
*Avena barbata**	Slender wild oat	-
*Briza maxima**	Rattlesnake grass	-
Briza minor	Little quaking grass	FAC
*Bromus diandrus**	Ripgut brome	-
*Bromus hordeaceus**	Soft chess	FACU
*Bromus madritensis**	Spanish brome	UPL
*Bromus rubens**	Red brome	-
*Cynodon dactylon**	Bermuda grass	FACU
Cynosurus echinatus	Hedgehog dogtail	-
Elymus triticoides	Beardless wildrye	-
Danthonia californica var. californica	California oat grass	FAC
*Festuca bromoides**	Six-week fescue	-
Festuca myuros	Rat-tail fescue	-
Holcus lanatus	Velvet grass	FAC
*Hordeum marinum ssp. gussoneanum**	Mediterranean barley	FAC
*Hordeum murinum ssp. leporinum**	Farmer's foxtail	FACU
*Poa annua**	Annual bluegrass	FAC
Stipa pulchra	Purple needlegrass	-
*Stipa tenuissima**	Finestem needlegrass	-

POLMONIACEAE – PHLOX FAMILY		
Navarretia squarrosa	Skunkweed	FACU
POLYGONACEAE – BUCKWHEAT FAMILY		
Chorizanthe robusta var. hatwegii	Scotts Valley spineflower	-
Persicaria punctata	Dotted smartweed	OBL
*Polygonum aviculare ssp. depressum**	Common knotweed	FAC
*Rumex acetosella**	Common sheep sorrel	FACU
*Rumex crispus**	Curly dock	FAC
*Rumex pulcher**	Fiddle dock	FAC
PORTULACACEAE - PURSLANE FAMILY		
*Portulaca oleracea**	Common purslane	FAC
RHAMNACEAE – BUCKTHORN FAMILY		
Frangula californica	California coffeeberry	-
ROSACEAE – ROSE FAMILY		
Heteromeles arbutifolia	Toyon	-
*Photinia fraseri**	Fraser's photinia	-
*Prunus cerasifera**	Cherry plum	-
*Pyrus communis**	European pear	-
*Rubus armeniacus**	Himalayan blackberry	FAC
Rubus ursinus	California blackberry	FAC
RUBIACEAE – MADDER FAMILY		
Galium aparine	Common bedstraw	FACU
SALICACEAE – WILLOW FAMILY		
Salix lasiolepis	Arroyo willow	FACW
SCROPHULARIACEAE - FIGWORT FAMILY		
*Verbascum thapsus**	Woolly mullein	UPL
SOLANACEAE - Nightshade Family		
Solanum americanum	Common nightshade	FAC
URTICACEAE - Nettle Family		
*Urtica urens**	Dwarf nettle	UPL

* Introduced non-native species

APPENDIX B: PHOTOGRAPHS OF THE PROJECT SITE



Photo 1: Overview of onsite communities, including grasslands, oak woodlands, coyote brush scrub, and Arroyo Woodland.



Photo 2:The network of trails on the onsite grasslands exposes bare ground and sandy loam bedrock of Bonnydoon soils.



Photo 3. A ditch carries run-off from Sandraya Heights Road and drains into southern areas of the site.

Appendix B

Arborist Report

LIVE OAK ASSOCIATES, INC.
an Ecological Consulting Firm

November 18, 2021

Sachneel Patel
Granite Ridge Properties
225 Demeter Street
East Palo Alto, CA 94303

Subject: Tree Survey, Arborist Report for the property located at the intersection of Casa Way and Sandraya Heights, Scotts Valley, Santa Cruz County, California (APN 023-113-36) (LOA PN: 2631-02)

Dear Mr. Patel:

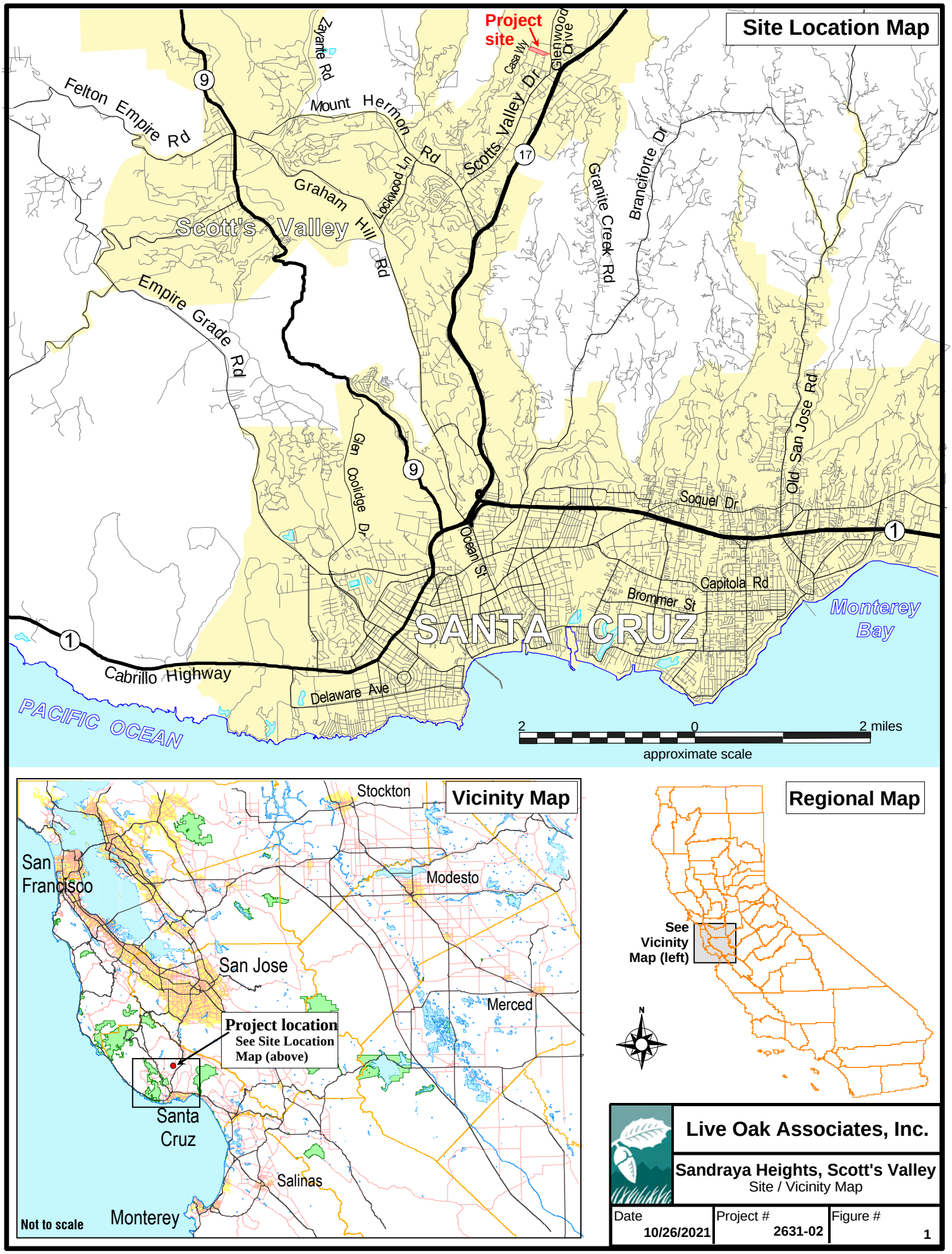
At your request, Live Oak Associates (LOA) has completed a tree survey on the approximately 5.9-acre property (project site) located at the intersection of Casa Way and Sandraya Heights in the City of Scotts Valley, Santa Cruz County, California (APN 023-113-36). The property is an undeveloped rectangular parcel bounded by Sandraya Heights Road to the north and Casa Way to the west (Figure 1).

This report highlights elements of the City of Scotts Valley tree protection ordinance relevant to the project site, provides methods and results regarding the tree survey, and provides general tree protection measures for trees to be retained.

CITY OF SCOTTS VALLEY TREE ORDINANCE

The City of Scotts Valley recognizes the many benefits that trees contribute to the urban environment. As such the City's Tree Protection Regulations 17.44.080 protect certain trees, making it "unlawful for any person to damage, destroy or remove, or cause to be damaged, destroyed or removed, any protected tree upon any private or public property in the City without first obtaining a permit". Trees on the project site that qualify as protected by the City ordinance may include the following:

- A single trunk oak tree that is equal to or greater than 25 inch circumference (8 inch diameter) measured fifty-four inches above natural grade, or any multi trunk oak tree with any trunk of 12 inch or more circumference(4 inches diameter)
- Any single trunk tree that is equal to or greater than 40 inches circumference (13 inches diameter) measured fifty-four inches above natural grade, or any multi trunk tree with a cumulative total of 40 inches or more circumference
- Any tree located within five feet of a public right-of-way or street no matter what size


Site Location Map
Project site
Glenwood Drive
Casa Wy
Layante Rd
Felton Empire Rd
Mount Hermon Rd
Scotts Valley Dr
Granite Creek Rd
Branciforte Dr
Graham Hill Rd
Lockwood Ln
Scott's Valley
Empire Grade Rd
Glen Coolidge Dr
Old San Jose Rd
Soquel Dr
Ocean St
Capitola Rd
Brommer St
SANTA CRUZ
Monterey Bay
Cabrillo Highway
Delaware Ave
PACIFIC OCEAN
2 0 2 miles
approximate scale
Vicinity Map
Stockton
San Francisco
Modesto
San Jose
Merced
Project location
See Site Location Map (above)
Santa Cruz
Salinas
Monterey
Not to scale
Regional Map
See Vicinity Map (left)
N
Live Oak Associates, Inc.
Sandraya Heights, Scott's Valley
Site / Vicinity Map
Date 10/26/2021
Project # 2631-02
Figure # 1

- Any size tree required as part of a permit approved by the Planning Department, Planning Commission, or City Council, or any required replacement trees for an unlawfully removed tree
- Any Heritage Tree, as specified in City Resolution No. 1697.1, Exhibit A (adopted 4/20/05)

A permit is not required for the removal of an acacia, eucalyptus or fruit tree, or for any bay laurel located within the dripline of any established oak tree.

A complete copy of Scotts Valley Tree Protection Regulations is provided with this report as Appendix B

METHODS

The tree survey for this report was conducted by Neal Kramer, a Certified Arborist, on November 3, 5 and 8, 2021. The tree species, trunk diameter, approximate height, and canopy spread, and general tree condition were recorded for all trees on the project site having a trunk circumference of 18 inches (approximately 6 inch diameter) or greater as measured at 4 ½ feet (54 inches) above grade. All multi-trunk oak trees with at least one trunk with a circumference of 12 inches or more (approximately 4 inch diameter), and all multi-trunk trees of any species with a cumulative trunk circumference of 40 inches (approximately 13 inch diameter) or more were also included.

A limited visual assessment of health and structure was used to assign a general condition rating for each tree according to the following scale:

- Excellent = 90-100% healthy foliage, free of structural defects, pests or disease, ideal form and function for species and location
- Good = 75-90% healthy foliage, minor correctable defects, good form and function for location
- Fair = 50-75% healthy foliage, moderate defects, and or substantial asymmetry that compromise function or aesthetics for the location
- Poor = 20-50% healthy foliage with significant defects, low life expectancy
- Very poor = less than 20% healthy foliage with significant defects, recovery unlikely
- Dead = less than 5% healthy foliage

Each tree surveyed was marked with a numbered metal tag (tag numbers 101-205) and an approximate location for each tree was mapped in the field using ArcGIS Collector. The ArcGIS Collector data was then used to prepare tree location maps for this report.

SURVEY RESULTS AND DISCUSSION

A total of 105 trees representing 9 different species were documented on the project site for this report. Tree species documented in order of abundance include coast live oak (*Quercus agrifolia*) 71 trees, box elder (*Acer negundo)*10 trees, arroyo willow (*Salix lasiolepis*) 10 trees, Monterey cypress (*Hesperocyparis macrocarpa*) 3 trees, Northern California black walnut (*Juglans hindsii*) 3 trees, mayten (*Maytenus boaria*) 2 trees, cherry plum (*Prunus cerasifera*) 2 trees, fruiting pear (*Pyrus communuis*) 1 tree, and blue elderberry (*Sambucus nigra ssp. caerulea*) 1 tree.

Coast live oak, box elder, arroyo willow and blue elderberry are native to the project area. All other tree species surveyed are introduced on this site.

A summary table of information collected for each tree documented is provided with this report as Appendix A, and maps showing the approximate tree locations are provided below as Figure 2a and 2b.

Tree Condition

The majority of trees surveyed for this report (58 out of 105) are in *fair* condition (see condition ratings defined above under Methods).

While no trees on the site were rated in *excellent* condition, 25 trees were ranked in *good* condition. Trees ranked in *good* condition are reasonable candidates to be considered for preservation, depending on proposed development plans. Trees in good condition include 23 coast live oaks, one mayten tree and one common fruiting pear.

Twenty-two trees surveyed were rated in either *poor* or *very poor* condition. These include 9 coast live oaks, 6 box elders, 3 Monterey cypresses, 2 cherry plums, 1 Northern California black walnut and 1 arroyo willow. Trees with ratings of *poor* or *very poor* condition have significant defects and low life expectancy.

Specific notes regarding the condition of individual trees are provided in the “comments” column in Appendix A

Protected Trees

Eighty-one (81) of the 105 trees documented for this report qualify as protected trees under the City of Scotts Valley Tree Protection Ordinance. Protected trees in order of abundance include 57 coast live oaks, 10 arroyo willows, 6 box elders, 3 Monterey cypress, 3 Northern California black walnuts, 1 mayten and 1 blue elderberry. Protected trees are identified in the “Protected Tree” column, and the tree tag number and species name are indicated in bold font in Appendix A.

Heritage Trees

No Heritage trees are present on the project site.



Aerial Photograph Courtesy of Google Earth. Photo Date 9/2020

LEGEND

Project Boundary

193 Protected Tree & Number

205 Un-protected Tree & Number

200' 0 100' 200 feet

Approximate Scale

Live Oak Associates, Inc.

Sandraya Heights
Tree Survey

Date	Project #	Figure #
11/17/2021	2631-02	2a



Aerial Photograph Courtesy of Google Earth. Photo Date 9/2020

LEGEND

- Project Boundary
- 193 — Protected Tree & Number
- 205 — Un-protected Tree & Number

200' 0 100' 200 feet

Approximate Scale

Live Oak Associates, Inc.

Sandraya Heights
Tree Survey

Date	Project #	Figure #
11/17/2021	2631-02	2b

PROJECT IMPACTS TO TREES

Based on a general site plan available for this report, all trees surveyed may need to be removed for project development. Once more detailed site and grading plans are available, the project arborist can evaluate likely impacts to individual trees and recommend whether each tree can be retained, or will need to be removed for project development.

In order to minimize project impacts to trees to be retained, and insure their long term health and survival, a general tree protection plan is provided below. Once final site grading and excavation plans are in place, the project arborist should review the plans again and recommend more specific tree protection measures for certain trees to be retained if necessary.

Trees on private property immediately adjacent to the project site were generally not accessible during surveys for this report, and were therefore not inventoried. However, these trees, especially those with canopy overhanging or roots extending onto the project site, could be impacted by project development and must be considered in a final tree protection plan.

GENERAL TREE PROTECTION PLAN

Tree Protection Zone

- A Tree Protection Zone (TPZ) shall be established for all retained trees that could be impacted by project activities. A TPZ will include all area within the canopy dripline of a tree to be protected unless otherwise defined and/or approved by the project arborist.

- The TPZ will be protected by a fenced enclosure to prevent unauthorized access during project activities. Fencing shall be constructed of six foot chain link, mounted on two inch diameter galvanized iron posts, at no more than 10-foot spacing. Warning signs (e.g. *WARNING - Tree Protection Zone – This fence shall not be moved without approval by Project Arborist*) shall be prominently displayed and visible from all sides of the TPZ fencing.

- TPZ fencing shall be installed prior to any demolition, grading, staging, stockpiling, or any other construction activities, and shall remain in place until all construction activities are complete.

- No construction, staging, or storage of materials, equipment or vehicles shall occur within a TPZ without advanced approval and oversite by the project arborist.

- No excess soil, chemicals, refuse or other waste shall be dumped within a TPZ.

- The primary contractor shall be responsible for maintaining TPZ fencing, and enforcing all TPZ guidelines outlined above throughout the course of the project.

Site Grading, Excavation and Trenching

- Soil disturbance or grade changes within a Tree Protection Zone (TPZ) are not permitted unless approved by the Project Arborist. Any approved grading, excavation or trench work within a TPZ will be field staked and inspected by the Project Arborist prior to implementation. Additional tree protection measures may be required.

- Grade changes in the vicinity of trees to be preserved should remain as close to natural grade as possible.

- If trenching is required and approved within a TPZ, trenches shall be dug by hand or with specialized equipment approved by the Project Arborist.

Canopy Pruning

- To the extent possible, any necessary canopy pruning should be completed prior to the commencement of any demolition, staging, grading or construction activities.

- Pruning shall be performed by a qualified tree service worker under the direction of a certified arborist following International Society of Arboriculture tree pruning best management practices. Pruning shall not be performed by construction personnel.

Root Pruning

- Any roots one inch and larger requiring removal shall be cut cleanly in sound tissue. No pruning seals or paint shall be used on wounds.

- Roots two inches and greater shall remain in place and undamaged to the extent practicable. If removal is required, cuts shall be made with the approval and under the direction of a certified arborist.

Communication for Tree Protection Compliance

- A preconstruction meeting shall be arranged for the Project Arborist to meet with the Project Planner, Onsite Project Supervisor, Demolition and Grading Contractors and/or other appropriate Project Leads to review and secure a commitment to compliance with all tree protection measures.

TREE REPLACEMENT

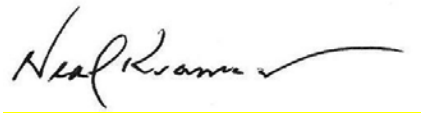
A tree removal permit may be conditioned upon tree replacement of one or more trees onsite, of species and size designated by the community development director, or, if onsite replacement is not possible, conditioned upon payment of a fee to the city's tree replacement fund (Tree protection Ordinance 17.44.080 H.5a).

Unless expressed otherwise, the evaluation of trees discussed in this report is limited to a visual examination of accessible parts without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the trees in

question may not arise in the future. Tree locations provided are approximate. More precise locations, if necessary, should be confirmed by a licensed surveyor.

If you have questions regarding findings or other elements of this report, please feel free to contact me at either (650) 563-9943 or (650) 208-0061 or Rick Hopkins at (408) 391-9433.

Sincerely,



Neal Kramer
Certified Arborist #WE-7833A

APPENDIX A: TREE TABLE

APPENDIX A: Results of the Casa Way/ Sandraya Heights Rd, Scotts Valley Property Tree Survey. Updated 3/20/23*

Tree #	Species	Common Name	Trunk Circumference @ 54" above grade (inches)	Protected (P)	Approx. Height (feet)	Approx. Canopy Spread (feet)	General Condition*	Retain/ Remove	Comments
Bold font trees qualify as City of Scotts Valley Protected tree									
101	***Quercus agrifolia***	**Coast live oak**	67.5+34.9	P	26	35	Poor	Remove	30% dead canopy, unbalanced to north
102	***Quercus agrifolia***	**Coast live oak**	38.9+54.3+28.3	P	36	38	Good-	Remove	Codominant trunks @2', included bark to base
103	***Quercus agrifolia***	**Coast live oak**	28.3	P	12	22	Poor	Remove	60° lean south, base outside canopy, suppressed
104	*Quercus agrifolia*	Coast live oak	20.1	-	22	18	Fair	Remove	Unbalanced canopy to east, crowded
105	***Quercus agrifolia***	**Coast live oak**	36.1	P	32	24	Fair	Retain	Failed codominant trunk @ 2', scar
106	***Quercus agrifolia***	**Coast live oak**	59.7	P	18	26	Fair-	Retain	Codominant trunks @ 3.5', cavity @4-6', topped
107	***Juglans hindsii***	**N. Calif. black walnut**	40.5	P	25	26	Poor	Remove	Canopy thin w/30% dead branches
108	***Quercus agrifolia***	**Coast live oak**	78.8	P	32	32	Fair-	Remove	Failed 15" codominant trunk @10'
109	***Juglans hindsii***	**N. Calif. black walnut**	22.6+21+21+30.8	P	30	26	Fair	Remove	20% dead canopy, multi-stemmed from base
110	***Quercus agrifolia***	**Coast live oak**	31.1	P	16	18	Poor	Remove	40% dead canopy, 60° lean to east, base outside canopy
111	***Quercus agrifolia***	**Coast live oak**	30.1	P	26	14	Good	Remove	
112	***Quercus agrifolia***	**Coast live oak**	35.2	P	22	18	Fair	Retain	25% dead canopy north side
113	***Quercus agrifolia***	**Coast live oak**	43	P	28	32	Fair-	Retain	Failed 10" codominant trunk @4', included bark
114	***Quercus agrifolia***	**Coast live oak**	19.2+22.6	P	18	15	Good	Retain	Codominant trunks w/included bark @base
115	*Quercus agrifolia*	Coast live oak	21.4	-	18	11	Good	Retain	
116	***Quercus agrifolia***	**Coast live oak**	20.4+26.4	P	18	15	Fair	Retain	Codominant trunks w/included bark @18"
117	***Quercus agrifolia***	**Coast live oak**	25.1	P	16	12	Good	Retain	
118	***Quercus agrifolia***	**Coast live oak**	17.6+11.9	P	18	14	Fair	Remove	Codominant trunks w/included bark @ 3'
119	***Quercus agrifolia***	**Coast live oak**	27.6	P	22	16	Good	Remove	
120	*Quercus agrifolia*	Coast live oak	19.8	-	22	12	Fair	Remove	Crowded canopy
121	***Quercus agrifolia***	**Coast live oak**	18.2+15.7	P	22	12	Fair-	Removed	Codominant trunks w/included bark from base
122	***Quercus agrifolia***	**Coast live oak**	14.1+31.4	P	24	12	Good	Remove	
123	*Quercus agrifolia*	Coast live oak	22	-	20	12	Fair	Remove	Crowded canopy
124	***Quercus agrifolia***	**Coast live oak**	33.6	P	30	16	Fair	Retain	Unbalance canopy to NW, crowded
125	***Quercus agrifolia***	**Coast live oak**	53.1+51.8	P	36	32	Fair-	Retain	Codominant trunks w/included bark and internal decay from base to 4'
126	*Quercus agrifolia*	Coast live oak	20.4	-	18	16	Good	Remove	
127	*Quercus agrifolia*	Coast live oak	21	-	22	12	Fair+	Remove	Codominant trunks @ 5', crowded canopy
128	***Quercus agrifolia***	**Coast live oak**	66.6	P	35	32	Good	Remove	Canopy crowded on south side
129	***Quercus agrifolia***	**Coast live oak**	29.5+27.3	P	32	20	Fair	Remove	Codominant trunks @ 1'. Canopy crowded
130	***Quercus agrifolia***	**Coast live oak**	29.2	P	26	15	Fair	Remove	Canopy crowded on south side
131	*Quercus agrifolia*	Coast live oak	20.4	-	22	25	Poor	Remove	60° lean NW, base outside canopy

APPENDIX A: Results of the Casa Way/ Sandraya Heights Rd, Scotts Valley Property Tree Survey. Updated 3/20/23*

Tree #	Species	Common Name	Trunk Circumference @ 54" above grade (inches)	Protected (P)	Approx. Height (feet)	Approx. Canopy Spread (feet)	General Condition*	Retain/ Remove	Comments
132	***Quercus agrifolia***	**Coast live oak**	52.8+35.2	P	28	26	Fair	Remove	Codominant trunks @ 4', included bark with trunk decay, 45° lean to north
133	***Quercus agrifolia***	**Coast live oak**	55.6	P	34	33	Good	Remove	
134	***Quercus agrifolia***	**Coast live oak**	60.6	P	34	24	Fair	Remove	Codominant trunks with included bark to 1', crowded canopy
135	***Quercus agrifolia***	**Coast live oak**	53.4	P	38	26	Good	Retain	Unbalanced canopy to NW, woodrat nest
136	*Prunus cerasifera*	Cherry plum	18+20.4	-	26	24	Poor	Retain	Multi-stemmed @ 2', bark cracks below, canopy crowded
137	***Quercus agrifolia***	**Coast live oak**	40.8	P	22	25	Fair	Retain	Canopy unbalanced to south
138	***Quercus agrifolia***	**Coast live oak**	50.2	P	28	24	Fair-	Retain	Top out, canopy unbalanced to south
139	***Quercus agrifolia***	**Coast live oak**	57.8	P	34	30	Good	Remove	
140	*Acer negundo*	Box elder	21	-	24	18	Fair	Retain	40% dead canopy, unbalanced SE
141	***Acer negundo***	**Box elder**	18.2+18.5+21.4+17.9	P	30	25	Poor-	Retain	90% dead canopy, basal sprouts
142	***Quercus agrifolia***	**Coast live oak**	44.6	P	34	16	Good	Retain	
143	***Acer negundo***	**Box elder**	15.4+24.2+17.9	P	30	15	Very Poor	Retain	Sprouts from base, upper trunks 90% dead
144	***Quercus agrifolia***	**Coast live oak**	46.8	P	32	24	Fair	Retain	Canopy unbalanced to south, trunk 15° lean
145	***Acer negundo***	**Box elder**	49	P	32	12	Very Poor	Retain	70% dead canopy, trunk rot, multiple branch failures
146	*Acer negundo*	Box elder	37.7	-	32	18	Poor	Retain	30% dead canopy, unbalanced to north, base outside canopy
147	*Prunus cerasifera*	Cherry plum	29.2	-	22	16	Poor	Remove	40% dead canopy, unbalanced to north, multi-sprouts from base
148	*Acer negundo*	Box elder	21	-	24	20	Fair-	Retain	40° lean to north, base outside canopy, trunk rot
149	*Acer negundo*	Box elder	19.5	-	12	12	Very Poor	Retain	50% dead canopy, trunk rot, branch failures
150	***Acer negundo***	**Box elder**	22	P	30	18	Poor	Retain	30% dead canopy, trunk rot, branch failures
151	***Acer negundo***	**Box elder**	45.5	P	28	20	Fair	Retain	20% dead canopy, unbalanced to north, branch failures
152	***Quercus agrifolia***	**Coast live oak**	19.8+23.6	P	25	15	Fair+	Retain	Codominant from base with included bark
153	***Juglans hindsii***	**N. Calif. black walnut**	20.4+18.2+10.8+15.1	P	26	24	Fair	Retain	Multi-stemmed from base, 30% dead branches
154	***Quercus agrifolia***	**Coast live oak**	12.6+9.4+22.9	P	20	12	Fair	Retain	20° lean to south, crowded
155	***Acer negundo***	**Box elder**	12.9+13.5+14.1+11+ 11.5+11.6+12.2	P	26	22	Fair	Remove	Multi-stemmed from base
156	*Quercus agrifolia*	Coast live oak	19.2	-	24	12	Good	Retain	
157	*Quercus agrifolia*	Coast live oak	22.6	-	25	15	Good	Remove	
158	***Salix lasiolepis***	**Arroyo willow**	12.6+14.1+12.6+11+11	P	25	18	Fair	Retain	Tangled trunks, unbalanced SE

APPENDIX A: Results of the Casa Way/ Sandraya Heights Rd, Scotts Valley Property Tree Survey. Updated 3/20/23*

Tree #	Species	Common Name	Trunk Circumference @ 54" above grade (inches)	Protected (P)	Approx. Height (feet)	Approx. Canopy Spread (feet)	General Condition*	Retain/ Remove	Comments
159	***Salix lasiolepis***	**Arroyo willow**	36.1+15.7+16+28.6+ 25.1	P	28	30	Fair	Remove	Tangled trunks, unbalanced SE
160	***Salix lasiolepis***	**Arroyo willow**	32+18.8	P	28	25	Fair	Remove	Tangled trunks, unbalanced east
161	***Salix lasiolepis***	**Arroyo willow**	15.7+16,3+17.3	P	24	18	Fair-	Remove	Tangled trunks, unbalanced north
162	***Salix lasiolepis***	**Arroyo willow**	28.3+30.5+25.4+25.7+ 32.3+28.3+37.7	P	28	38	Fair	Remove	Re-rooting from old wide spreading branches, failed branches
163	***Salix lasiolepis***	**Arroyo willow**	26.7+25.1+19.5+24.5+ 22+22.6+23.6+23.6	P	28	38	Fair	Retain	Re-rooting from old wide spreading branches, failed branches
164	***Salix lasiolepis***	**Arroyo willow**	36.4+31.4+16+15.7+ 25.1+18.8	P	20	40	Fair	Retain	Re-rooting from old wide spreading branches, failed branches
165	***Salix lasiolepis***	**Arroyo willow**	26.7+20.4	P	22	24	Fair-	Remove	Multi-stemmed @ base, branch failures
166	***Salix lasiolepis***	**Arroyo willow**	17.3+14.4+14.8	P	20	20	Poor	Remove	Multi-stemmed from base, dead stems to 22' tall
167	***Salix lasiolepis***	**Arroyo willow**	11.6+12.2+24.2+17+ 17.6	P	22	22	Fair-	Retain	Multi-stemmed from base, 12" dead trunk failure at base, new stems fair condition
168	***Quercus agrifolia***	**Coast Live oak**	30.1+52.8+17.3	P	28	24	Good	Retain	Canopy full green, codominant trunks from base
169	***Quercus agrifolia***	**Coast live oak**	44+55	P	25	35	Fair	Retain	Codominant with included bark from base
170	***Quercus agrifolia***	**Coast live oak**	31.7	P	20	14	Good-	Retain	Crowded from the south
171	***Quercus agrifolia***	**Coast live oak**	47.4+25.1	P	25	26	Good	Remove	Canopy full green
172	***Maytenus boaria***	**Mayten**	29.5+15.7	P	22	15	Good	Retain	Canopy full green, multi-stemmed @ 2'
173	***Quercus agrifolia***	**Coast live oak**	32	P	22	20	Good	Retain	Canopy full green
174	*Quercus agrifolia*	Coast live oak	20.4	-	18	10	Good-	Retain	Canopy unbalanced to north
175	***Quercus agrifolia***	**Coast live oak**	26.4	P	24	18	Fair	Remove	Canopy unbalanced to SE, crowded from NW
176	***Quercus agrifolia***	**Coast live oak**	29.8	P	26	18	Fair	Remove	Canopy thin
177	***Quercus agrifolia***	**Coast live oak**	22+22.3	P	24	20	Fair	Remove	Codominant trunks @ 18" with included bark
178	***Quercus agrifolia***	**Coast live oak**	13.5+13.8+25.7+34.5	P	24	24	Fair	Remove	Codominant @ base with included bark, crowded from the south
179	***Quercus agrifolia***	**Coast live oak**	28.6	P	24	18	Fair-	Remove	Crowded
180	***Quercus agrifolia***	**Coast live oak**	28.3	P	26	12	Fair	Remove	Crowded
181	*Quercus agrifolia*	Coast live oak	21	-	26	10	Poor	Remove	Crowded, 95% dead canopy
182	***Quercus agrifolia***	**Coast live oak**	29.8	P	26	18	Poor	Remove	Crowded, 80% dead canopy,
183	*Quercus agrifolia*	Coast live oak	19.2	-	18	15	Fair	Retain	Crowded
184	***Quercus agrifolia***	**Coast live oak**	33.9	P	30	18	Good	Retain	Full canopy, woodrat nest @base
185	***Quercus agrifolia***	**Coast live oak**	33.3	P	30	18	Fair	Retain	Canopy unbalanced to SW
186	*Quercus agrifolia*	Coast live oak	21.4	-	22	16	Fair	Retain	Canopy unbalanced to SW
187	***Quercus agrifolia***	**Coast live oak**	33+23.6	P	32	25	Fair+	Retain	Codominant trunks with included bark @2.5'

APPENDIX A: Results of the Casa Way/ Sandraya Heights Rd, Scotts Valley Property Tree Survey. Updated 3/20/23*

Tree #	Species	Common Name	Trunk Circumference @ 54" above grade (inches)	Protected (P)	Approx. Height (feet)	Approx. Canopy Spread (feet)	General Condition*	Retain/ Remove	Comments
188	*Maytenus boaria*	Mayten	25.1	-	22	14	Fair	Retain	Thin canopy, crowded
189	*Quercus agrifolia*	Coast live oak	24.5	-	24	18	Very Poor	Remove	90 % dead canopy
190	*Quercus agrifolia*	Coast live oak	24.5	-	26	16	Fair	Remove	Canopy unbalanced to SW
191	***Quercus agrifolia***	**Coast live oak**	29.8+20.1	P	26	20	Fair	Remove	Codominant trunks with included barb @base, canopy unbalanced to north
192	*Quercus agrifolia*	Coast live oak	20.1	-	24	15	Poor	Remove	Thin canopy, suppressed, unbalanced to NW
193	***Quercus agrifolia***	**Coast live oak**	28.3+40.8	P	28	24	Fair	Retain	Codominant trunks with included bark from base
194	***Quercus agrifolia***	**Coast live oak**	70.7	P	38	34	Fair	Retain	Lean 20° east, base outside canopy
195	***Quercus agrifolia***	**Coast live oak**	62.5	P	35	26	Good-	Retain	Lean 15° SE, base outside canopy
196	***Hesperocyparis macrocrapa****	**Monterey cypress**	76	P	24	20	Very Poor	Retain	Trunk rot from base, top out @ 18', multiple branch failures to 12" dia.
197	***Quercus agrifolia***	**Coast live oak**	60.9	P	35	30	Fair-	Remove	Lean 45° east, base outside canopy
198	***Hesperocyparis macrocrapa****	**Monterey cypress**	136.6	P	56	48	Poor	Retain	Lean 15° SW, trunk rot 0-15', main trunk failure @ 25', new 18" dia. leader from 15', multiple branch failures
199	***Hesperocyparis macrocrapa****	**Monterey cypress**	178	P	52	46	Poor	Remove	Trunk rot, multiple branch failures – diameters to 20"
200	***Quercus agrifolia***	**Coast live oak**	57.1	P	28	26	Fair	Remove	Lean 50° north, base outside canopy
201	***Quercus agrifolia***	**Coast live oak**	66.6	P	28	32	Fair	Retain	Canopy unbalanced to north
202	***Quercus agrifolia***	**Coast live oak**	38.6	P	16	25	Poor	Retain	Lean 45° north then horizontal trunk to SW 4-6' off ground
203	***Sambucus nigra ssp. caerulea***	**Blue elderberry**	32+30.8+20.1	P	22	16	Fair-	Retain	Multi-stemmed from base, canopy unbalanced to SW, 30% dead canopy, draped in cape ivy
204	***Quercus agrifolia***	**Coast live oak**	25.4	P	24	10	Good	Remove	Canopy full green, numbered out of sequence, tree located between trees 123 and 126
205	*Pyrus communis*	Common pear	17.3+26.1+31.1+23.6+ 21.4+23.6+24.2	-	25	26	Good	Remove	Fruit tree – not protected

*General Condition: **Excellent** =90-100% healthy foliage, free of defects, ideal form and function for site; **Good** =75-90% healthy foliage, minor correctable defects, good form and function; **Fair** =50 to 75% healthy foliage, moderate defects and/or substantial asymmetry compromising function or aesthetics; **Poor** =20-50% healthy foliage with significant defects, low life expectancy; **Very Poor** =5-20% healthy foliage with significant defects, recovery unlikely; **Dead** =less than 5% healthy foliage.
The retain/remove column is based on site plans provided on 9/1/22 and updated tree removal schedule provided on 1/20/23. Based on 1/20/23 tree removal schedule, approximately 8 coast live trees that are off-site may be removed. ***Once final site grading and excavation plans are in place, the project arborist should review the plans again and recommend more specific tree protection measures for certain trees to be retained if necessary.***

APPENDIX B: SCOTTS VALLEY TREE PROTECTION REGULATIONS 17.44.080

17.44.080 Tree protection regulations.

A. Purpose and Intent. The city is forested with several varieties of native and significant trees which contribute greatly to the value of the land in the city and the preservation of which is necessary for the health, safety and welfare of the citizens of the city. It is the intent of this section to: (1) regulate the removal of protected trees within the city in order to preserve scenic beauty, and a diverse ecosystem, prevent erosion of topsoil, protect against flood hazard and risks of land slides, counteract pollutants in the area, maintain the climatic balance, decrease wind velocities; (2) retain as many trees as possible consistent with the reasonable enjoyment of private property. (3) preserve significant, healthy trees when development of property is proposed; and, (4) protect trees designated for preservation during the construction of new development projects.

B. Definitions. The terms used herein have the following meanings:

1. "Certified arborist" means an arborist who has experience in the Santa Cruz County area in preparing tree reports and has valid certification credentials. A list of certified arborists who meet these criteria shall be maintained by the planning department.

2. "City arborist" means a certified arborist retained by the City of Scotts Valley to provide professional arboricultural services to the city.

3. "Damage" means any action undertaken which may cause the death or significant injury, or which places a protected tree in a hazardous condition or in an irreversible state of decline. This includes but is not limited to tree cutting, excessive foliar crown removal, topping, girdling, or poisoning, or trenching, compacting or excavating within a tree's root zone.

4. "Drip line" means a line which may be drawn on the ground around a tree directly under its outermost branch tips and which identifies that location where rainwater tends to drop from the tree.

5. "Foliar crown" means the leaves and branches of a tree; the upper portion of a tree from the lowest branch on the trunk to the top of the tree.

6. "Heritage trees" means trees which have been identified because of unique quality and/or size as the most significant and noteworthy in the city and which have been listed in an adopted resolution of the city council as to common name, location and the reason for listing.

7. "Protected tree" means a standing or upright tree meeting any one of the following:

    a. Any tree having a main stem or trunk which measures twenty-five inches or greater in circumference (eight 8 inches in diameter, approximately) measured fifty-four inches above natural grade, located in a hillside residential zone where the slope of the area within twenty feet of where the tree is located exceeds twenty percent;

    b. Any tree which existed at the time of any approval granted under any zoning ordinance in effect prior to the adoption of the ordinance codified in this title and which was required to the preserved as part of such approval;

    c. Any tree required to be planted as condition of any approval under this title;

    d. Any tree that was or is required to be planted as a replacement for any unlawfully removed tree;

    e. Any oak tree having a main stem or trunk which measures twenty-five inches or greater in circumference (eight inches diameter, approximately) measure fifty-four inches above natural grade. Any multi-trunk oak with an individual trunk of over twelve inches in circumference (four inches diameter, approximately) measured fifty-four inches above the natural grade;

    f. Any street tree, as defined in subsection B.9, regardless of size;

g. Heritage tree, as adopted in a resolution approved by the city council and shown on the map on file in the planning department;

h. All trees which have a forty-inch or greater circumference of any trunk measured fifty-four inches above the natural grade or, in the case of multi-trunk tress, a total of above the natural grade. This provision shall not apply to the following trees: eucalyptus (blue gum), fruit trees and acacias. It also shall not apply to any bat laurel below and located within the drip line of any established oak tree.

8. "Pruning or trimming" means the removal of superfluous parts, branches or shoots from a plant or tree for better shaped or more fruitful growth.

9. "Street tree" means any tree within five feet of public or private street or right-of-way.

10. "Tree" means a woody perennial plant characterized by having a main stem or trunk or a multi-stemmed trunk system with more or less definitely formed crown, usually over ten feet high at maturity. This definition shall not include trees planted, grown and held for sale by licensed nurseries or the first removal or transplanting of such trees pursuant to and as part of the operation of a licensed nursery business.

11. "Tree removal" means the killing of a tree by any means.

12. "Tree root zone" means an area extending five feet beyond the tree's drip line.

C. Protection of Trees. No person shall willfully cause or permit any condition which may damage a protected tree, including but not limited to the following:

1. Maintenance of a tree irretrievably infested or infected with insects or disease that could be detrimental to the health of any adjacent protected tree.

2. Alteration of natural grade around any protected tree that impacts the flow of air, moisture or nutrients, or degrades the function of feeding or structural roots of a protected tree. This regulation does not include landscaping improvements which were approved by the city with an original development approval. Landscaping projects which are not subject to city review for existing development are not subject to this requirement unless a project was approved with conditions regarding location of landscaping or protection of trees.

3. Storage of building materials or parking of vehicles or equipment within the root zone of a protected tree during development, unless specifically authorized by the city and under the direction of a certified arborist.

4. Application of any substance which might be detrimental to the health of any protected tree.

5. Driving metal stakes into tree trunks or stems or the root zone for any purpose other than to support a protected tree.

6. Open flames within fifteen feet of the foliar canopy or trunk of a protected tree.

D. Tree Removals Subject to Obtaining a Permit. Except as otherwise provided in subsection E, it is unlawful for any person to damage, destroy or remove, or cause to be damaged, destroyed or removed, any protected tree defined in subsection B.7, upon any private or public property in the city without first having obtained a permit to do so issued pursuant to this chapter. Exceptions to obtaining a permit provided in subsection E.

E. Exceptions. The permit requirement set forth in subsection D shall not apply to any of the following:

1. Emergencies. If the condition of a tree presents an immediate hazard to life or property, or if the city has determined that a tree is a hazard to other protected trees via in infestation or disease which presents an imminent hazard to other protected trees in the vicinity, it may be removed without a permit on order of the city manager, the city engineer, building inspector, community development

director, a peace officer employed by the Scotts Valley police department, or an employee of the Scotts Valley Fire Protection District acting in the course and within the scope of employment. The community development director shall require a written determination from a certified arborist to confirm the immediate or imminent hazard of the tree when the situation warrants such confirmation.

2. City Employees. Employees of the city may without a permit take such action with regard to trees on city-owned property as may be necessary to maintain safety unless such trees are designated as Heritage trees. If a Heritage tree is to be removed, a tree removal permit is required pursuant to subsection D and G unless an emergency exists pursuant to subsection E.1.

3. Public Utilities. Public utilities subject to the jurisdiction of the state public utilities commission may without a permit take such action as may be necessary to comply with the safety regulations of the public utilities commission and as may be necessary to maintain a safe operation of their facilities.

4. Project Approval. Where removal of a tree has been specifically authorized as part of any development application approved by the planning commission or city council under any other provision of this title, no additional permit shall be required for removal of such tree. 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 include a review of the information and requirements set forth below for the purpose of preserving 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 development application shall the following information, and prior to deeming an application complete, shall be subject to the following process for review:

    a. All development plans, and landscaping and irrigation plans shall show all trees and indicate size and species with locations, drip lines and tree root zones properly surveyed.

    b. The city arborist shall perform a resource evaluation, tree survey, and/or impact report using the plans provided by the applicant. The city arborist shall make recommendations for trees requiring removal or appropriate for preservation. The report shall include procedures for pre-construction treatment and alternative construction methods. In addition, requirements for Preservation and Maintenance, contained in sub-section I shall be considered and appropriate conditions for long term maintenance of preserved trees shall be evaluated.

    c. Tree preservation measures shall be incorporated as conditions of permit approval.

    d. The city arborist shall place a monetary value on trees preserved on development sites and a surety bond in an amount equal to the value of the preserved trees shall be deposited with the city. If damaged occurs to the preserved trees during development and/or construction, funds will be drawn from the deposited amount. Funds remaining in the account will be returned to the applicant upon final inspection of the project.

    e. During the pre-construction phase of development the city arborist shall inspect tree protection fencing and the completion of pre-construction treatments. This inspection shall be completed prior to the issuance of any grading or building permits.

    f. The city arborist shall routinely inspect the development site through the term of the project.

    g. The cost of the city arborist review and implementation of conditions, site inspection and related work shall be borne by the applicant.

F. City-Required Removal of Trees. On order of the city manager, city engineer, building inspector, community development director, peace officer employed by the City of Scotts Valley police department or an employee of the fire district, a dead or diseased non-heritage tree may be required to be removed if it is determined to

be a potential threat or if its removal is determined to be beneficial to the health and safety of surrounding vegetation or property.

G. Applications. Application for a tree removal permit for any tree protected in this section shall be filed with the city planning department on forms prescribed by the community development director, and shall be accompanied by a fee as set forth by resolution of the city council. The application shall contain the number and location of each tree to be removed, the type and approximate size of the tree, the reason for removal, and such additional information as the community development director may require. The city shall mail notices to at least the five closest neighboring property owners, the Scotts Valley planning commissioners and others deemed necessary by the community development director. The planning staff will determine who will receive the notice.

H. Processing of and Determinations on Tree Removal Permits.

1. Permit. Applications for removal of all protected trees except Heritage trees shall be reviewed and determined by the planning director. Permit application for removal of Heritage trees shall be reviewed and determined by the planning commission.

2. Criteria. Each application for a tree removal permit shall be reviewed and a decision rendered on approval or denial (in whole or in part) on the basis of following criteria:

    a. The condition of the tree with respect to disease, danger of falling, proximity to existing or proposed structures, and interference with existing utility services;

    b. The topography of the land and the effect of the tree removal upon erosion, soil retention and the diversion or increased flow of surface waters;

    c. The number, species, size and location of existing trees in the area and the effect the removal would have upon shade, sunlight, privacy, scenic beauty, wildlife, noise, air quality, wind, health, safety, prosperity, historic values and general welfare of the area and the city as a whole.

3. Additional Recommendations. The community development director or planning commission may refer the application to another department, commission or person for a report and recommendation. They may also require the applicant to furnish a written report from a certified arborist as identified on the list maintained by the planning department, such report to be obtained at the expense of the applicant.

4. Dead or Diseased Tree(s).

    a. If a property owner is required to presents a written report from a certified arborist, which identifies a tree(s) as dead or diseased and recommends removal, no fee shall be charged if such disease is considered terminal or can be spread to other trees causing further damage, disease or death.

    b. If a property owner has been directed by city staff to remove a potentially destructive, dead or diseased tree, no tree removal permit shall be required.

    c. If a request is filed to remove a dead tree, such tree shall be inspected by the community development director, and if determined to be dead, no fee for a permit to remove such tree shall be required nor shall any of the procedures for dead trees shall be processed within three (3) business days. Failure to process the permit within three (3) days results in approval of the permit and the tree can be removed.

5. Decision by Community Development Director of Planning Commission on Permits and Replacement Tree(s) Requirements.

    a. The community development director shall render a decision on the permit in accordance with the adopted processing schedule maintained by the planning department. The director may grant

or deny the application or grant the same with conditions, including, but not limited to, the condition that one or more replacement trees be planted of a species and size, at on or off site location(s) as designated by the community development director. Any such replacement trees shall be planted and maintained on the same site at the expense of the applicant. When a site is not of a sufficient size or other factors determined by the community development director warrant placement of trees off-site, such replacement tree(s) shall be substituted by payment of a fee to the city's tree replacement fund. When a permit is granted, denied or conditions attached, the community development director shall provide the applicant with a written statement of the reasons for said grant, denial or conditions based on the criteria of this subsection.

b. [Reserved.]

c. The planning commission may request a tree removal permit to be reviewed by the planning commission during the initial notice period or by an appeal of the community development director's decision on a tree removal permit. If such request is made during the initial notice period, the community development director shall place such permit on the next available planning commission agenda. No action on the permit can be taken until the permit is reviewed and an action is taken by the planning commission. Action by the planning commission shall be in accordance with the criteria for approval of a tree removal permit as contained subsection H.2. Notwithstanding any other provision of this code, the decision of the planning commission on any tree removal permit shall be final.

d. An application to remove any heritage tree shall be considered by the planning commission at a public hearing schedule for the next available planning commission meeting from the date the permit is filed. Notice of the public hearing shall be given pursuant to Section 17.50.090 of this title. The planning commission may grant or deny the application or grant the same with conditions, including, but not limited to, the condition that one or more replacement trees be planted of a species and size and at locations as designated by the planning commission. Any such replacement trees shall be obtained and planted at the expense of the applicant. When a permit is granted, denied or conditions attached, the planning commission shall provide the applicant with a written statement of the reasons for said grant, denial or conditions based on the criteria of this subsection. Notwithstanding any other provision of this code, the decision of the planning commission shall be final.

e. Notice of the community development director's or planning commission's decision on any application for a tree removal permit shall be made by first class mail, postage prepaid, to the owners of the five closest neighboring properties, or others as required in subsection G and to any other person who has filed with the community development director a written request for such notice.

6. Denial of Tree Removal Permits. If a tree removal permit is denied by the community development director or planning commission, a re-application for removal of the tree(s) may be made at any time if conditions change or significant new information becomes available.

I. Preservation and Maintenance.

1. The existing ground surface in the tree zone of any protected trees shall not be cut, filled, compacted or paved as a part of any new development project unless specifically recommended by a certified arborist. Specific attention to paving or covering soil within the tree zone of the any protected trees shall be evaluated to ensure the long term health of the tree(s). All cut fill, compaction and paving within the tree root zone of any protected tree shall be reviewed by a certified arborist and appropriate recommendations made based upon the conditions relative to the particular site and the condition and type of tree being affected. When conditions are applied to new development projects

for preservation of specific tree(s), such conditions shall be applied to the future preservation and maintenance of the tree(s) after construction is complete.

2. When a proposed development complies with subsection E.4 and still encroaches into the tree root zone of any protected tree, special construction techniques shall be employed to permit the roots to remain undisturbed. The special construction techniques, as recommended by a certified arborist, may be required to be submitted with the application for building permits.

3. Excavation adjacent to any protected tree shall not be permitted where material damage to the root system will result. In questionable situations, the applicant shall provide substantiated documentation acceptable and satisfactory to the certified arborist and the community development director showing that the trees will be properly protected. Posting of a bond to insure tree protection may be required at the discretion of the community development director.

4. Chain link fencing with posts sunk in the ground or other fencing method approved by the city arborist shall be installed in locations surrounding tree(s) to be preserved during all construction activities on site. The location of the fencing shall be as determined by the certified arborist and community development director. Such fencing shall be installed by the applicant and inspected prior to issuance of a grading and building permit.

5. Landscaping and irrigation plans within the tree root zone of any protected tree(s) shall be reviewed and recommended by a certified arborist.

J. Appeal.

1. The applicant or any other interested person may appeal the decision of the community development director to the planning commission whose decision shall be final. Notice of the hearing shall be provided in the same manner as notice in subsection G. Notice of the planning commission's decision shall be forwarded to applicant within twenty-one days of the date of the decision.

2. Where an application for a tree removal permit has been granted and the community development director determines that the tree in question presents a clear and immediate threat of causing injury to persons or property, the community development director may issue the tree removal permit prior to expiration of the appeal period.

K. Designation of Heritage Trees. Any member of the public may petition the city council in writing to designate a tree or group of trees of the heritage tree inventory and the city council shall consider the request. A tree or group of trees may be designated as heritage tree(s) by resolution of the city council upon their finding that the tree(s) is/are of outstanding value because of any of the following reasons: age, size, aesthetics, history, uniqueness, tradition, or location. Trees designated as heritage trees shall be included in the heritage tree inventory.

L. Removal from Heritage Tree Inventory. A tree or trees shall be removed from the heritage tree inventory upon adoption of a resolution by the city council based on findings of the city arborist that:

1. The tree or trees is/are dead, or

2. The tree or trees is/are irreparably damaged so that they will not survive, or

3. The tree or trees is/are damaged, diseased, infested or infected so that they are a hazard to public health and safety or to other trees, or

4. The tree or trees has/have been removed with the required tree removal permit for one of the above reasons, or

5. The tree or trees longer retain or hold the value for which they were placed upon the heritage tree list.

M. No Liability Upon City. Nothing in this section shall be deemed to impose any liability upon the city or upon any of its officers or employees, nor to relieve the owner or occupant of any private property from the duty to keep in safe condition any trees and shrubs upon his property or upon a public right-of-way over his property.

N. Enforcement. The community development director of the city, and his/her duly authorized representatives, are authorized and directed to enforce all the provisions of this chapter. Whenever activity is being done in violation of this chapter, the community development director may order the work stopped by notice in writing served on any persons engaged in such activity and such persons shall stop immediately until authorized by the community development director to proceed with such activity.

O. Violations—Penalties. The violation of any provision contained in this chapter is declared to be unlawful and shall constitute a misdemeanor and a public nuisance, subject to the penalties as prescribed in Chapter 1.08 of this code. Such penalties may be waged also against a certified arborist or contractor who performed work in violation of this section. In addition thereto, any person unlawfully removing, destroying or damaging any protected tree shall be penalized as follows:

1. Replacing the unlawfully removed tree with one or more new trees which, in the opinion of the community development director or planning commission, will provide equivalent aesthetic quality in terms of size, height, location, appearance, age and other characteristics of the unlawfully removed tree. Such trees may be required to be located either on or off of the site where the tree was removed.

2. Where similar replacement trees will not provide reasonably equivalent aesthetic quality because of the size, height, location, appearance, age and other characteristics of the unlawfully removed or damaged tree, the community development director shall calculate the value of the removed tree in accordance with the latest edition of the Guide for Establishing Values of Trees and Other Plants, as prepared by the council of tree and landscape appraisers. Upon the determination of such value, the community development director may require either a cash payment to the city, and/or the planting of replacement trees as designated by the community development director, or any combination thereof, in accordance with the following:

    a. To the extent that a cash payment is required for any portion or all of the value of the removed tree, and

    b. To the extent that the planting of replacement trees is required, the retail costs of such trees, as shown by documentary evidence satisfactory to the community development director, shall be offset against the value of the removed or damaged tree, but no credit shall be given for transportation, installation, maintenance and other costs incidental to the planting and care of the replacement trees.

3. Where a violation(s) of this section has previously occurred with the same property owner, agent, certified arborist or contractor or advance knowledge of the requirements of this section have been provided to the property owner, agent or certified or contractor, the community development director or planning commission, at their discretion, shall require payment of a penalty fee pursuant to sub-section O.2.

4. In the event a violation is performed under the direction of a certified arborist, the certified arborist shall be removed from the city's list for a minimum of one year. If the certified arborist wishes to be placed back on the list after one year, a written confirmation of agreement to abide by the these regulations shall be submitted and approved by the community development director. Repeat violations of these regulations by a certified arborist is basis to permanently remove the certified arborist from the City's lists.

5. All applications and permit fees paid to the city shall be forfeited.

(Ord. 16.94 § 1; Ord. 16.104 § 2, 1998; Ord. 16-114 § 4, 2002; Ord. 16.123, § 54, 9-5-2007)

Appendix C

Archeological Review and Field Inventory

MEMORANDUM **Basin Research Associates**

Archaeological Review and Field Inventory – In Support of Environmental Clearance, Casa Way Lot 9 Residential Subdivision, City of Scotts Valley, Santa Cruz County

TO:	Mr. Sachneel Patel Granite Ridge Properties
RE:	Archaeological Review and Field Inventory – In Support of Environmental Clearance, Casa Way Lot 9 Residential Subdivision, City of Scotts Valley, Santa Cruz County
FROM:	Colin I. Busby, Project Principal (510 430-8441 x101)
DATE:	March 13, 2023

INTRODUCTION

The City of Scotts Valley (City) requested this preliminary Archaeological Review to determine if significant cultural resources under the California Environmental Quality Act (CEQA) might be affected by the development of nine residences on a vacant approximately 5.74 acre parcel, City of Scotts Valley. The information in this document will be reviewed by the City to determine if additional archaeological review is required prior to development permitting.

PROJECT LOCATION AND DESCRIPTION

The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line with developed residence to the south . The development site is currently vacant. Nine residences are planned for the 5.74 acre parcel (Township 10S, Range 1W [T10S R1W], unsectioned, United States Geological Survey [hereafter USGS], Felton, CA, 1991. 7.5' quadrangle topographic map, 1991) [Figs. 1-3].

RESEARCH PROTOCOLS

A prehistoric and historic site record and literature search was completed by the California Historical Resources Information System, Northwest Information Center, Sonoma State University, Rohnert Park (CHRIS/NWIC File No. 22-1225 dated 2/24/2023 by Murazzo). Reference material from the Bancroft Library, University of California, Berkeley and Basin Research Associates, San Leandro was also consulted. Specialized listings for cultural resources consulted include:

> *National Register of Historic Places* listings for Santa Cruz County, California (USNPS 2023a-c);
>
> *OHP Built Environment Resources Directory* [BERD] for Santa Cruz County (CAL/OHP 2023a);
>
> *Listed California Historical Resources* with the most recent updates of the National Register of Historic Places; California Historical Landmarks; and, California Points of Historical Interest as well as other evaluations of properties reviewed by the State of California Office of Historic Preservation (CAL/OHP 2023b);

Archaeological Determinations of Eligibility (CAL/OHP 2023c);

California History Plan (CAL/OHP 1973);

California Inventory of Historic Resources (CAL/OHP 1976);

California Points of Historical Interest [SHPI] (CAL/OHP 1992)

Five Views: An Ethnic Sites Survey for California (CAL/OHP 1988); and,

Other relevant sources (see References Cited).

The Native American Heritage Commission (NAHC) was contacted for a review of the Sacred Lands File (SLF) (Busby 2023a). The review was negative (Campagne 2023). The seven Native American tribes/individuals recommended for further outreach were contacted by BASIN on February 21, 2023 (Busby 2023b-h). No responses were received as of March 13, 2023 by BASIN (see Attachments).

No other agencies, departments or local historical societies were contacted regarding landmarks, potential historic sites or structures.

A systematic archaeological survey of the project site was conducted by Mr. Christopher Canzonieri (MA, RPA), an archaeologist meeting the Standards of the Secretary of the Interior, on February 14, 2023.

RESEARCH RESULTS

There are three studies on or adjacent to the project site with negative results. Thirty-three (33) additional studies are within 0.25 mile of the project area (see Table 1). The majority of the studies are negative for cultural resources.

TABLE 1
STUDIES IN/ADJACENT TO OR WITHIN 0.25 MILE OF THE PROJECT

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
In or Adjacent						
S-003913	William Roop, Leo Barker, and Charlene Detlefs	1977	Cultural Resource Inventory of the Scotts Valley Wastewater Project Service Area	Archaeological, Architectural/ historical, Field study	P-44-000240 within 0.25 mile search area; seven resources outside search area	None
S-003913a	Leo Barker and Charlene Detlefs	1977	Historical Synopsis and Site Inventory of Scotts Valley	Architectural/ historical, Field study, Other research	P-44-000240 within 0.25 mile search area; seven resources outside search area	None
S-011006	Stephen A. Dietz	1989	Cultural Resources Assessment, 161 Glenwood Drive, Scotts Valley, CA (letter report)	Archaeological, Field study	Negative	None

TABLE 1, con't
STUDIES IN/ADJACENT TO OR WITHIN 0.25 MILE OF THE PROJECT

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
Within 0.25 Mile						
S-003756	Joseph W. Morris	1977	Preliminary Archaeological Reconnaissance of APN 23-111-30, Scotts Valley, California	Archaeological, Field study	Negative	None
S-004127	David J. Fee	1981	An Archaeological Assessment of the Land Parcel at the Junction of Scotts Valley Drive and Vine Hill Road, Scotts Valley, California	Archaeological, Field study	P-44-000240 within 0.25 mile search area	None
S-006887	Lawrence E. Weigel	1984	Archaeological Survey Report for the Proposed Modification to Scotts Valley Drive at the Highway 17 On Ramp, 4-SCr-17 P.M. 5.5 04133-929051	Archaeological, Field study	P-44-000239 within 0.25 mile search area	None
S-008313	Robert Cartier, Charlene Detlefs, and Glory Laffey	1980	Cultural Resource Evaluation of the Scotts Valley Redevelopment Area in the City of Scotts Valley, County of Santa Cruz	Archaeological, Architectural/ historical, Field study	P-44-000239, P-44-000240 within 0.25 mile search area; six resources outside search area	None
S-010013	Matthew R. Clark and Miley Paul Holman	1988	Archaeological Reconnaissance of the "Glenwood Estates and Golf Club" Project Area, in the City of Scotts Valley, Santa Cruz County, California	Archaeological, Field study	Negative	None
S-010013a	Mathew R. Clark	1990	Evaluation of Cultural Resources for the Glenwood Estates and Golf Club Development in the City of Scotts Valley, Santa Cruz County, California	Archaeological, Architectural/ historical, Excavation, Field study, Other research	Negative	None
S-010013b	Matthew R. Clark	1990	Research Design for Prehistoric Cultural Resources, Glenwood Estates Project Area, Scotts Valley, California	Archaeological, Management/ planning	Negative	None
S-010013c	Matthew R. Clark	1990	Final Report: Evaluation of Prehistoric Cultural Resources, Glenwood Estates and Golf Club Project Area, Scotts Valley, California	Archaeological, Excavation, Field study	Negative	None
S-010013d	Glory Anne Laffey	1990	Historical Background of the Glenwood Estates Project Area in the City of Scotts Valley	Architectural/ historical, Other research	Negative	None
S-010013e	Matthew Clark	1990	Proposal for Historic Archaeological Fieldwork, Glenwood Estates Project (letter report)	Archaeological, Management/ planning	Negative	None
S-010162	Rebecca Loveland Anastasio, James C. Bard, Patricia M. Ogrey, and Stuart A. Guedon	1988	A Cultural Resources Assessment and Limited Testing Program at the Granite Creek Business Center, City of Scotts Valley, Santa Cruz County, California	Archaeological, Excavation, Field study, Monitoring	P-44-000239 within 0.25 mile search area	None
S-010294	Charles R. Smith and Gary S. Breschini	1988	Preliminary Cultural Resources Reconnaissance of Parcels APN 23-181-14 &-15, between Augustine and Grace Ways, Scotts Valley, Santa Cruz County, California	Archaeological, Field study	Negative	None
S-010848	Robert Cartier	1989	Cultural Resource Evaluation of Property on Grace Way in the City of Scotts Valley, County of Santa Cruz	Archaeological, Field study	Negative	None
S-011007	Stephen A. Dietz	1989	Archaeological Reconnaissance, APN 023-111-79, Scotts Valley, CA (letter report)	Archaeological, Field study	Negative	None

TABLE 1, con't
STUDIES IN/ADJACENT TO OR WITHIN 0.25 MILE OF THE PROJECT

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
Within 0.25 Mile, con't						
S-011455	Larry Bordeau	1990	Results of Phase I Archaeological Reconnaissance with Recommendations for Cultural Resource Management, Project Parcel APN 23-151-07, Chevron Service	Archaeological, Field study	Negative	None
S-012889	Rob Edwards and Charlotte A. Simpson-Smith	1990	Preliminary Cultural Resources Reconnaissance of a Parcel on Vine Hill School Road, A.P.N. 023-121-15, in the City of Scotts Valley, California	Archaeological, Field study	Negative	None
S-013344	Robert Cartier	1990	Cultural Resource Evaluation of the Borland Property on Santa's Village Road in the City of Scotts Valley, County of Santa Cruz	Archaeological, Architectural/ historical, Field study	One resource outside 0.25 mile search area	None
S-013344a	Glory Anne Laffey and Marion Dale Pokriots	1991	Historical Background of the Santa's Village Property in the City of Scotts Valley	Literature search	One resource outside 0.25 mile search area	None
S-013344b	Robert Cartier	1991	Phase II Testing Report of the Borland Property on Santa's Village Road in the City of Scotts Valley, County of Santa Cruz	Archaeological, Architectural/ historical, Excavation, Field study	One resource outside 0.25 mile search area	None
S-013344c	Robert Cartier	1992	Data Recovery Report of the Borland Property on Santa's Village Road in the City of Scotts Valley, County of Santa Cruz	Archaeological, Architectural/ historical, Excavation, Field study	One resource outside 0.25 mile search area	None
S-020870	Suzanne Baker and Nina Ilic	1998	Archaeological Monitoring Scotts Valley High School Project, Scotts Valley, California	Archaeological, Monitoring	One resource outside 0.25 mile search area	None
S-021856	Randy S. Wiberg	1999	Archaeological Field Inspection of the Santa's Village (FS22xc005) Sprint Wireless Base Site, Scotts Valley, Santa Cruz County, California (letter report)	Archaeological, Field study	Negative	None
S-022159	Robert Cartier	1999	Cultural Resource Evaluation of Land on Glenwood Drive for the Fire Protection District Project in the City of Scotts Valley	Archaeological, Field study	Negative	None
S-022192	Robert Cartier	1999	Cultural Resource Evaluation of the Santa's Village Project Located in the City of Scotts Valley	Archaeological, Field study	Negative	None
S-024434	Kelda Wilson	2001	Cultural Resources Review, Vine Hill School Road Sidewalk Project, Scotts Valley (letter report)	Archaeological, Field study	Negative	None
S-026118	Robert Cartier	2002	Historical Resources Evaluation Report (HRER) for the Two Structures on Hacienda Drive Within the APE for the Proposed Intersection Operation Improvement Project in the City of Scotts Valley, California	Archaeological, Architectural/ historical, Field study	P-44-000496, P-44-000871 within 0.25 mile search area	None
S-026118a	Robert Cartier	2002	Negative Archaeological Survey Report for the Proposed Intersection Operation Improvement Project in Scotts Valley, Santa Cruz County, California	Archaeological, Field study	P-44-000496, P-44-000871 within 0.25 mile search area	None
S-026572	Ric Windmiller	2003	Archaeological Survey Report AT&T Wireless Services, L.L.C Site ID #960008023B-Granite Creek, 6020 Scotts Valley Drive, Scotts Valley, Santa Cruz County, California	Archaeological, Field study	Negative	None
S-027087	Robert Cartier	2002	Cultural Resource Evaluation of the Casa Way Project in the City of Scotts Valley	Archaeological, Field study	Negative	None

TABLE 1, con't
STUDIES IN/ADJACENT TO OR WITHIN 0.25 MILE OF THE PROJECT

Report #	Author	Date	Title	Study Type	Comments	Resources In/Adjacent
Within 0.25 Mile, con't						
S-031488	Robert Cartier	2005	Cultural Resource Evaluation of the Property at 36 Casa Way in the City of Scotts Valley	Archaeological, Field study	Negative	None
S-045943	Ryan Brandy	2015	Archaeological Monitoring, 9 Kerry Court, Scotts Valley, California	Archaeological, Monitoring	Negative	None
S-047602	Carolyn Losee	2016	Cultural Resources Investigation for Trileaf 623382 Crown Castle SF71647M "Caltrans Sign" Adjacent to 6020 Scotts Valley Drive, Scotts Valley, Santa Cruz County, California 95066 (letter report)	Archaeological, Field study	Negative	None
S-047602a	Carolina Y. Castro	2016	FCC Wireless Telecommunication Bureau, Collocation ("CO") Submission Packet: Crown Castle-Cal-Trans Sign, Scotts Valley/BU #877225	Evaluation	Negative	None

RECORDED SITES AND REPORTED CULTURAL RESOURCES

There are no historic resources (archaeological and/or built environment) within or adjacent to the proposed project. There are two prehistoric sites, one prehistoric isolate, one historic structure, and two historic buildings within approximately 1000 feet of the project parcel. A non-significant prehistoric isolated find is at least 200 feet north the project site (see Table 2).

TABLE 2
CULTURAL RESOURCES IN THE VICINITYOF THE PROJECT

Resource	Type	Recorded by	Eligibility NRHP/CRHR	Comment
In/adjacent				
None				
Within 0.25 miles				
P-44-000239 CA-SCR-237	Prehistoric; Site	1981 (J. Whitlow, P. Johnson); 1984 (Basin Research Associates)		Ca. 1100 feet south of project; the site was at least 85% destroyed
P-44-000240 CA-SCR-238	Prehistoric; Site	1981 (Cartier, Detlefs, Cabrillo College)	Unevaluated?	Ca. 1200 feet east of project
P-44-000402 CA-SCR-330H	Historic; Structure, Other; Highway 17	1999 (L. Leach-Palm, S. Mikesell, FWARG, JRP)	Unevaluated?	Ca. 1250 feet east of project
P-44-000443	Prehistoric; Other; Isolate	2001 (Mary Doane, Archaeological Consulting)	Not significant DPR	At least 200 feet north of project, across Sandraya Heights Rd
P-44-000496	Historic; Building; Burton Log Home, Kit log home; 110 Hacienda Dr.	2002 (Robert R. Cartier, ARM)	Not Eligible DPR	Ca 975 feet to the south of project
P-44-000871	Historic; Building; Burton House; 112 Hacienda Dr.	2002 (Robert R. Cartier, ARM)	Not Eligible DPR	Ca 950 feet to the south of project

LISTED HISTORIC PROPERTIES

No listed, known or potentially significant local, state or federal cultural resources/historic properties, landmarks, points of interest, etc. have been identified in or adjacent to the project (CHRIS/NWIC File No. 22-1225 by Murazzo 2023; see also References).

ARCHAEOLOGICAL SENSITIVITY

The project site and surrounding area has not been assigned a sensitivity designation (see Draft Figure OSC-6 Cultural Resource Areas, General Plan Advisory Committee 2020 *Final Draft. City of Scotts Valley General Plan).* Other areas covered by the 2020 map indicate areas of Low Sensitivity, Moderate Sensitivity, High Sensitivity Historic, High Sensitivity Prehistoric, and/or High Sensitivity Historic and Prehistoric. The project site and immediate area in 1994 (see *City of Scotts Valley, California General Plan,* Fig. OS Archaeological Sensitivity zones) are mapped within a High And Moderate Sensitivity Zone based on information available in the early 1990s. Research over the past 30 years suggests a low or low-moderate sensitivity for the project site and vicinity based on completed and ongoing development and the lack of significant reported discoveries.

FIELD INVENTORY [Figs. 3-9]

Mr. Christopher Canzonieri (MA, RPA) completed a pedestrian field inventory of the project site on February 14, 2023. The mostly rectangular parcel is bordered by fences and residential houses on the south and east, Sandraya Heights Road on the south and Casa Way on the west. The parcel slopes east from Casa Way and has several densely vegetated areas (i.e., oak trees, scrub brush, etc.) at the west and east ends and within portions of the north and south boundaries. The east end of the property, just west of the densely vegetated area, had standing water present during the field inventory.

Field transects were oriented east to west and spaced approximately 3 meters apart. Surface visibility varied throughout with 0-25% near the west and east ends, nearly 100% in the middle of the property, and 0-5% in the densely vegetated areas. Observed sediments consisted of coarse loam with areas of underlying bedrock within the western half of the property. A shallow earth drainage is present in the southeast corner of the parcel (at the terminus of San Augustine Way) and a partial open culvert is located on the south side at the terminus of Grace Way. The culvert consists of one 24-inch RCP pipe on the east end and a 18-inch and 24-inch RCP pipe on the west side. A concrete maintenance hole ("manhole") for a storm sewer with a 24-inch cast iron/steel frame and cover (SBF [South Bay Foundry] Model 1900 [Made in Mexico]) is present along with an at grade/subsurface Pacific Telephone vault with a "diamond" steel cover at the west boundary.

No evidence of prehistoric or historic cultural material and/or culturally modified sediments was observed during the survey.

NATIVE AMERICAN RESOURCES

The aboriginal inhabitants of the project area belonged to a group known as the Costanoan, a name derived from the Spanish word *Costanos* ("coast people" or "coastal dwellers") who

occupied the central California coast as far east as the Diablo Range. Their territory covered 6,000-7,000 square miles extending along the Pacific Coast from south of Monterey Bay north to the San Francisco Peninsula and inland 20-45 miles into the Coast Ranges, including the east shore of San Francisco Bay from the Carquinez Straits south. The descendants of the Costanoan in the greater San Francisco Bay Area now generally prefer to be known as *Ohlone* (Galvan 1967/1968; Margolin 1978).

The project site is within the territory of the ethnographic group known as the *Awaswas* of the *Costanoan* (Levy 1978:485, Fig. 1). Kroeber (1925:465, Fig. 42) shows no subdivisions or settlements in the study area. Milliken (1995:229, Map 5, 253) places the *Sayanta*, as the group who "held the Scotts Valley area and the Glenwood and Laural areas to the north and east." Subsequent work assigned the general area to the "Santa Cruz Mountains/*Upi/Aptos/Cotoni*" (Milliken 2006:27, Fig. 5). Later research differentiated the grouping with the *Upi* southwest of the *Sayanta* (within the project area), and the *Aptos* further to the east (Milliken et al. :2009:88, Fig. 12).

CONTEMPORARY

As noted previously, the NAHC review of the SLF was negative (Campagne 2023). No responses were received from the seven Native American tribes/individuals contacted by BASIN (see Attachments).

HISTORIC ERA

Scotts Valley refers to a geographical area that encompasses most of *Rancho San Agustin*. "Scotts Valley" was a settlement and incorporated as a city in 1966.

The Spanish philosophy of government in northwestern New Spain was directed at the founding of presidios, missions, and secular towns with the land held by the Crown (1769-1821), while the later Mexican Period policy (1822-1848) stressed individual ownership of the land (Hart 1987).

The project is located within the northern eastern part of former *Rancho San Agustin,* granted to Juan J. Majors (formerly John, a Native of Tennessee) in 1833 and patented to him in 1866. None of the known adobe dwellings or other structures or features within the rancho have been identified in or near the project

Hiram Daniel Scott, namesake of Scotts Valley, arrived in the Monterey Bay area as a second mate on the *J. C. Whiting* and jumped ship. After pursuing shipbuilding he then left for the "mines." He received the nearby *Rancho Zayanta* grant in 1841 and purchased the *Rancho San Agustin* in 1850/1852. He returned to Santa Cruz county in 1852 and was joined by his father, two brothers and a sister-in-law as well as his sister. In turn, his father took over the *San Agustin* grant (Wallace 1859; Hoover et al. 1966; Clark 1986; Perez 1996). See the *Final Draft. City of Scotts Valley General Plan* (1-6 – 1-10) (2020) for a concise summary of the City of Scotts Valley history.

Topographic quadrangle maps indicate that Sandraya Heights Road on the south of the project and Casa Way on the west of the project (continuing beyond the project) were constructed between 1955 and 1980 (USGS 1902 [surveyed 1895 and 1899; USGS 1980).

FINDINGS

This document was completed to determine if significant cultural resources are present within the proposed *Casa Way Lot 9 Residential Subdivision.*

- The CHRIS/NWIC archival review lists three studies on or adjacent to the project with negative results.
- The CHRIS/NWIC archival review is negative for recorded and reported cultural resources in or adjacent to the project.
- No known ethnographic Native American villages, trails, traditional use areas or contemporary use areas and/or other features of cultural significance have been identified in or adjacent to the project.
- No known potential Hispanic Period archaeological resources (e.g., adobe dwellings or other structures, features, etc.) have been reported within or adjacent to the project.
- No American Period archaeological or built environment sites have been recorded or reported in or adjacent to the project.
- A systematic field inventory of the project site was completed with negative results.
- No listed or known potential National Register of Historic Places and/or California Register of Historical Resources have been identified in or adjacent to the project site. No other significant or potentially significant local, state or federal cultural resources/historic properties, landmarks, points of interest, etc. have been identified within or adjacent to the project site.
- The project site appear to have a low sensitivity for archaeological resources based on the lack of previously recorded sites, the absence of nearby environmentally advantageous resources (e.g., water, quarries, early roads, etc.) and the lack of reported archaeological discoveries during the past 30 years of development.

MANAGEMENT RECOMMENDATIONS

The proposed project can proceed as planned as it will not affect any recorded historic properties or potentially unique archaeological resources or known tribal cultural resources. Subsurface testing for buried archaeological resources is not recommended. The following post-review protection measures are recommended.

(a) The City of Scotts Valley shall note on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources[1] including prehistoric Native American burials.

---

1. Significant prehistoric cultural resources are defined as human burials, features or other clusterings of finds made, modified or used by Native American peoples in the past. The prehistoric and protohistoric indicators of prior cultural occupation by Native Americans include artifacts and human bone, as well as soil discoloration, shell, animal bone, sandstone cobbles, ashy areas, and baked or vitrified clays. Prehistoric materials may include:

   a. Human bone - either isolated or intact burials.

(b) The City of Scotts Valley View shall retain a Professional Archaeologist on an "on-call" basis during ground disturbing construction to review, identify and evaluate any potential cultural resources that may be inadvertently exposed during construction. The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under the California Environmental Quality Act (CEQA).

(c) If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource or tribal cultural resource under CEQA, he/she shall notify the City of Scotts Valley and other appropriate parties of the evaluation and recommend mitigation measures to mitigate to a less-than significant impact in accordance with California Public Resources Code Section 15064.5. Mitigation measures may include avoidance, preservation in-place, recordation, additional archaeological testing and data recovery among other options.

The completion of a formal *Archaeological Monitoring Plan* (AMP) and/or *Archaeological Treatment Plan* (ATP) that may include data recovery may be recommended by the Professional Archaeologist if significant archaeological deposits are exposed during ground disturbing construction. Development and implementation of the AMP and ATP and treatment of significant cultural resources will be determined by the City of Scotts Valley in consultation with any regulatory agencies and culturally affiliated Native American tribes who have expressed interest with tribal cultural resources for Scotts Valley.

(d) State law shall be followed in regard to Native American burials (Chapter 1492, Section 7050.5 to the Health and Safety Code, Sections 5097.94, 5097.98 and 5097.99 of the Public Resources Code). This shall include immediate notification of the appropriate county Coroner/Medical Examiner and the City of Scotts Valley.

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b. Habitation (occupation or ceremonial structures as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
c Artifacts including chipped stone objects such as projectile points and bifaces; groundstone artifacts such as manos, metates, mortars, pestles, grinding stones, pitted hammerstones; and, shell and bone artifacts including ornaments and beads.
d. Various features and samples including hearths (fire-cracked rock; baked and vitrified clay), artifact caches, faunal and shellfish remains (which permit dietary reconstruction), distinctive changes in soil stratigraphy indicative of prehistoric activities.
e. Isolated artifacts

Historic cultural materials may include finds from the late 19th through early 20th centuries. Objects and features associated with the Historic Period can include.

a. Structural remains or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.).
b. Trash pits, privies, wells and associated artifacts.
c. Isolated artifacts or isolated clusters of manufactured artifacts (e.g., glass bottles, metal cans, manufactured wood items, etc.).
d. Human remains.

In addition, cultural materials including both artifacts and structures that can be attributed to Hispanic, Asian and other ethnic or racial groups are potentially significant. Such features or clusters of artifacts and samples include remains of structures, trash pits, and privies.

(e) A *Monitoring Closure Report* shall be filed with the City of Scotts Valley at the conclusion of ground disturbing construction if archaeological and Native American monitoring of excavation was undertaken.

REFERENCES

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2023b-h Letters to Valentin Lopez, Chairperson, Amah Mutsun Tribal Band, Galt; Irene Zwierlein, Chairperson, Amah Mutsun Tribal Band of Mission San Juan Bautista, Lakeport; Patrick Orozco, Chairman, Costanoan Ohlone Rumsen-Mutsen Tribe, Watsonville; Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan, Hollister; Kanyon Sayers-Roods, MLD [Most Likely Descendant], Indian Canyon Mutsun Band of Costanoan, San Jose; Monica Arellano, Vice Chairwoman, Muwekma Ohlone Indian Tribe of the SF Bay Area, Castro Valley; and Kenneth Woodrow, Chairperson, Wuksache Indian Tribe/Eshom Valley Bank, Salinas. Request for Information: Casa Way Residential, City of Scotts Valley, Santa Cruz County. Dated February 21, 2023.

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Abbreviations

n.d. no date v.d. various dates N.P.no publisher noted
n.p.p. no place of publisher noted

CHRIS/NWIC, Sonoma State University, Rohnert Park is used for archival on file at the California Historical Resources Information System, Northwest Information Center, Sonoma State University, Rohnert Park.

ATTACHMENTS

FIGURES

FIGURE 1	General Project Location (ESRI World Street Map)
FIGURE 2	Project Location - T10S R1W unsectioned (USGS Felton, CA 1991; Laurel, CA 1996)
FIGURE 3	Project with Photo View Locations
FIGURE 4	View southeast from near Casa Way and Sandraya Heights Road
FIGURE 5	View southeast from middle of parcel
FIGURE 6	View southeast towards east end of parcel – seasonal wetland
FIGURE 7	View west from east end of parcel
FIGURE 8	View northwest along south side of parcel, west of San Augustine Way
FIGURE 9	View northwest along south side of parcel, west of Grace Way

CORRESPONDENCE

LETTER	Request to Native American Heritage Commission
LETTER	Response from Native American Heritage Commission
LETTER	Letters to Native American Individuals and Groups Recommended by the Native American Heritage Commission

CHRIS/NWIC SEARCH RESULTS

SEARCH	CHRIS/NWIC File No. 22-1225. Dated 2/24/2023. (No Confidential Information)

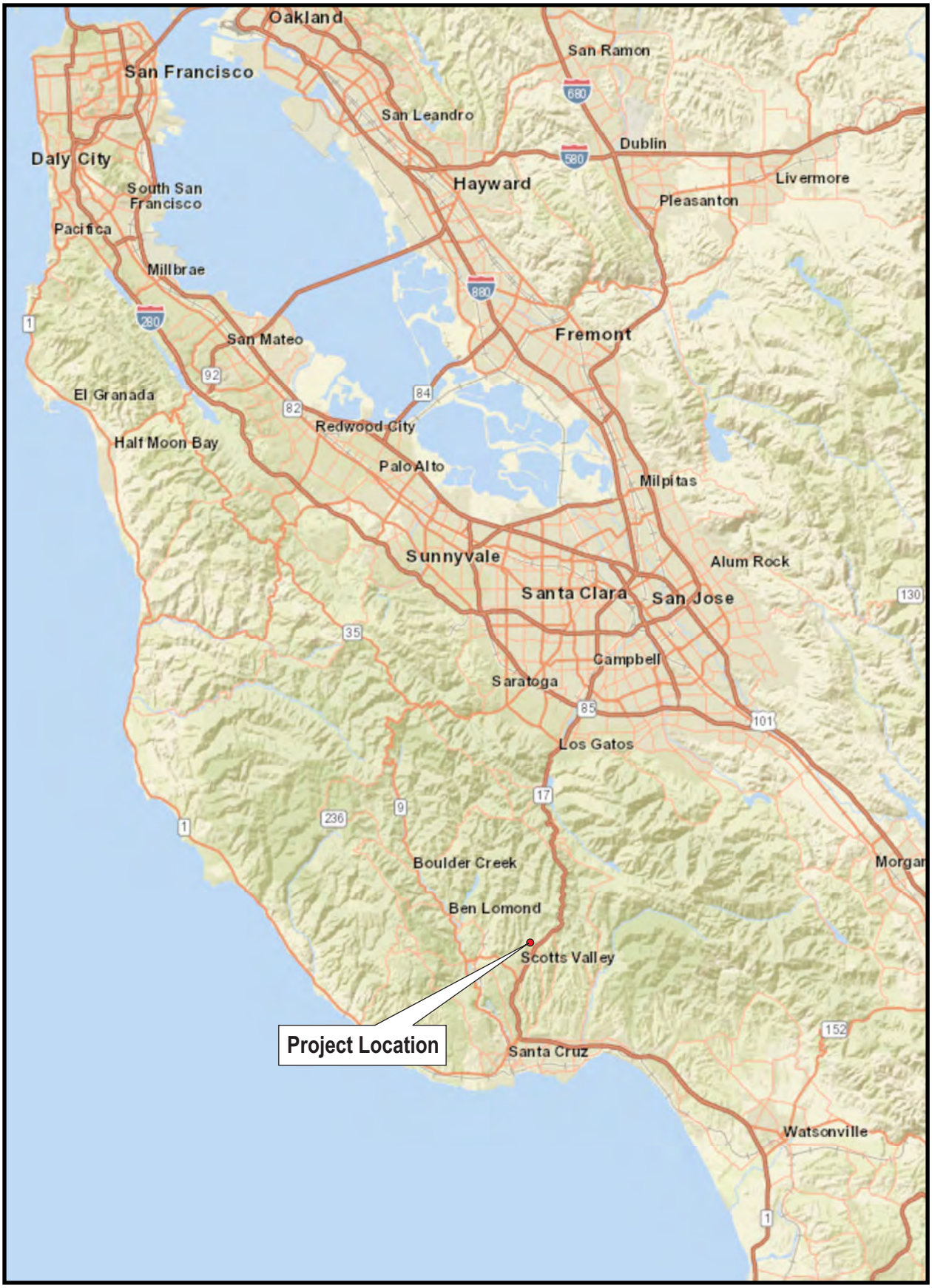


Figure 1: General Project Location (ESRI World Street Map)

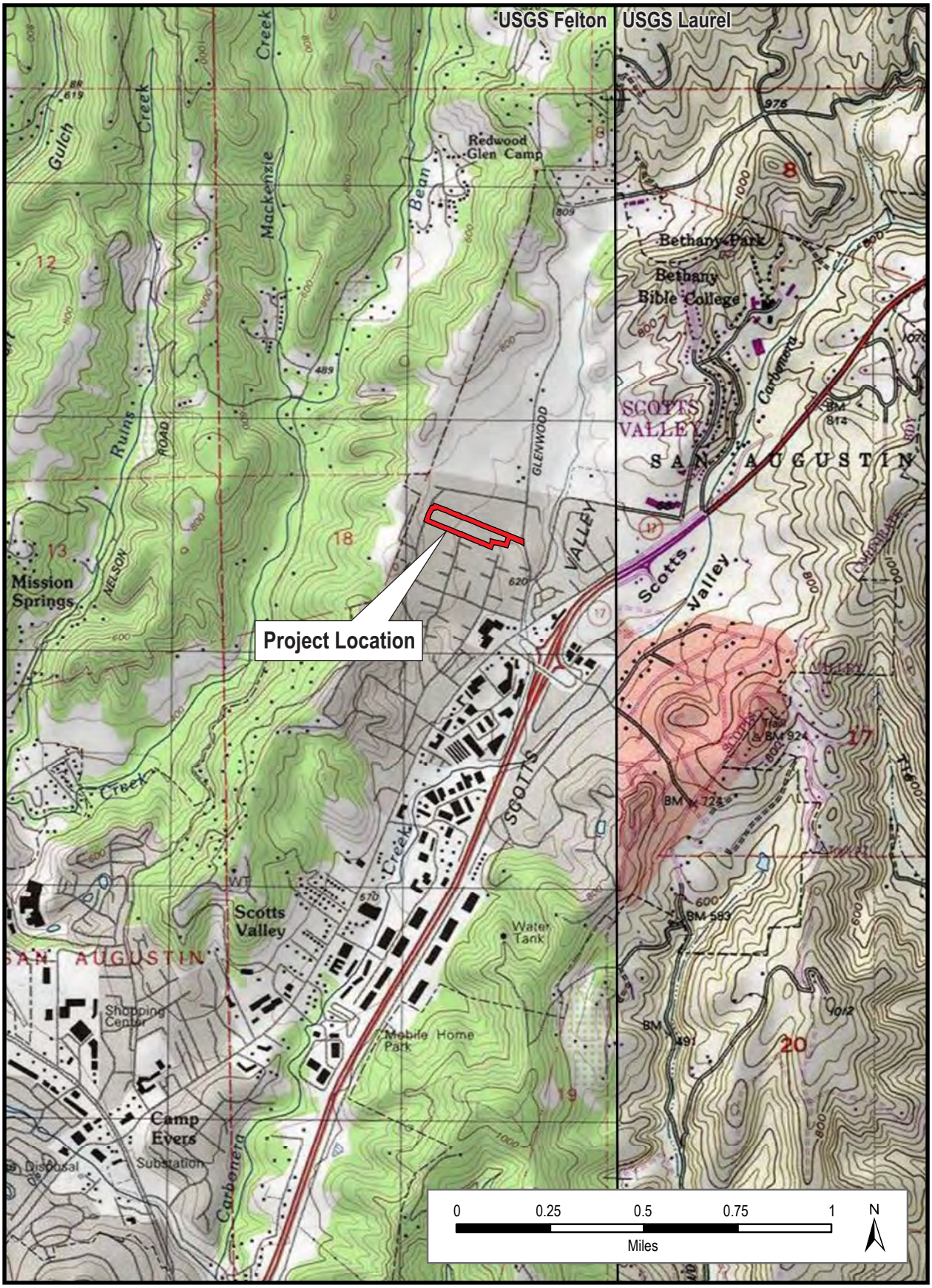


Figure 2: Project Location - T10S R1W unsectioned (USGS Felton, CA 1991; Laurel, CA 1996)

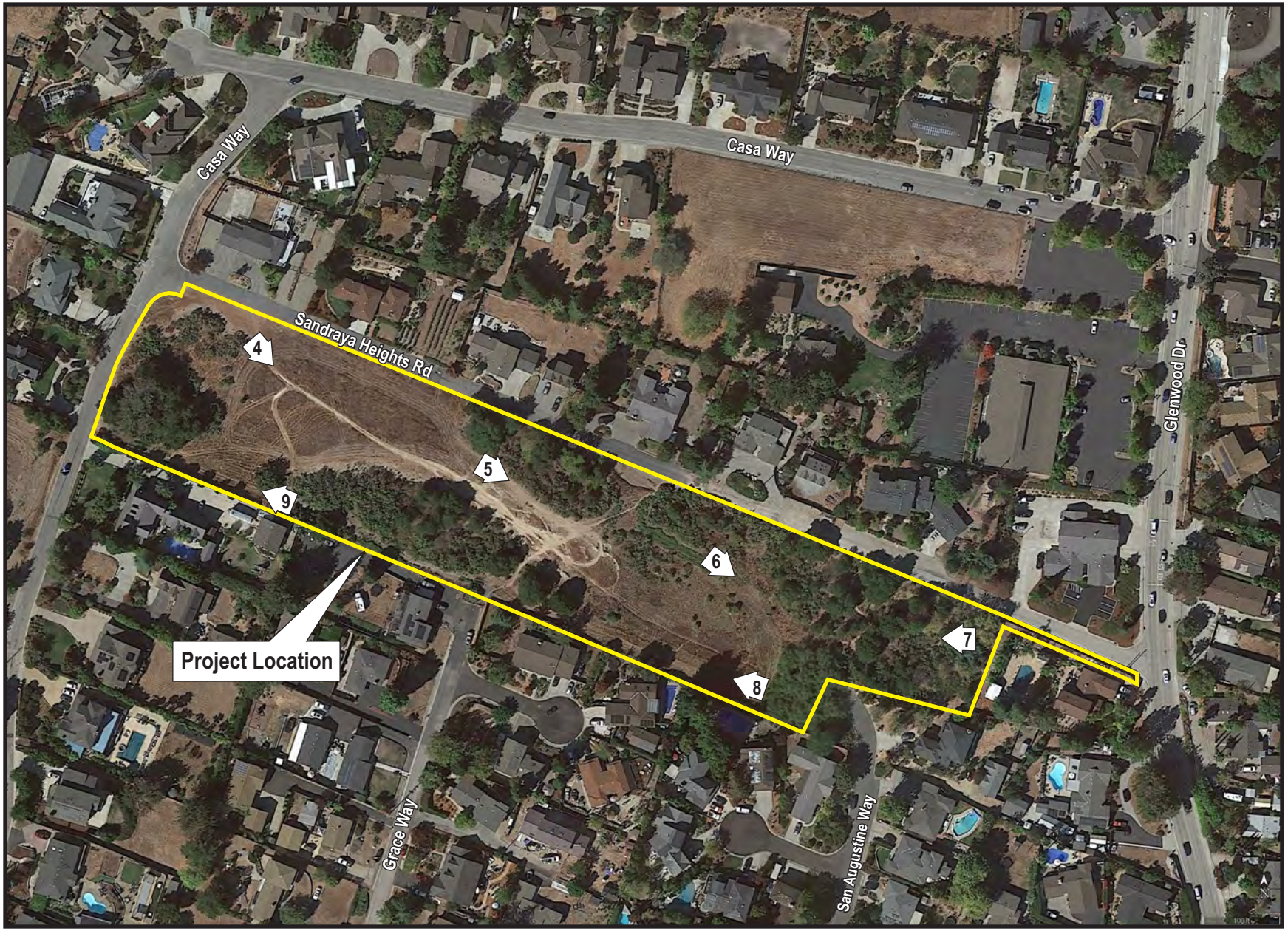


Figure 3: Project with Photo View Locations



Figure 4: View southeast from near Casa Way and Sandraya Heights Road



Figure 5: View southeast from middle of parcel



Figure 6: View southeast towards east end of parcel – seasonal wetland



Figure 7: View west from east end of parcel



Figure 8: View northwest along south side of parcel, west of San Augustine Way



Figure 9: View northwest along south side of parcel, west of Grace Way

Sacred Lands File & Native American Contacts List Request

NATIVE AMERICAN HERITAGE COMMISSION

1556 Harbor Boulevard, STE 100
West Sacramento, CA 95691
(916) 373-3710
(916) 373-5471 – Fax
nahc@nahc.ca.gov

Information Below is Required for a Sacred Lands File Search

Project: Casa Way Residential, Scotts Valley

County: Santa Cruz

USGS Quadrangle Name: USGS Felton, CA 1991

Address: The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line on the south, City of Scotts Valley.

Township: 10 South, **Range**: 1 W, unsectioned

Company/Firm/Agency: Basin Research Associates

Contact Person: Colin I. Busby, PhD, RPA

Street Address: 1933 Davis Street, STE 210

City/Zip: San Leandro, CA 94577

Phone: (510) 430-8441 x101

Email: Please send response to basinres1@gmail.com

Project Description:

The project will involve the construction of nine residences on a vacant approximately 5.74 acre parcel in the City of Scotts Valley.

Initial research suggests no resources are present within or adjacent to the project site.

Date: 02/10/2023



Figure 1: Project Location - T10S R1W unsectioned (ESRI World Street Map)

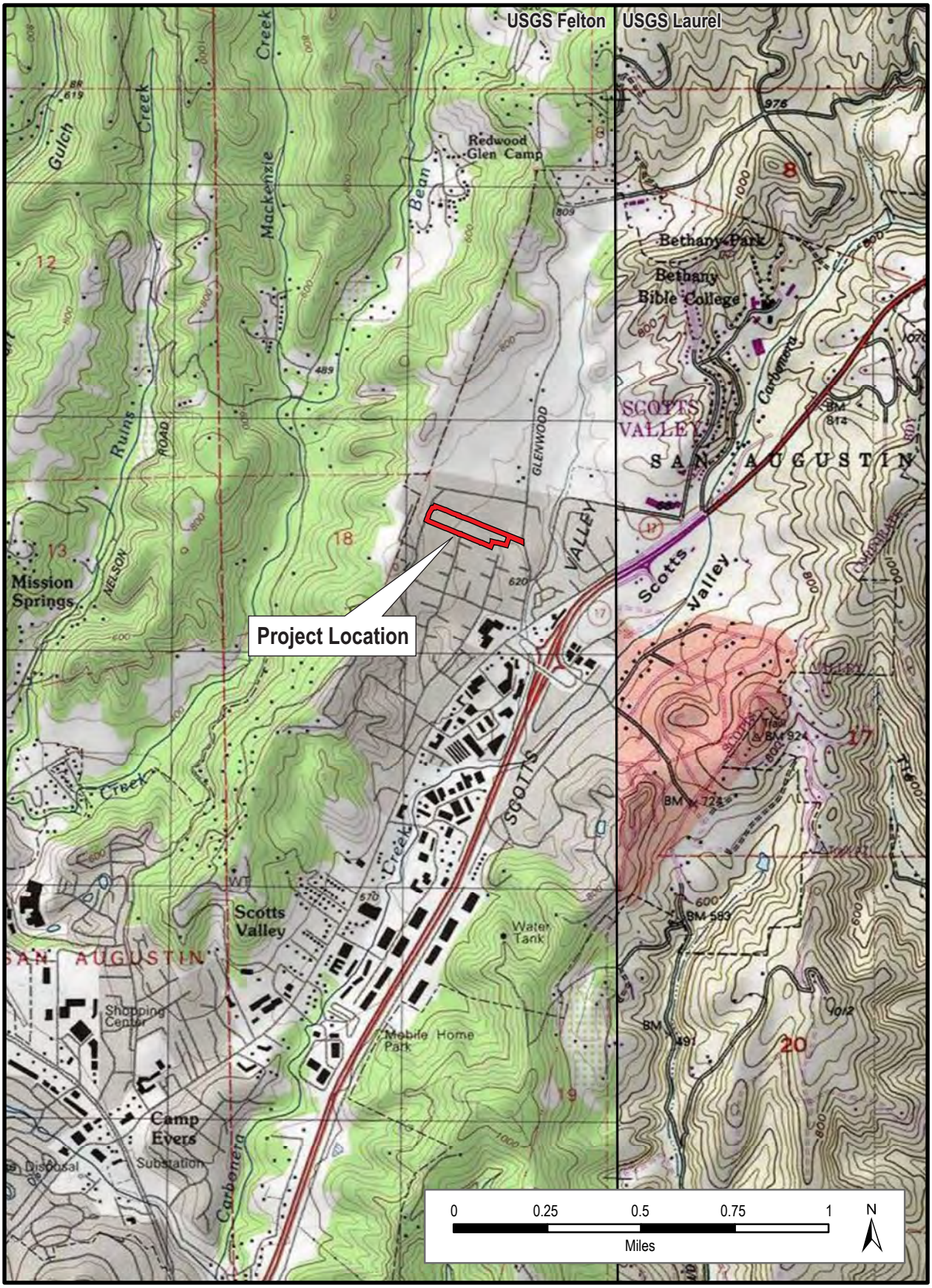


Figure 1: Project Location - T10S R1W unsectioned (USGS Felton, CA 1991; Laurel, CA 1996)

NATIVE AMERICAN HERITAGE COMMISSION

CHAIRPERSON
Laura Miranda
Luiseño

VICE CHAIRPERSON
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Luiseño

COMMISSIONER
Stanley Rodriguez
Kumeyaay

COMMISSIONER
[Vacant]

COMMISSIONER
[Vacant]

EXECUTIVE SECRETARY
Raymond C.
Hitchcock
Miwok/Nisenan

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

February 20, 2023

Colin I. Busby, PhD, RPA
Basin Research Associates

Via Email to: basinres1@gmail.com

Re: Casa Way Residential, Scotts Valley Project, Santa Cruz County

Dear Dr. Busby:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Cody.Campagne@nahc.ca.gov.

Sincerely,

Cody Campagne

Cody Campagne
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Santa Cruz County
2/20/2023

Amah Mutsun Tribal Band
Valentin Lopez, Chairperson
P.O. Box 5272
Galt, CA, 95632
Phone: (916) 743 - 5833
vlopez@amahmutsun.org

Costanoan
Northern Valley Yokut

Amah MutsunTribal Band of Mission San Juan Bautista
Irene Zwierlein, Chairperson
3030 Soda Bay Road
Lakeport, CA, 95453
Phone: (650) 851 - 7489
Fax: (650) 332-1526
amahmutsuntribal@gmail.com

Costanoan

Costanoan Ohlone Rumsen-Mutsen Tribe
Patrick Orozco, Chairman
644 Peartree Drive
Watsonville, CA, 95076
Phone: (831) 728 - 8471
yanapvoic97@gmail.com

Ohlone

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA, 95024
Phone: (831) 637 - 4238
ams@indiancanyon.org

Costanoan

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods, MLD Contact
1615 Pearson Court
San Jose, CA, 95122
Phone: (408) 673 - 0626
kanyon@kanyonkonsulting.com

Costanoan

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano, Vice Chairwoman
20885 Redwood Road, Suite 232
Castro Valley, CA, 94546
Phone: (408) 205 - 9714
monicavarellano@gmail.com

Costanoan

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas, CA, 93906
Phone: (831) 443 - 9702
kwood8934@aol.com

Foothill Yokut
Mono

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed Casa Way Residential, Scotts Valley Project, Santa Cruz County.



February 21, 2023

BASIN
RESEARCH
ASSOCIATES
1933 DAVIS STREET
SUITE 214
SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

Amah Mutsun Tribal Band
Valentin Lopez, Chairperson
P.O. Box 5272
Galt, CA 95632

RE: Request for Information – Casa Way Residential. City of Scotts Valley, Santa Cruz County

Dear Val,

The Native American Heritage Commission (NAHC) has provided your name as a person who may have further information on Native American resources associated with the above project. The review by the NAHC was negative for resources listed on the Sacred Lands File (SLF).

The project will involve the construction of nine residences on a vacant approximately 5.74 acre parcel in the City of Scotts Valley. The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line on the south, City of Scotts Valley. Initial research suggests no resources are present within or adjacent to the project site.

We look forward to hearing from you. I can be reached at (510) 430-8441 x101 or via email at basinres1@gmail.com. Thanking you in advance for any assistance.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA



February 21, 2023

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1933 DAVIS STREET
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VOICE (510) 430-8441
FAX (510) 430-8443

Amah Mutsun Tribal Band of Mission San Juan Bautista
Irenne Zwierlein, Chairperson
3030 Soda Bay Road
Lakeport, CA 95453

RE: Request for Information – Casa Way Residential. City of Scotts Valley, Santa Cruz County

Dear Irenne,

The Native American Heritage Commission (NAHC) has provided your name as a person who may have further information on Native American resources associated with the above project. The review by the NAHC was negative for resources listed on the Sacred Lands File (SLF).

The project will involve the construction of nine residences on a vacant approximately 5.74 acre parcel in the City of Scotts Valley. The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line on the south, City of Scotts Valley. Initial research suggests no resources are present within or adjacent to the project site.

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BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA



February 21, 2023

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VOICE (510) 430-8441
FAX (510) 430-8443

Costanoan Ohlone Rumsen-Mutsen Tribe
Patrick Orozco, Chairperson
644 Peartree Drive
Watasonville, CA 95076

RE: Request for Information – Casa Way Residential. City of Scotts Valley, Santa Cruz County

Dear Chairperson Orozco,

The Native American Heritage Commission (NAHC) has provided your name as a person who may have further information on Native American resources associated with the above project. The review by the NAHC was negative for resources listed on the Sacred Lands File (SLF).

The project will involve the construction of nine residences on a vacant approximately 5.74 acre parcel in the City of Scotts Valley. The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line on the south, City of Scotts Valley. Initial research suggests no resources are present within or adjacent to the project site.

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Colin I. Busby, Ph.D., RPA



February 21, 2023

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SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister, CA 95024

RE: Request for Information – Casa Way Residential. City of Scotts Valley, Santa Cruz County

Dear Ann Marie,

The Native American Heritage Commission (NAHC) has provided your name as a person who may have further information on Native American resources associated with the above project. The review by the NAHC was negative for resources listed on the Sacred Lands File (SLF).

The project will involve the construction of nine residences on a vacant approximately 5.74 acre parcel in the City of Scotts Valley. The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line on the south, City of Scotts Valley. Initial research suggests no resources are present within or adjacent to the project site.

We look forward to hearing from you. I can be reached at (510) 430-8441 x101 or via email at basinres1@gmail.com. Thanking you in advance for any assistance.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA



February 21, 2023

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1933 DAVIS STREET
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SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

Indian Canyon Mutsun Band of Costanoan
Kanyon Sayers-Roods
1615 Pearson Court
San Jose, CA 95122

RE: Request for Information – Casa Way Residential. City of Scotts Valley, Santa Cruz County

Dear Ms. Sayers-Roods,

The Native American Heritage Commission (NAHC) has provided your name as a person who may have further information on Native American resources associated with the above project. The review by the NAHC was negative for resources listed on the Sacred Lands File (SLF).

The project will involve the construction of nine residences on a vacant approximately 5.74 acre parcel in the City of Scotts Valley. The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line on the south, City of Scotts Valley. Initial research suggests no resources are present within or adjacent to the project site.

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BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA



February 21, 2023

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VOICE (510) 430-8441
FAX (510) 430-8443

Muwekma Ohlone Indian Tribe of the SF Bay Area
Monica Arellano, Vice Chairwoman
20885 Redwood Road, Suite 232
Castro Valley, CA 94546

RE: Request for Information – Casa Way Residential. City of Scotts Valley, Santa Cruz County

Dear Monica,

The Native American Heritage Commission (NAHC) has provided your name as a person who may have further information on Native American resources associated with the above project. The review by the NAHC was negative for resources listed on the Sacred Lands File (SLF).

The project will involve the construction of nine residences on a vacant approximately 5.74 acre parcel in the City of Scotts Valley. The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line on the south, City of Scotts Valley. Initial research suggests no resources are present within or adjacent to the project site.

We look forward to hearing from you. I can be reached at (510) 430-8441 x101 or via email at basinres1@gmail.com. Thanking you in advance for any assistance.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA



February 21, 2023

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1933 DAVIS STREET
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SAN LEANDRO, CA 94577
VOICE (510) 430-8441
FAX (510) 430-8443

Wuksache Indian Tribe/Eshom Valley Band
Mr. Kenneth Woodrow, Chairperson
1179 Rock Haven Ct.
Salinas, CA 93906

RE: Request for Information – Casa Way Residential. City of Scotts Valley, Santa Cruz County

Dear Chairperson Woodrow,

The Native American Heritage Commission (NAHC) has provided your name as a person who may have further information on Native American resources associated with the above project. The review by the NAHC was negative for resources listed on the Sacred Lands File (SLF).

The project will involve the construction of nine residences on a vacant approximately 5.74 acre parcel in the City of Scotts Valley. The project site is bounded by Sandraya Heights on the north, Saint Augustine Way on the east, Casa Way on the west and the property line on the south, City of Scotts Valley. Initial research suggests no resources are present within or adjacent to the project site.

We look forward to hearing from you. I can be reached at (510) 430-8441 x101 or via email at basinres1@gmail.com. Thanking you in advance for any assistance.

BASIN RESEARCH ASSOCIATES, INC.

Colin I. Busby, Ph.D., RPA

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA, COLUSA, CONTRA COSTA, DEL NORTE, HUMBOLDT, LAKE, MARIN, MENDOCINO, MONTEREY, NAPA, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, SONOMA, YOLO

Northwest Information Center
Sonoma State University
1400 Valley House Drive, Suite 210
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
https://nwic.sonoma.edu

2/24/2023 NWIC File No.: 22-1225

Donna M. Garaventa
Basin Research Associates
1933 Davis Street, Suite 214
San Leandro, CA 94577

Re: Casa Way Scotts Valley

The Northwest Information Center received your record search request for the project area referenced above, located on the Felton USGS 7.5' quad(s). The following reflects the results of the records search for the project area and a ¼ mile radius:

Resources within project area:	None
Resources within ¼ mile radius: Informal Res. w/in ¼ mi. radius:	P-44-000239; P-44-000240; P-44-000402; P-44-000443; P-44-000496; P-44-000871 SCR-ISO-4
Reports within project area:	S-003913; S-011006
Reports within ¼ mile radius:	S-003756; S-003916; S-004127; S-006887; S-008313; S-010013; S-010162; S-010294; S-010848; S-011007; S-011455; S-012889; S-013344; S-020870; S-021856; S-022159; S-022192; S-024434; S-026118; S-026572; S-027087; S-031488; S-045943; S-047602

Resource Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Resource Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Report Database Printout (list):	☒ enclosed	☐ not requested	☐ nothing listed
Report Database Printout (details):	☒ enclosed	☐ not requested	☐ nothing listed
Report Digital Database Records:	☐ enclosed	☒ not requested	☐ nothing listed
Resource Record Copies:	☐ enclosed	☒ not requested	☐ nothing listed
Report Copies:	☐ enclosed	☒ not requested	☐ nothing listed
OHP Built Environment Resources Directory:	☐ enclosed	☐ not requested	☒ nothing listed
Archaeological Determinations of Eligibility:	☒ enclosed	☐ not requested	☐ nothing listed
CA Inventory of Historic Resources (1976):	☐ enclosed	☒ not requested	☐ nothing listed
Caltrans Bridge Survey:	☐ enclosed	☒ not requested	☐ nothing listed

Ethnographic Information:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Literature:	☐ enclosed	☒ not requested	☐ nothing listed
Historical Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Local Inventories:	☐ enclosed	☒ not requested	☐ nothing listed
GLO and/or Rancho Plat Maps:	☐ enclosed	☒ not requested	☐ nothing listed
Shipwreck Inventory:	☐ enclosed	☒ not requested	☐ nothing listed
Soil Survey Maps:	☐ enclosed	☒ not requested	☐ nothing listed

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Requests made after initial invoicing will result in the preparation of a separate invoice.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Justin Murazzo
Researcher

Appendix D

Geotechnical Investigation

GEOTECHNICAL ENGINEERING REPORT
PROPOSED 10 LOT RESIDENTIAL SUBDIVISION
SANDRAYA HEIGHTS ROAD
SCOTTS VALLEY, CALIFORNIA

March 23, 2022

Prepared for:

Mr. Sachneel Patel
Granite Ridge Properties

Prepared by:

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March 23, 2022 File No.: 305065-001

Mr. Sachneel Patel
Granite Ridge Properties
225 Demeter Street
East Palo Alto, CA 94303

PROJECT: PROPOSED 10 LOT RESIDENTIAL SUBDIVISION
SANDRAYA HEIGHTS ROAD (APN 023-113-36)
SCOTTS VALLEY, CALIFORNIA

SUBJECT: Geotechnical Engineering Report

REF.: Proposal to Prepare a Geotechnical Engineering Report, Proposed 10 Lot Residential Subdivision, Sandraya Heights Road (APN 023-113-36), Scott Valley, California, by Earth Systems Pacific, December 8, 2021

Dear Mr. Patel:

In accordance with your authorization of the above referenced proposal, this geotechnical engineering report has been prepared by Earth Systems Pacific (Earth Systems) for use in the development of plans and specifications for the proposed subdivision to be located on Sandraya Heights Road in Scotts Valley, California. The conclusions and recommendations presented herein are based on our understanding of the proposed development, a review of the subsurface conditions revealed by our exploratory borings advanced as a part of this investigation, and our engineering analysis.

We appreciate the opportunity to assist you on this project. Should you have any questions regarding the contents of this report, please contact the undersigned.

Sincerely,

Earth Systems Pacific

J. Shahmoradi

Javad Shahmoradi
Staff Engineer

Bill E Zehrbach

Bill E. Zehrbach, GE 926
Principal Engineer



Copy to: C2G Civil Consultants Group

Doc. No.: 2203-003.SER/jc

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1
Site Setting 1
Project Description 1
Scope of Services 1

2.0 GEOLOGIC SETTING 2

3.0 FIELD INVESTIGATION 4
Subsurface Exploration 4
Subsurface Profile 4
Laboratory Testing 5

4.0 DATA ANALYSIS 5
Subsurface Soil Classification 5
Seismic Design Parameters 5

5.0 CONCLUSIONS 6
General 6
Site Preparation and Grading 6
Soil Expansion Potential 6
Foundations 7
Groundwater 7
Settlements 7
Seismicity 7

6.0 RECOMMENDATIONS 8
Site Preparation and Grading 8
Foundations 10
Slab-on-Grade Construction 11
Exterior Flatwork 12
Flexible Pavement Sections 14
Utility Trench Backfills 16
Post-Construction Site Drainage Management 16
Infiltration Testing 17
Required Geotechnical Observation and Testing 18

7.0 CLOSURE 20

TABLE OF CONTENTS
(CONT.)

FIGURES

Figure 1 – Site Location Map
Figure 2 – Site Plan

APPENDIX A

Boring Logs (12)

APPENDIX B

Summary of Laboratory Test Results

APPENDIX C

Infiltration Test Results

1.0 INTRODUCTION

This report presents the results of the geotechnical engineering study performed by Earth Systems Pacific (Earth System) for the proposed subdivision to be constructed at the captioned site in Scotts Valley, California. The attached Site Location Map (Figure 1) shows the general location of the site and the attached Site Plan (Figure 2) shows the locations of the exploratory borings advanced at the site as part of this investigation.

Site Setting

The subject property is a roughly rectangular-shaped parcel located on the south side of Sandraya Heights Road in Scotts Valley, California. The site area has a latitude of 37.0668° N and a longitude of -122.0084° W and the site topography slopes from northwest to southeast. The site is bordered by Sandraya Heights Road and Casa Way to the north and west and developed residential lots to the south and east. A review of aerial images shows that the site has never been developed. Currently, the site is covered by seasonal grasses, bushes, and mature trees. Some minor undocumented cuts and fills could be seen along the trail crossing the site from northwest to the southeast.

Project Description

Based on plans provided by C2G Civil/Consultant Group, Inc. the project will consist of the development of 10 residential lots. Each lot will receive a one or two-story, single-family home constructed on a graded building pad. Detailed plans were not available at the time this report was prepared. The structures will utilize conventional strip and spread footing with either wood frame floors over a crawl space, concrete slab-on-grade floors, or a combination of the two. Low retaining walls will separate some of the lots. No basements are planned. Other improvements include new roadway cul-de-sacs and an area for a bioswale for surface runoff treatment.

Scope of Services

The scope of work for the geotechnical engineering study included general site reconnaissance, exploration of subsurface soil and groundwater conditions from a geotechnical engineering standpoint, laboratory testing to measure pertinent engineering properties of soil samples collected from the site, evaluation of the subsurface data collected from the site, percolation testing and preparation of this report. The analysis and engineering recommendations presented in the following sections of this report are based on our understanding of the proposed development at the subject site and our experience with projects of a similar nature.

The report and recommendations are intended to comply with the considerations of Section 1803 of the California Building Code (CBC), 2019 Edition, and common geotechnical engineering practice in this area at this time under similar conditions.

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

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

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

2.0 GEOLOGIC SETTING

The approximate eastern half of the site is mapped as (Tsc) Santa Cruz Mudstone (upper Miocene) which is described as medium to thick-bedded and faintly laminated, blocky-weathering, pale-yellowish-brown siliceous organic mudstone. The western half of the site is

mapped as (Tp) Purisima Formation (Pliocene and upper Miocene) which is described as very thick-bedded yellowish-gray tuffaceous and diatomaceous siltstone containing thick interbeds of bluish-gray, semi friable, fine-grained andesitic sandstone (Geologic Map of Santa Cruz Compiled by Earl E Brabb, 1997).

The site is located within a seismically active area but is outside an Alquist-Priolo Earthquake Fault Rupture Zone as delineated by the State of California. The site is not located within a liquefaction hazard zone as delineated by Santa Cruz County GIS.

The entire Central Coast Area is considered to be an active seismic region due to the presence of several active faults. Three northwest-trending major earthquake faults that are responsible for the majority of the movement on the San Andreas fault system extend through the San Francisco Bay Area. They include the San Andreas fault, the Calaveras fault and the Hayward fault, which are respectively located approximately 5.9 miles, 23.6 miles, and 28.3 miles to the northeast. Other faults closer to the site are the Zeyante-Vergeles fault, Butano, and Sargent fault which are respectively located approximately 2.5 miles, 5.3 miles, and 6.0 miles to the northeast.

Using information from recent earthquakes, improved mapping of active faults, and a new model for estimating earthquake probabilities, the 2014 Working Group on California Earthquake Probabilities updated the 30 years earthquake forecast for California. A summary of the significant faults in the near vicinity of the site and their respective potential moment magnitudes are listed below.

Major Active Faults

Fault	Distance from Site (miles)	Probability of $M_w \geq 6.7$ within 30 Years[1]
Zeyante-Vergeles	2.5 (NE)	0.08%
San Andreas	5.9 (NE)	9.85%
Calaveras	16.3 (NE)	16.25%
Hayward	20.9 (NE)	6.45%

[1] Working Group on California Earthquake Probabilities, 2014

3.0 FIELD INVESTIGATION

Subsurface Exploration

As a part of the current phase of site investigation, Earth Systems advanced nine borings on December 16, and 17, 2021, and Febuary 2, 2022 at the approximate locations shown on the Site Plan, Figure 2. Data from the borings, as part of this investigation, were used to generate the conclusions and recommendations presented in this report.

The borings were drilled to depths of 5 to 20 feet below the ground surface. The drilling process consisted of using a limited access drill rig and a truck-mounted drill rig equipped with 6-inch diameter solid stem augers. Once reaching the desired depth, a standard sampler connected to steel rods was lowered into the hole. The sampler was driven into undisturbed ground with a 140-pound, safety hammer falling about 30 inches per drop. The sampler was driven up to 18 inches and the hammer blows required to drive every six inches of the sampler were recorded and are presented on the boring logs. The number of blows required to drive the final 12 inches of the sampler into the undisturbed ground was recorded as Penetration Resistance and was used to interpret soil consistency/density. Our staff engineer supervised the drilling program, described the soil conditions revealed by the boring to create a continuous log, and collected representative samples for laboratory testing. After drilling to the final depth, the borings were backfilled by soil cuttings and grout. The boring logs show soil description including: color, major and minor components, USCS classification, changes in soil conditions with depth, moisture content, consistency/density, plasticity, sampler type, and sampling depths, and laboratory test results. Copies of the logs of boring drilled for this investigation are presented in Appendix A.

Subsurface Profile

Borings B-1 through B-5 were drilled in Casa Way and Sandraya Heights Road to determine the thickness of the existing pavement. The borings encountered roughly 2 to 3 inches of asphalt over approximately 20 to 22 inches of aggregate base, underlain by sandy lean clay to the bottom of the borings.

The borings drilled within the property encountered surficial soils consisting of sandy lean clay, clayey silt, and clayey sand of variable thickness. These materials were stiff to hard. They were underlain by very dense clayey sand which is interpreted as the Purissima Formation.

Groundwater was initially encountered in Borings B-5, B-6, B-7 and B-9 at depths of 8.5, 12.5, 11.5, and 9.5 feet below the ground surface during our subsurface exploration. The water level was measured at 4 feet, 5.5 feet, and 8.3 feet in Borings B-5, B-7, and B-9, respectfully, at the end of drilling. The borings were not left open long enough for the water level to stabilize. The Scotts Valley Water District reported a high permanent groundwater level of 250 to 270 feet bgs for the years 2018 and 2020 (Santa Margarita Ground Water Basin). The groundwater encountered is considered a perched condition. Variations in subsurface soil and bedrock conditions, topography of the vicninity, rainfall, temperature, and other factors may affect water levels, and therefore groundwater levels should not be considered constant.

Laboratory Testing

Select samples were tested in the laboratory to measure moisture content and dry unit weight (ASTM D 2216-17 and D 2937-17), Atterberg Limits (ASTM D 4318-17), grain size distribution (ASTM D 422-63/07; D 1140-1), direct shear (D 3080/D 2435M-11) and R-value (ASTM D 2844/D2844M-13). The results of the tests performed to measure moisture content and dry unit weight were used to aid in soil classification and to help interpret variations in soil types. The results of Atterberg Limits tests were used to aid in soil classification and interpret shrinkage/swell potential. The results of the grain size analyses were used to aid in soil classification. The result of direct shear tests was used to develop foundation design criteria. The results of the R-value test were used to aid in the flexible pavement section design.

Copies of the laboratory results are provided in Appendix B.

4.0 DATA ANALYSIS

Subsurface Soil Classification

Based on the penetration resistance data from the borings advanced at the site (Appendix A) and the geological profile of the site, the site is assigned to Site Class C (“stiff soil”) as defined by Table 20.3-1 of the ASCE 7-16.

Seismic Design Parameters

The following seismic design parameters represent the general procedure as outlined in Section 1613 of the 2019 CBC and in ASCE 7. The values determined below are based on the 2009 National Earthquake Hazard Reduction Program (NEHRP) maps and were obtained using the OSHPD Seismic Design Maps Web Application.

Summary of Seismic Parameters - CBC 2019
(Site Coordinates 37.0668°N, -122.0084° W)

Parameter	Design Value
Site Class	C
Mapped Short Term Spectral Response Parameter, (S_s)	2.166g
Mapped 1-second Spectral Response Parameter, (S_1)	0.861g
Site Coefficient, (F_a)	1.2
Site Coefficient, (F_v)	1.4
Site Modified Short Term Response Parameter, (S_{Ms})	2.599g
Site Modified 1-second Response Parameter, (S_{M1})	1.205g
Design Short Term Response Parameter, (S_{Ds})	1.732g
Design 1-second Response Parameter, (S_{D1})	0.804g[1]

5.0 CONCLUSIONS

General

Based on the results of the field investigation and the laboratory testing program, in our opinion, the site is geotechnically suitable for the proposed residential development provided the recommendations contained herein are incorporated in the design and implemented during site grading and foundation construction. The primary geotechnical concern is the moderately expansive soil of the site and presence of cut/fill and differential fill conditions on the proposed lots.

Site Preparation and Grading

Due to the sloping nature of the site, grading is anticipated to include cuts and fills on the order of 6 feet or less. Remedial grading will be required to eliminate the cut/fill transitions and differential fill conditions on the lots. Additiona grading work is anticipated to include new pavement construction and backfill work related to the placement of new utility lines. Grading operations are discussed in detail in the Recommendations section of this report.

Soil Expansion Potential

Three Atterberg Limits test was performed on the near surface samples resulted in nonexpansive soil for the samples from Borings B-7 and B-8. The result of the Atterberg limit test on a surface sample from Boring B-5 resulted in sandy silt with a liquid limit of 34 and a plasticity index of 14. The sample tested has a moderate shrinkage/swell potential.

Foundations

Due to the light loads of the proposed structures, the anticipated building loads can be supported on a conventional spread footing foundations with wood frame or concrete slab on grade floors.

Groundwater

Groundwater was encountered in Borings B-5, B-6, B-7 and B-9 at 4 to 12.5 feet bgs during our subsurface exploration. The historic high depth to groundwater level is reported to be approximately 250 to 270 feet bgs for the years 2018 and 2020. Variations in subsurface conditions, rainfall, temperature, and other factors may affect water levels, and therefore groundwater levels should not be considered constant. Groundwater levels are not anticipated to have an adverse effect on the project.

Settlements

The estimated static settlements for the conventional spread footing foundation are less than 1-inch with approximately ½-inch of differential settlement.

Seismicity

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

6.0 RECOMMENDATIONS

Site Preparation and Grading

General Site Preparation

1. The site should be prepared for grading by removing the existing vegetation, debris, and other potentially deleterious materials from areas to receive improvements. Existing utility lines that will not be serving the proposed project should be either removed or abandoned. The appropriate method of utility abandonment will depend upon the type and depth of the utility. Recommendations for abandonment can be made as necessary.

2. Ruts or depressions resulting from the removal of utilities, undocumented fill, tree root systems, and abandoned and/or buried structures, buried debris, and remnants of the former use of the site that are discovered during site grading should be removed and properly cleaned out down to undisturbed native soil. The bottoms of the resulting depressions should be scarified and cross-scarified at least 8 inches in depth, moisture conditioned and recompacted. The depressions should then be backfilled with approved, compacted, moisture conditioned structural fill, as recommended in other sections of this report.

3. Site clearing and backfilling operations should be conducted under the field observation of the Geotechnical Engineer.

4. The grading plans indicate that there will be cut/fill transitions and differential fill conditions on some of the graded lots. To mitigate this condition is is recommended that the building pad be over-excavated to create a uniform thickness of engineered fill under each of the proposed structures. This over-excavation should extend a minimum of 5 feet beyond the perimeter foundation of the structures.

5. Some lots will have a property line retaining wall while some will have a graded slope. Where a graded slope is to be constructed between the pads a minor keyway should be excavated at the toe of the slope. This keyway should extend a minimum 18 inches below the lowest adjacent soil grade on the downhill side of the slope and be founded in stiff undisturbed soil. The keyway should be observed by a representative from Earth Systems prior to commencement of filling.

6. The Geotechnical Engineer should be notified at least 48 hours prior to commencement of grading operations.

Compaction Recommendations

1. Prior to placing new fill, the underlying undisturbed native soil should be scarified at least 8 inches, moisture conditioned, and recompacted to the recommended relative compaction presented below, unless noted otherwise. This scarification operation should be performed at locations designated for proposed structural fill, concrete slabs-on-grade, exterior flatwork, foundations, and pavement areas.

2. Recompacted native soils and fill soils should be compacted to a minimum relative compaction of 90 percent of maximum dry density at a moisture content above optimum.

3. In areas to be paved, the upper 8 inches of subgrade soil should be compacted to a minimum 95 percent of maximum dry density at a moisture content above optimum. The aggregate base courses should be compacted to a minimum 95 percent of maximum dry density at a moisture content that is slightly over optimum. The subgrade and base should be firm and unyielding when proof-rolled with heavy, rubber-tired equipment prior to paving. The pavement subgrade soils should be periodically moistened as necessary prior to placement of the aggregate base to maintain the soil moisture content near optimum.

Fill Recommendations

1. Structural fill is defined herein as fill material which, when properly compacted, will support foundations, building slabs, pavements, and other fills. The on-site soil may be used as structural fill provided it is free of organics, deleterious material and rocks greater than 3 inches in size are removed.

2. Imported fill soils for use at the site as structural fill should meet the following criteria:
   a. Be coarse grained and have a plasticity index of less than 15 and/or an expansion index less than 20;
   b. Be free of organics, debris or other deleterious material;
   c. Have a maximum rock size of 3 inches; and

d. Contain sufficient clay binder to allow for stable foundation and utility trench excavations.

3. A representative sample of the proposed imported soils should be submitted at least five working days before being transported to the site for evaluation by the Geotechnical Engineer. During importation to the site the material should be further reviewed on an intermittent basis.

Foundations

Conventional Foundations

1. The proposed residential structures may be supported on a conventional spread foundation provided the foundation elements bear on undisturbed natural ground or a uniform thickness of engineered fill.

2. The actual design of the foundation, including detailed reinforcing requirements, should be determined by the engineer performing the structural analysis of the building and the supporting foundations.

3. The perimeter foundation should extend a minimum of 18 inches below the lowest adjacent soil pad grade. Interior foundations should also extend at least 18 inches below lowest adjacent soil pad grade. Foundations should be designed using a maximum allowable bearing capacity of 2,500 psf dead plus live load for both spread and strip footings. This value may be increased by one-third when transient loads such as wind or seismicity are included.

4. Minimum widths of continuous footings should be 12 inches. Isolated spread footings should be a minimum of 18 inches wide.

5. Resistance to lateral loads should be calculated based on a passive equivalent fluid pressure of 250 pcf and a friction factor of 0.25. Passive and frictional resistance can be combined in the calculations without reduction to either value. These values are based on the assumption that backfill adjacent to foundations is properly compacted. The upper 12 inches of embedment should be neglected in calculating lateral passive resistance where landscape areas are adjacent to the foundations.

6. The foundation excavations should be moisture conditioned over optimum to close any desiccation cracks prior to the placement of concrete, as recommended by the Geotechnical Engineer in the field. Foundation excavations should be free of excessive slough prior to placement of concrete and reinforcing steel. The Geotechnical Engineer should observe the foundation excavations prior to forming or placement of reinforcing steel to verify the bearing capacity of the soil, the adequacy of the moisture conditioning, or to recommend additional moisture conditioning, if deemed necessary.

Slab-on-Grade Construction

1. The slab-on-grade should have a minimum thickness of 4 full inches and be reinforced as directed by the architect/engineer. Interior slabs and foundations should be structurally connected as required by the architect/engineer.

2. The garage slab should be constructed independent of the perimeter foundation except at door openings. A layer of felt expansion joint material should be placed between the grade beam and the floor slab.

3. For conventional slab-on-grade floor construction in areas which will receive carpet or other floor coverings or where moisture sensitive materials will be stored directly on the slab, a capillary break should be constructed between the floor slab and the properly prepared building pad. This capillary break should consist of a vapor retarder, underlain in turn by 4 inches of open graded ½-inch to ¾-inch gravel. A layer of clean sand over the vapor retarder is optional.

4. The garage slab should be underlain by 6 inches of compacted aggregate base. The subgrade soil beneath the slab should be prepared as recommended in the Site Preparation and Grading Section of this report.

5. The vapor retarder should comply with ASTM Standard Specification E 1745-17 and the latest recommendations of ACI Committee 302. The vapor retarder should be installed in accordance with ASTM Standard Practice E 1643-18a. Care should be taken to properly lap and seal the vapor retarder, particularly around utilities, and to protect it from damage during construction. A layer of sand above the vapor retarder is optional.

6. If sand, gravel or other permeable material is to be placed over the vapor retarder, the material over the vapor retarder should be only lightly moistened and not saturated prior to casting the slab. Excess water above the vapor retarder would increase the potential for moisture damage to floor coverings. Recent studies, including those by ACI Committee 302, have concluded that excess water above the vapor retarder would increase the potential for moisture damage to floor coverings and could increase the potential for mold growth or other microbial contamination. These studies also concluded that it is preferable to eliminate the sand layer and place the slab in direct contact with the vapor retarder, particularly during wet weather construction. However, placing the concrete directly on the vapor retarder would require special attention to using the proper vapor retarder, concrete mix design, and finishing and curing techniques.

7. When concrete slabs are in direct contact with vapor retarders, the concrete water to cement (w/c) ratio must be correctly specified to control bleed water and plastic shrinkage and cracking. The concrete w/c ratio for this type of application is typically in the range of 0.45 to 0.50. The concrete should be properly cured to reduce slab curling and plastic shrinkage cracking. Concrete materials, placement, and curing methods should be specified by the architect/engineer.

8. The building pad should be periodically moisture conditioned as necessary to maintain the soil moisture content at a minimum of 2 percent above optimum at the time of placement of concrete or vapor retarding membranes. The moisture content of the soil should be tested by a representative from Earth Systems Pacific prior to placement of the concrete or vapor retarding membranes.

Exterior Flatwork

1. Exterior concrete flatwork should have a minimum thickness of 4 full inches and should be reinforced as directed by the architect/engineer. The exterior flatwork may be constructed directly on a properly prepared native soil subgrade. Alternatively, the flatwork may be underlain by a 4-inch thick layer of compacted Class 2 aggregate base conforming with Section 26-1.02B of the Caltrans Standard Specifications. Prior to placement of the flatwork or aggregate base, the subgrade soil should be moistened as necessary to maintain the soil moisture content at or above optimum, and no desiccations cracks should be present.

2. Exterior flatwork adjacent to the structure should be designed to be independent of the foundation. The flatwork should not be doweled to foundations, and a separator should be placed between the two.

3. To reduce shrinkage cracks in concrete, the concrete aggregates should be of appropriate size and proportion, the water/cement ratio should be low, the concrete should be properly placed and finished, contraction joints should be installed, and the concrete should be properly cured. Concrete materials, placement and curing specifications should be at the direction of the architect/engineer; ACI 302.1R-04 and ACI 302.2R-04 are suggested as resources for the architect/engineer in preparing such specifications.

Retaining Walls

1. Modular block walls such as Keystone, Versa-Lok, Allen Block, or other equivalent segmental retaining wall systems may be used throughout the site. Geotechnical engineering design recommendations for modular block walls are provided below:

	Friction angle (ϕ) (degrees)	Cohesion (C) (psf)	Moist Unit Weight (γ) (pcf)
Reinforced Fill	25	0	100
Retained Soil	25	0	100
Foundation Soil	25	0	100

Allowable Bearing Pressure ..... 2000 psf
Minimum Depth of Embedment for Wall Foundation ..... 12 inches

2. Appropriate safety factors should be incorporated into the design calculations and are recommended below:

	Safety Factor
Sliding	1.5
Overturning	2.0
Bearing Capacity	2.0
Pullout	1.5
Shear	1.5
Bending	1.5
Uncertainties	1.5
Connection	1.5

3. Modular block walls greater than three feet in height should be reinforced with geogrid. The geogrid placement, type, and length should be determined by the design engineer.

4. Retaining wall backfill should be drained using either perforated drain pipes encased in a free draining gravel blanket or manufactured synthetic drainage systems. If drain pipes are to be used, the pipes should consist of rigid PVC plastic, Schedule 40 or SDR 35, and should be placed perforations downward near the base of the walls. The gravel blankets should have a width of approximately 1 foot and should extend upward to within 2 feet of the top of the wall backfill. To reduce infiltration of the surrounding soil into the gravel, a permeable synthetic fabric conforming to Caltrans Standard Specifications, Section 96-1.02B for edge drains, should be placed between the two. Manufactured synthetic drains such as Miradrain or Enkadrain are acceptable alternatives to the use of a gravel blankets, provided they are installed in accordance with the recommendations of the manufacturer.

5. The foundation excavations for the walls should be observed by a representative from Earth Systems prior to the placement of the foundation base course.

6. Retaining wall backfill should be placed in thin, moisture conditioned, and compacted lifts. Refer to *Site Preparation and Backfilling* for the recommended degree of relative compaction.

7. Long-term settlement of properly compacted sand or gravel retaining wall backfill should be assumed to be about ¼ percent of the depth of the backfill. Long-term settlement of properly compacted clayey retaining wall backfill should be assumed to be about ½ to 1 percent of the depth of the backfill. Improvements constructed near the tops of retaining walls should be designed to accommodate the estimated settlement.

Flexible Pavement Sections

1. The asphalt pavement design sections were developed using the State of California Highway Design Manual, Chapter 630-Flexible Pavement. The laboratory R-Value test resulted in an R-Valueof 15. To account for variation in subgrade soil types an R-Value of 10 was used for this analysis. Determination of the appropriate Traffic Index (TI) for each area to be paved is the province of the design engineer. The calculated Asphalt Concrete (AC) and aggregate base (AB) thicknesses are for compacted subgrade material. Normal Caltrans construction tolerances should apply. The aggregate base should conform to Caltrans Class 2.

Summary of Pavement Sections

R-Value of 10

Traffic Index	Asphaltic Concrete (AC) inches	Class II Aggregate Base (AB) inches
4.0	2.5	7.0
4.5	2.5	8.5
5.0	3.0	9.0
5.5	3.0	11.0
6.0	3.5	11.5
6.5	4.0	13.0
7.0	4.0	12.5
7.5	4.5	15.5
8.0	4.5	17.0
8.5	5.0	18.5
9.0	5.5	19.0

2. The upper 8 inches of subgrade soil should be compacted to a minimum 95 percent of maximum dry density. The aggregate base course should be compacted to a minimum 95 percent of maximum dry density. The subgrade and base should be firm and unyielding when proof-rolled with heavy, rubber-tired equipment prior to paving. The pavement subgrade soils should be periodically moistened as necessary prior to placement of the aggregate base to maintain the soil moisture content near optimum.

3. Pavement longevity will be enhanced if the surface grade drains away from the edges of the pavement. Finished AC surfaces should slope toward drainage facilities at 2 percent where practicable, but in no case, should water be allowed to pond.

4. Cutoff walls below curbs and around landscape islands may be used to extend the life of the pavement by reducing irrigation water and runoff that seeps into the aggregate base. Where utilized, cutoff walls should extend through the aggregate base to penetrate a minimum of 3 inches into the subgrade soils.

5. To reduce migration of surface drainage into the subgrade, maintenance of the paved areas is critical. Any cracks that develop in the AC should be promptly sealed.

Utility Trench Backfills

1. A select, noncorrosive, granular, easily compacted material should be used as bedding and shading immediately around utility pipes. The site soils may be used for trench backfill above the select material.

2. Trench backfill in the upper 8 inches of subgrade beneath pavement areas should be compacted to a minimum of 95 percent of maximum dry density. Trench backfill in other areas should be compacted to a minimum of 90 percent. Jetting of utility trench backfill should not be allowed.

3. Where utility trenches extend under perimeter foundations, the trenches should be backfilled entirely with approved fill soil compacted to a minimum of 90 percent of maximum dry density. The zone of approved fill soil should extend a minimum distance of 2 feet on both sides of the foundation. If utility pipes pass through sleeves cast into the perimeter foundations, the annulus between the pipes and sleeves should be completely sealed.

4. Parallel trenches excavated in the area under foundations defined by a plane radiating at a 45-degree angle downward from the bottom edge of the footing should be avoided, if possible. Trench backfill within this zone, if necessary, should consist of Controlled Density Fill (Flowable Fill).

Post-Construction Site Drainage Management

1. Unpaved ground surfaces should be finish graded to direct surface runoff away from site improvements at a minimum 5 percent grade for a minimum distance of 10 feet. If this is not practical due to the terrain or other site features, swales with improved surfaces should be provided to divert drainage away from improvements. The landscaping should be planned and installed to maintain proper surface drainage conditions.

2. Runoff from driveways, roof gutters, downspouts, planter drains and other improvements should discharge in a non-erosive manner away from foundations, pavements, and other improvements. The downspouts may discharge onto splash blocks that direct the flow away from the foundation.

3. Stabilization of surface soils, particularly those disturbed during construction, by vegetation or other means during and following construction is essential to protect the site from erosion damage. Care should be taken to establish and maintain vegetation.

4. Open areas adjacent to exterior flatwork should be irrigated or otherwise maintained so that constant moisture conditions are created throughout the year. Irrigation systems should be controlled to the minimum levels that will sustain the vegetation without saturating the soil.

5. Bio-retention basins and swales located within 10 feet of foundation elements should be lined with a 20-mil pond liner.

Infiltration Testing

Earth Systems Pacific (Earth Systems) conducted soil infiltration rate testing for use at the proposed bio-retention system. On December 16, 2021, three infiltration rate tests were performed at the location of the proposed bioretention basin area as indicated on Figure 2. The test holes were drilled using an 8-inch diameter auger. Infiltration test holes were drilled to nominal depths of 2.5 and 4.5 feet. Infiltration test hole locations are shown on the attached Site Plan (Figure 2).

The tests were conducted in general accordance with the Deep Quick Infiltration Testing Methodology, as detailed in the document *Native Soil Assessment for Small Infiltration-Based Stormwater Control Measures* prepared by Earth Systems Pacific for the Central Coast Low Impact Initiative (2013). Perforated PVC pipes were placed in the borings, and the annular spaces were backfilled with gravel. They were then filled with water, and the water level was maintained for approximately 30 minutes (i.e. kept at a constant head). From that point on, the tests were conducted as a falling head test, and measurements were taken as the water level dropped. Copies of the infiltration test results are included in Appendix C.

These test results only indicate the infiltration rates at the specific locations and under specific conditions. Sound engineering judgment should be exercised in extrapolating the test results for other conditions or locations. Please note that the test results incorporate both downward and horizontal fluxes of water. Therefore, the test results will need to be adjusted to estimate the

downward infiltration rates for assessment of the storm water percolation facilities. Technical design references vary in methods they present for using these types of test results. However, most references include reduction and/or correction factors for several parameters including, but not limited to, size of the storm water percolation system relative to the test volume, number of tests conducted, variability in the soil profile, anticipated silt loading, anticipated biological buildup, anticipated long-term maintenance, and other factors. Assessment of the storm water infiltration system should select the appropriate reduction and/or correction factors based on these considerations.

Required Geotechnical Observation and Testing

1. It must be recognized that the recommendations contained in this report are based on a limited number of borings and rely on continuity of the subsurface conditions encountered.

2. It is assumed that the Geotechnical Engineer will be retained to provide consultation during the design phase, to interpret this report during construction, and to provide construction monitoring in the form of testing and observation.

3. Unless otherwise stated, the terms "compacted" and "recompacted" refer to soils placed in level lifts not exceeding 8 inches in loose thickness and compacted to a minimum of 90 percent of maximum dry density. The standard tests used to define maximum dry density and field density should be ASTM D 1557-12 and ASTM D 6938-17, respectively, or other methods acceptable to the Geotechnical Engineer and jurisdiction.

4. “Moisture conditioning” refers to adjusting the soil moisture to at least 2 percentage points above optimum moisture content prior to application of compactive effort. If the soils are overly moist so that they become unstable, or if the recommended compaction cannot be readily achieved, drying the soil to optimum moisture content or just above may be necessary. Placement of gravel layers or geotextiles may also be necessary to help stabilize unstable soils. The Geotechnical Engineer should be contacted for recommendations for mitigating unstable soils.

5. At a minimum, the following should be provided by the Geotechnical Engineer:
   - Review of final grading and foundation plans,
   - Professional observation during site preparation, grading, and foundation excavation,
   - Oversight of soil compaction testing during grading,
   - Oversight of soil special inspection during grading.

6. Special inspection of grading should be provided as per Section 1705.6 and Table 1705.6 and of the CBC; the soils special inspector should be under the direction of the Geotechnical Engineer. In our opinion, the following operations should be subject to *continuous* soils special inspection:
   - Scarification and recompaction,
   - Fill placement and compaction,
   - Over-excavation to the recommended depth.

7. In our opinion, the following operations may be subject to *periodic* soils special inspection; subject to approval by the Building Official:
   - Site preparation,
   - Compaction of utility trench backfill,
   - Compaction of subgrade and aggregate base,
   - Observation of foundation excavations,
   - Building pad moisture conditioning.

8. It will be necessary to develop a program of quality control prior to beginning grading. It is the responsibility of the owner, contractor, or project manager to determine any additional inspection items required by the architect/engineer or the governing jurisdiction.

9. The locations and frequencies of compaction tests should be as per the recommendations of the Geotechnical Engineer at the time of construction. The recommended test locations and frequencies may be subject to modification by the Geotechnical Engineer based upon soil and moisture conditions encountered, the size and type of equipment used by the contractor, the general trend of the compaction test results, and other factors.

10. A preconstruction conference among a representative of the owner, the Geotechnical Engineer, soils special inspector, the architect/engineer, and contractors is recommended to discuss planned construction procedures and quality control requirements. Earth Systems should be notified at least 48 hours prior to beginning grading operations.

7.0 CLOSURE

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

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

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

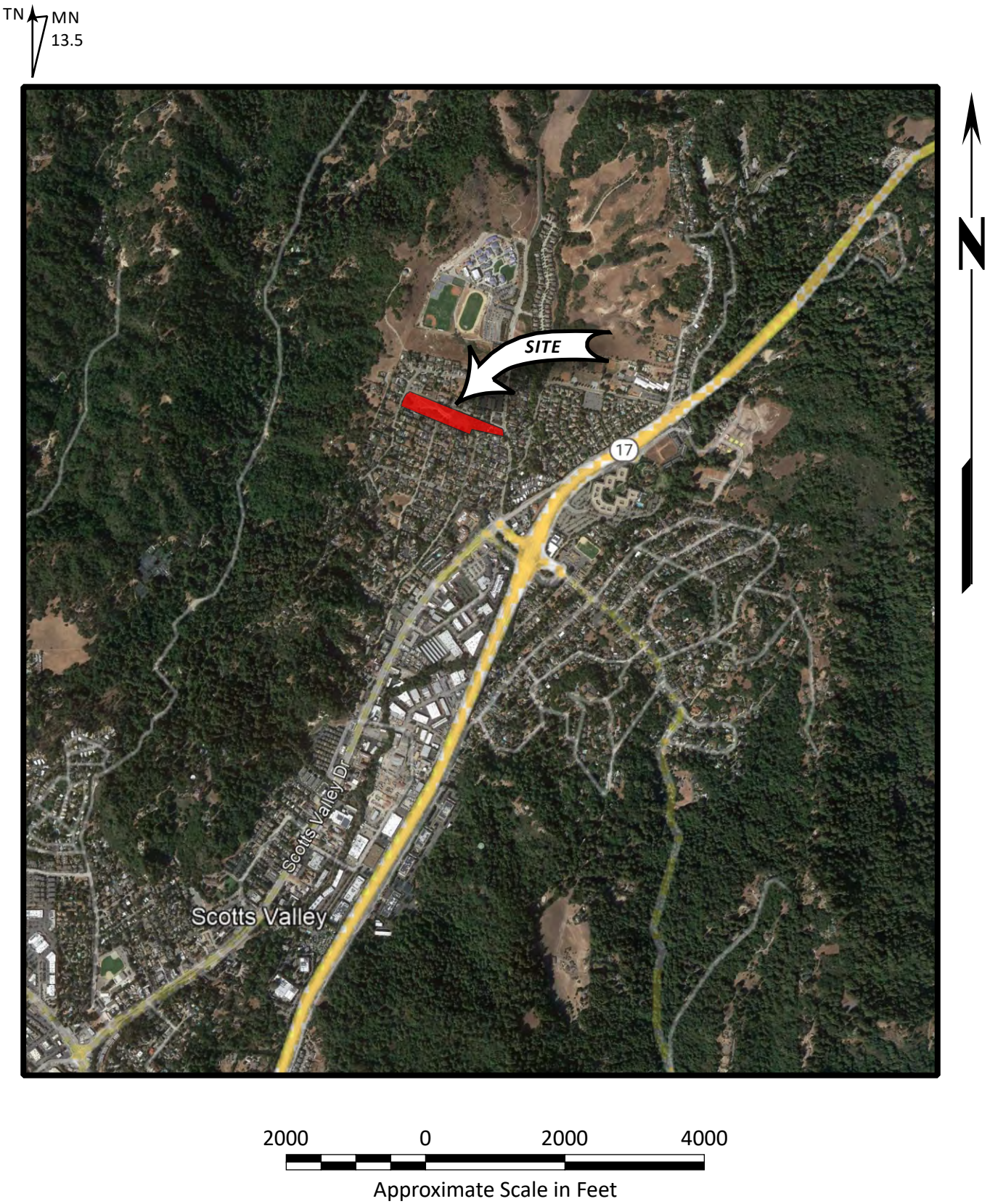
If Earth Systems is not retained to provide construction observation and testing services, it will not be responsible for the interpretation of the information by others or any consequences arising there from.

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

FIGURES

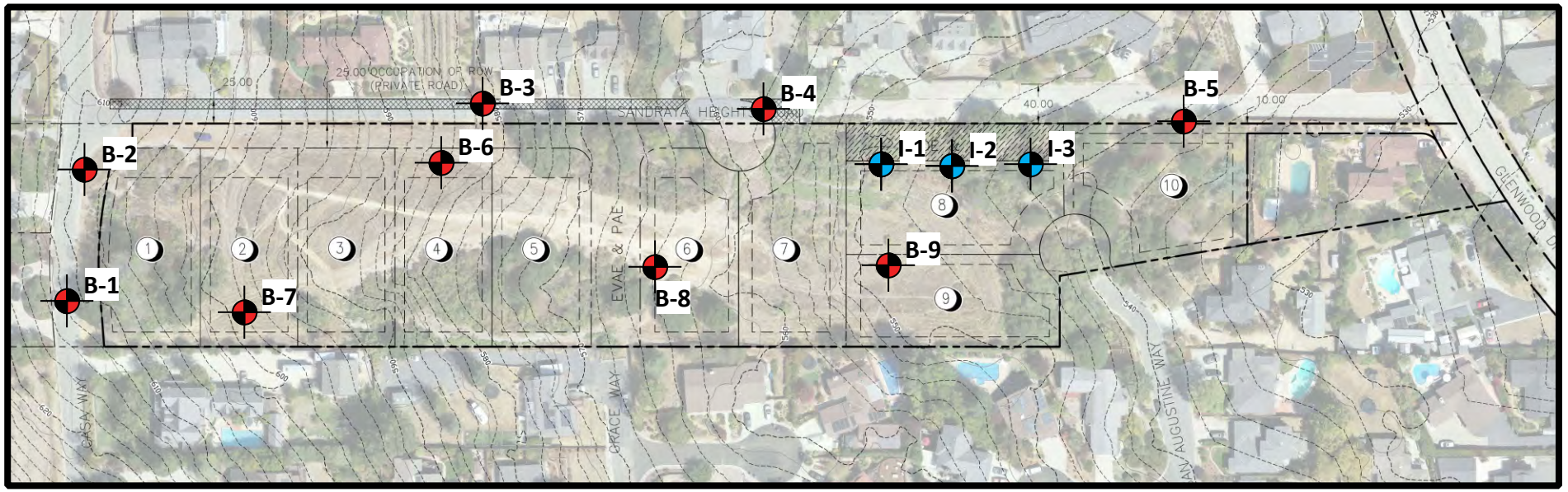
Figure 1 - Site Location Map
Figure 2 - Site Plan

Figure 1



Base: Google Earth (2021)

Earth Systems Pacific	Sandraya Heights Res. Development Scos V alley, California	Site Locaon Map 305065-001



B-9 Approximate Boring Locaons

0 160 320 480

Approximate Scale in Feet

I-3 Approximate Infiltraon Loc aons

Base: C2G /CIVIL CONSULTANTS GROUP, INC. (2021)

Earth Systems Pacific	Sandraya Heights Res. Development Scos V alley, California	Site Plan File No.: 305065-001

APPENDIX A

Boring Logs (12)

Earth Systems Pacific

Boring No. 1
PAGE 1 OF 1

LOGGED BY: J. Shahmoradi
DRILL RIG: 2400 T SK-1
AUGER TYPE: 6" soild Stem

JOB NO.: 305065-001
DATE: December 17, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
0	AC	3-inch AC							
1	AB	21-inches AB						14	
2								25	
3	CL	SANDY LEAN CLAY; dark gray to dark green, hard, moist, trace fine gravel	2.0 - 2.5	1-1	■	92.6	29.1	25	
4								15	
5			4.0 - 4.5	1-2	■	97.8	28.2	21	
6	Bdrx	SANDSTONE /MUDSTONE in CLAYEY MATRIX; yellow gray to yellow green, very dense, moist, orange, gray and dark gray mottling, intensely weathered	5.0 - 5.5	1-3	■			50/6"	
7		Bottom of boring at 5.5 feet Groundwater was not encountered							
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Boring No. 2

LOGGED BY: J. Shahmoradi
DRILL RIG: 2400 T SK-1
AUGER TYPE: 6" soild Stem

JOB NO.: 305065-001
DATE: December 17, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SOIL DESCRIPTION	INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
		SAMPLE DATA							
0	AC	3-inches AC							
1	AB	21-inches AB						14	
2	CL	SANDY LEAN CLAY; dark gray, hard, moist, trace fine gravel	1.0 - 2.5	2-1	■	119.1	15.8	15 22	>4.5
3								7	
4			3.0 - 4.5	2-2	■	116.6	20.2	12 14	3.5
5		- very stiff, fine sand							
6		SANDSTONE/MUDSTONE FRAGMENTS in CLAYEY MATRIX; yellow gray to yellow green, very dense, moist	5.0 - 5.5	2-3	■			12 50/3"	
7		Bottom of boring at 5.2 feet Groundwater was not encountered							

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Boring No. 3
PAGE 1 OF 1

LOGGED BY: J. Shahmoradi
DRILL RIG: 2400 T SK-1
AUGER TYPE: 6" soild Stem

JOB NO.: 305065-001
DATE: December 16, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
0	AC		3-inches AC							
1	AB		21-inches AB						7 12	
2	SC		CLAYEY SAND with GRAVEL; tan brown, medium dense, moist, fine to coarse sand, fine to medium gravel, orange mottling	2.0 - 2.5	3-1	■	102.4	26.3	23	>4.5
3									28	
4			- very dense, fine sand, trace gravel	3.5 - 4.0	3-2	■			50/3"	
5			- slightly moist, dark gray to dark green	5.0 - 5.5	3-3	■	73.7	23.5	50/4"	
6			Bottom of boring at 5.5 feet Groundwater was not encountered							
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Boring No. 4
PAGE 1 OF 1

LOGGED BY: J. Shahmoradi
DRILL RIG: 2400 T SK-1
AUGER TYPE: 6" soild Stem

JOB NO.: 305065-001
DATE: December 16, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
0	AC		3-inches AC							
1	AB		20-inches AB						11 16	
2	CL		SANDY LEAN CLAY; dark gray, stiff, moist, fine sand	2.0 - 2.5	4-1	■	117.0	12.6	9	
3									5 8	
4				4.0 - 4.5	4-2	■			9	4.0
5									7 10	
6			- very stiff	6.0 - 6.5	4-3	■			16	3.5
			Bottom of boring at 6.5 feet Groundwater was not encountered							

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Boring No. 5
PAGE 1 OF 1

LOGGED BY: J. Shahmoradi
DRILL RIG: 2400 T SK-1
AUGER TYPE: 6" soild Stem

JOB NO.: 305065-001
DATE: December 16, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
0	AC		2-inches AC							
1	AB		22-inches AB						15	
2	ML		[none plastic] SANDY SILT; dark brown, very stiff, moist, fine sand	2.0 - 2.5	5-1	■	137.2	14.8	15 13	>4.5
3									7	
4			- light brown,trace fine gravel, orange mottling ▼	4.0 - 4.5	5-2	■	95.9	30.1	13 16	4.0
5									5	
6				6.0 - 6.5	5-3	■	91.6	33.2	10 10	1.5
7										
8			▽							
9									7	
10	CL		SANDY LEAN CLAY with GRAVEL; light brown, stiff, wet, fine to coarse sand and gravel, orange mottling	11.0 - 11.5	5-4	■			6 6	1.5
11										
12										
13										
14										
15	Bdrx		CLAYEY SANDSTONE/MUDSTONE; dark green to dark gray, very dense, wet, fine sand, intensely weathered, [no sample recovery]			■			50/1"	
16										
17										
18										
19										
20				20.0 - 20.3	5-6	■			50/4"	
21			Bottom of boring at 20 feet Groundwater initially encountered at 8.5 feet water level measured at 4.0 feet after drilling							
22										
23										
24										
25										
26										

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Boring No. 6

LOGGED BY: A. Hernandez
DRILL RIG: Geoprobe 7822DT
AUGER TYPE: 8" Hollow Stem

PAGE 1 OF 1
JOB NO.: 305065-001
DATE: December 17, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
0 - 1 - 2	CL		SANDY LEAN CLAY; gray to yellow brown, moist, hard, fine to coarse grained sand	1.5 - 2.0	6-1	■	101.9	19.5	26 50/4"	>4.5
3 - 4 - 5 - 6	SC		CLAYEY SAND; yellow brown, moist to wet, dense, fine to medium grained sand - grayish green - dense, gravels 0.5" to 1.0" diameter	3.5 - 4.0	6-2	■	82.2	26.1	25 50/3"	4.0
6 - 7 - 8 - 9 - 10 - 11 - 12 - 13 - 14 - 15			- grayish green to yellowish brown, gravels 0.5" to 1.0" diameter - wet, continued	5.0 - 5.5	6-3	■	93.7	18.2	50	1.5
				10.0 - 10.5	6-4	■			50/5"	1.5
				15.0 - 15.5	6-5	■			50/1"	
16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26			Bottom of boring at 15.5 feet Groundwater was encountered at 12.5 feet							

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Boring No. 7
PAGE 1 OF 1

LOGGED BY: J. Shahmoradi
DRILL RIG: Tractor
AUGER TYPE: 6" Solid Stem

JOB NO.: 305065-001
DATE: February 02, 2022

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
0	CL		SANDY LEAN CLAY; dark gray brown, moist, medium stiff, trace roots						2 4 6	
			[LL=34, PI=14]	1.5 - 2.0	7-1	■			3 11 12	1.25
3			- very stiff, fine sand	3.0 - 3.5	7-2	■	103.2	21.4	3 11 15	2.5
5			- grayish green	4.5- 5.0	7-3	■	101.8	20.0	8 13 15	2.0
10			- yellow brown, wet, orange mottling	9.5 - 10.0	7-4	■	87.6	33.2	23 50/6"	2.25
12	Bdrx		CLAYEY SANDSTONE/MUDSTONE; yellow brown, wet, soft, moderately weathered	12.0 - 12.5	7-5	■	76.1	40.8		
			Bottom of boring at 12.5 feet due to auger refusal Groundwater initially encountered at 11.5 feet water level measured at 5.5 feet after drilling							

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Boring No. 8

LOGGED BY: A. Hernandez
DRILL RIG: Geoprobe 7822DT
AUGER TYPE: 8" Hollow Stem

PAGE 1 OF 1
JOB NO.: 305065-001
DATE: December 17, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
0 - 1 - 2 -	SM		SILTY SAND; yellow brown to yellowish gray, moist, very dense, fine to medium grained sand, black mottling [none plastic]	1.5 - 2.0	8-1	■	98.7	29.0	35 40	>4.5
3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 -	SC		CLAYEY SAND; light gray, moist, dense, fine to medium grained sand - grayish green, fine to coarse grained sand, gravel fragments 0.5" to 1.0" diameter - grayish brown, continued, gravels fragments 0.5" to 1.0" diameter	3.5 - 4.0 5.5 - 6.0 8.5 - 9.5	8-2 8-3 8-4	■ ■ ●	85.6 72.1	22.8 23.9	24 50/5" 44 51/6" 24 50/5"	2.5 3.0
11 - 12 - 13 - 14 - 15 - 16 - 17 - 18 - 19 - 20 - 21 - 22 - 23 - 24 - 25 - 26 -			Bottom of boring at 10.5 feet Groundwater was not encountered							

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Boring No. 9
PAGE 1 OF 1

LOGGED BY: J. Shahmoradi
DRILL RIG: Tractor
AUGER TYPE: 6" Solid Stem

JOB NO.: 305065-001
DATE: February 02, 2022

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN.	POCKET PEN (t.s.f)
0	CL		SANDY LEAN CLAY; dark brown, moist, very stiff, trace roots							
1									7	
2				2.0 - 2.5	9-1	■	104.3	21.7	14 20	
3			- gray brown, orange mottling, fine sand						3	
4				4.0 - 4.5	9-2	■	99.0	22.0	7 10	
5			- stiff, trace fine to coarse subangular gravel							
6			- light yellow brown, very moist	6.0- 6.5	9-3	■	104.7	21.3	4 9 9	
7										
8			▼							
9			▽							
10									14	
11			MUDSTONE BEDROCK FRAGMENTS in CLAY MATRIX	10.0 - 10.5	9-4	■	78.3	38.8	50/1"	
12			Bottom of boring at 10.5 feet due to auger refusal Groundwater initially encountered at 9.5 feet water level measured at 8.3 feet after drilling							
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										

LEGEND: ■ 2.5" Mod Cal Sample ▭ Shelby ● SPT ○ Bulk Sample ▼ Final Groundwater ▽ Initial Groundwater

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

Earth Systems Pacific

Infiltration No. 1

LOGGED BY: A. Hernandez
AUGER TYPE: 8" Hollow Stem
DRILL RIG: Geoprobe 7822DT

PAGE 1 OF 1
JOB NO.: 305065-001
DATE: December 17, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN. 70 lbs Hammer	POCKET PEN (t.s.f)
0 - 3	CH		FAT CLAY; dark brown, wet, trace silts							
			Bottom of boring at 3.0' Groundwater encountered at 2.0' Hole caved in at the end of testing.							

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

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

Earth Systems Pacific

Infiltration No. 2

LOGGED BY: A. Hernandez
AUGER TYPE: 8" Hollow Stem
DRILL RIG: Geoprobe 7822DT

JOB NO.: 305065-001
DATE: December 17, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN. 70 lbs Hammer	POCKET PEN (t.s.f)
0	CH		FAT CLAY; dark brown, very moist							
3	Bdrx		SANDSTONE; dark gray, moist, few 0.5" diameter gravels ▼							
5			Bottom of boring at 5.0' Groundwater encountered at 4.0'							

LEGEND: ■ 2.5" Mod Cal Sample ▭ 2.0" Cal Sample ● SPT ○ Bulk Sample ▼ Groundwater

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

Earth Systems Pacific

Infiltration No. 3

LOGGED BY: A. Hernandez
AUGER TYPE: 8" Hollow Stem
DRILL RIG: Geoprobe 7822DT

JOB NO.: 305065-001
DATE: December 17, 2021

Sandraya Heights Subdivision
Sandraya Heights Road
Scotts Valley, California

DEPTH (feet)	USCS CLASS	SYMBOL	SOIL DESCRIPTION	SAMPLE DATA: INTERVAL (feet)	SAMPLE NUMBER	SAMPLE TYPE	DRY DENSITY (pcf)	MOISTURE (%)	BLOWS PER 6 IN. 70 lbs Hammer	POCKET PEN (t.s.f)
0	CH		FAT CLAY; dark brown, very moist, trace silts							
4	Bdrx		SANDSTONE; light yellowish brown, moist, fine to medium grained sand, occasional 0.5" diameter gravels	4.0 - 8.0	I-A	◯				
6			- olive brown							
8			- very dense, the drill rig is struggling to finish							
10			Bottom of boring at 10.0' No groundwater encountered.							

LEGEND: ▬ 2.5" Mod Cal Sample ▭ 2.0" Cal Sample ● SPT ◯ Bulk Sample ▽ Groundwater

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

APPENDIX B

Summary of Laboratory Test Results

Sandraya Heights
Subdivision

305065-001

BULK DENSITY TEST RESULTS

ASTM D 2937-17 (modified for ring liners)

February 2, 2022

BORING NO.	DEPTH feet	MOISTURE CONTENT, %	WET DENSITY, pcf	DRY DENSITY, pcf
1-2	2.0 - 2.5	29.1	119.6	92.6
1-3	4.0 - 4.5	28.2	125.3	97.8
2-2	2.0 - 2.5	15.8	138.0	119.1
2-3	4.0 - 4.5	20.2	140.2	116.6
3-2	2.0 - 2.5	26.3	129.3	102.4
3-4	5.0 - 5.5	23.5	91.1	73.7
4-2	2.0 - 2.5	12.6	131.6	117.0
5-2	2.0 - 2.5	14.8	96.6	84.2
5-3	4.0 - 4.5	30.1	124.8	95.9
5-4	6.0 - 6.5	33.2	121.9	91.6
6-1	1.5 - 2.0	19.5	121.7	101.9
6-2	3.5 - 4.0	26.1	103.7	82.2
6-3	5.0 - 5.5	18.2	110.8	93.7
7-2	3.0 - 3.5	21.4	125.2	103.2
7-3	4.5 - 5.0	20.0	122.1	101.8
7-4	9.5 - 10.0	33.2	116.6	87.6
7-5	12.0 - 12.5	40.8	107.1	76.1
8-1	1.5 - 2.0	29.0	127.3	98.7
8-2	3.5 - 4.0	22.8	105.1	85.6
8-3	5.5 - 6.0	23.9	89.2	72.1
9-1	2.0 - 2.5	21.7	126.9	104.3
9-2	4.0 - 4.5	22.0	120.7	99.0
9-3	6.0 - 6.5	21.3	127.0	104.7
9-4	10.0 - 10.5	38.8	108.8	78.3

Sandraya Heights
Light Brown Sand With Silt

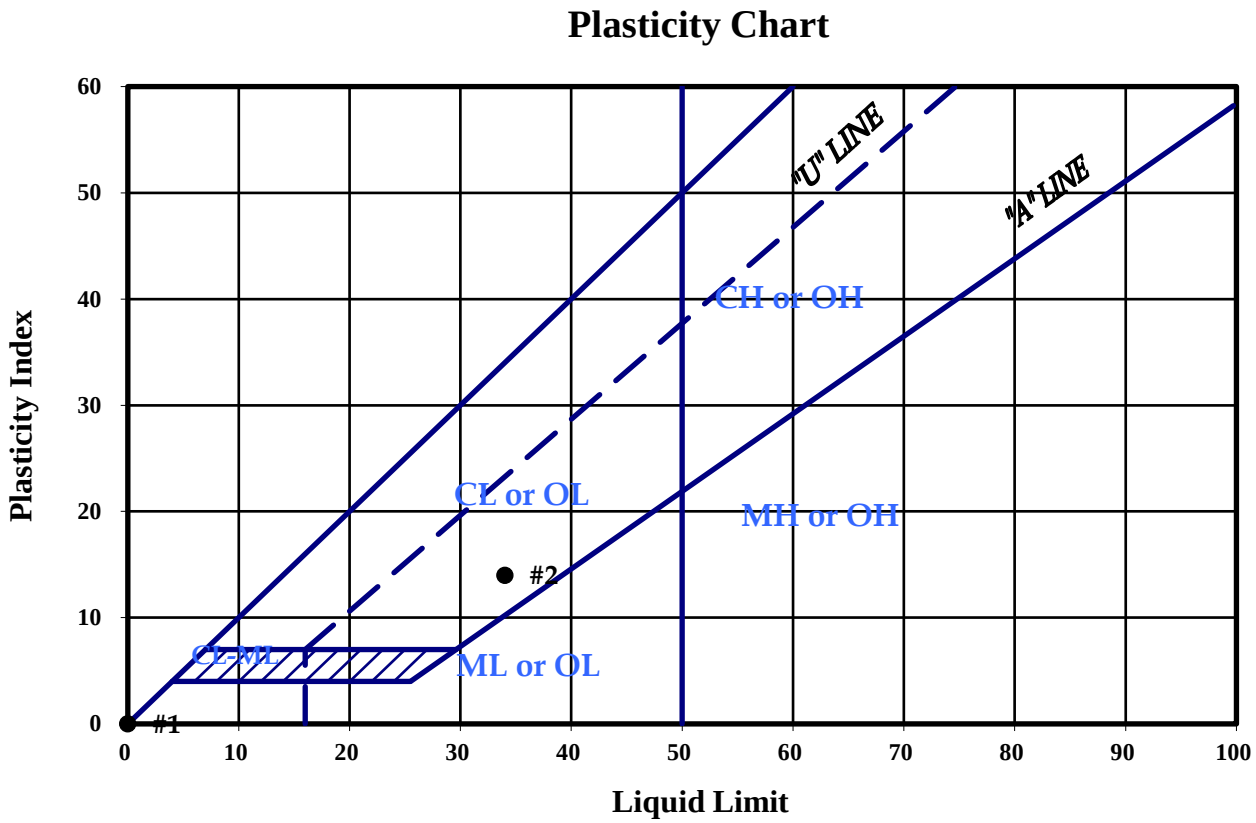
305065-001

PLASTICITY INDEX

ASTM D 4318-17

February 2, 2022

Test No.:	1	2	3	4	5
Boring No.:	5-1	7-1	8-1		
Sample Depth:	2.0 - 2.5'	1.5 - 2.0'	1.5 - 2.0'		
Liquid Limit:	Non-plastic	34	Non-plastic		
Plastic Limit:	Non-plastic	20	Non-plastic		
Plasticity Index:	Non-plastic	14	Non-plastic		



Sandraya Heights
Subdivision

305065-001

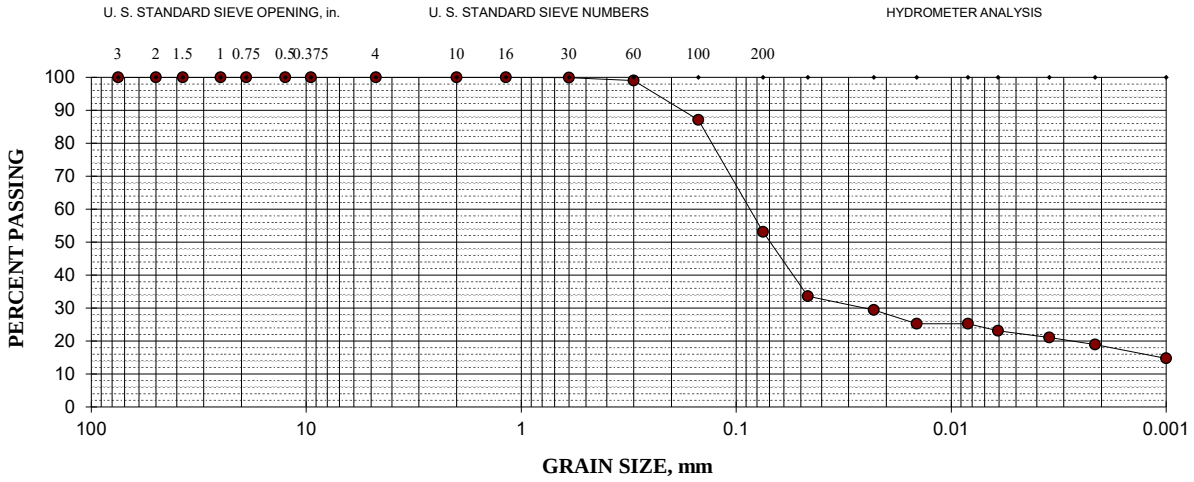
PARTICLE SIZE ANALYSIS

ASTM D 7928-16

Boring #5 @ 2.0 - 2.5'
Dark Brown Sandy Silt (ML)

#N/A
Specific Gravity = 2.65 (assumed)
Gravel = 0%; Sand = 47%; Silt = 32%; Clay = 21%

Sieve size	% Retained	% Passing
3" (75.0-mm)	0	100
2" (50.0-mm)	0	100
1-1/2" (37.5-mm)	0	100
1" (25.0-mm)	0	100
3/4" (19.0-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#10 (2.00-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600-µm)	0	100
#50 (300-µm)	1	99
#100 (150-µm)	13	87
#200 (75-µm)	47	53
Hydrometer Analysis		
46-µm		34
23-µm		29
14-µm		25
8-µm		25
6-µm		23
3.5-µm		21
2.1-µm		19
Colloids		15



Sandraya Heights
Subdivision

305065-001

PARTICLE SIZE ANALYSIS

ASTM D 7928-16

Boring #7 @ 1.5 - 2.0'

February 2, 2022

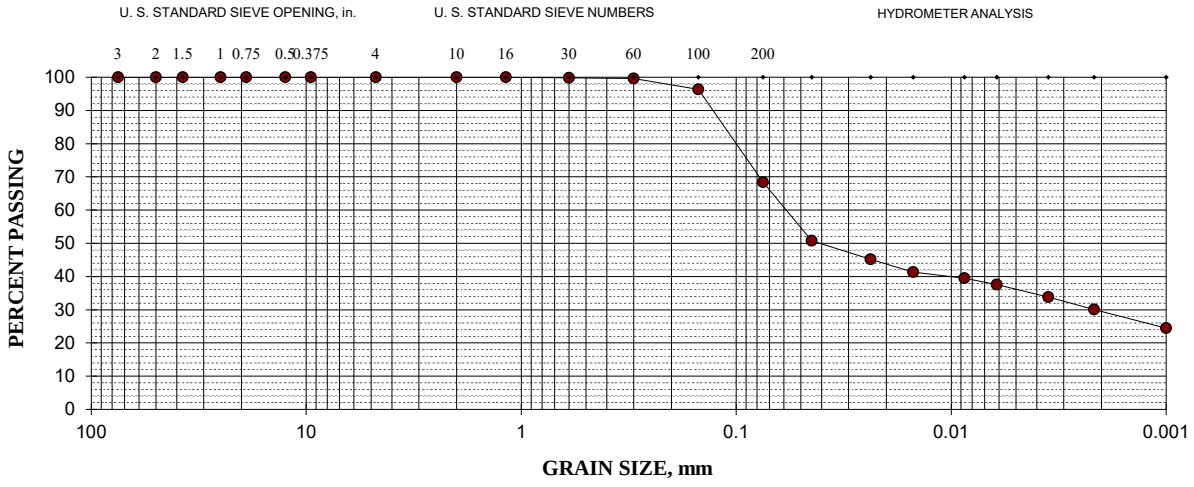
Dark Gray Brown Sandy Lean Clay

Specific Gravity = 2.65 (assumed)

LL = 34; PL = 20; PI = 14

Gravel = 0%; Sand = 32%; Silt = 34%; Clay = 34%

Sieve size	% Retained	% Passing
3" (75.0-mm)	0	100
2" (50.0-mm)	0	100
1-1/2" (37.5-mm)	0	100
1" (25.0-mm)	0	100
3/4" (19.0-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#10 (2.00-mm)	0	100
#16 (1.18-mm)	0	100
#30 (600-µm)	0	100
#50 (300-µm)	0	100
#100 (150-µm)	4	96
#200 (75-µm)	32	68
Hydrometer Analysis		
45-µm		51
24-µm		45
15-µm		41
9-µm		39
6-µm		38
3.5-µm		34
2.2-µm		30
Colloids		24



Sandraya Heights
Subdivision

305065-001

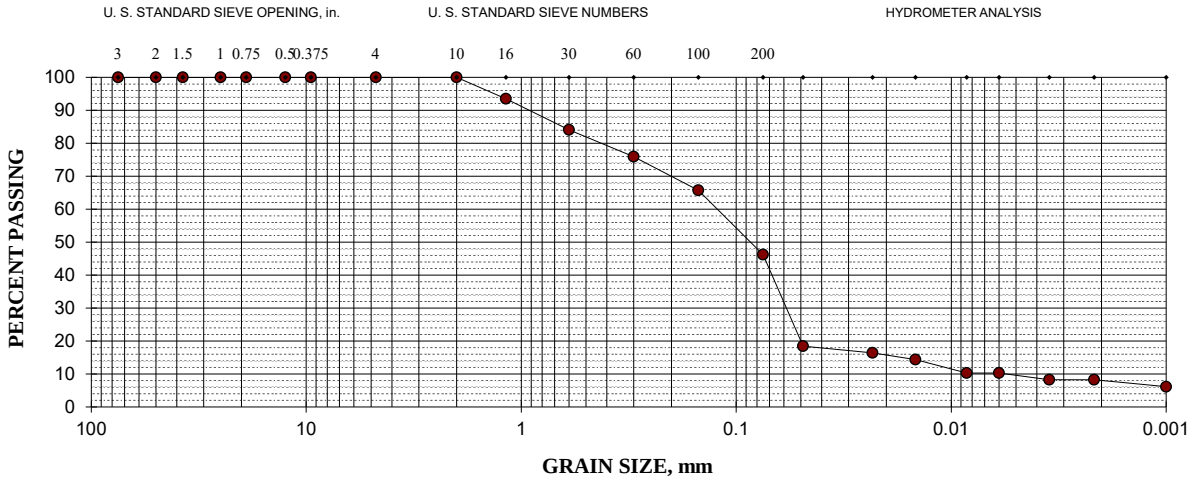
PARTICLE SIZE ANALYSIS

ASTM D 7928-16

Boring #8 @ 1.5 - 2.0'
Yellow Brown to Yellowish Gray Silty Sand (SM)

December 21, 2022
Specific Gravity = 2.65 (assumed)
Gravel = 0%; Sand = 54%; Silt = 38%; Clay = 8%

Sieve size	% Retained	% Passing
3" (75.0-mm)	0	100
2" (50.0-mm)	0	100
1-1/2" (37.5-mm)	0	100
1" (25.0-mm)	0	100
3/4" (19.0-mm)	0	100
1/2" (12.5-mm)	0	100
3/8" (9.5-mm)	0	100
#4 (4.75-mm)	0	100
#10 (2.00-mm)	0	100
#16 (1.18-mm)	7	93
#30 (600-µm)	16	84
#50 (300-µm)	24	76
#100 (150-µm)	34	66
#200 (75-µm)	54	46
Hydrometer Analysis		
49-µm		18
23-µm		16
15-µm		14
8-µm		10
6-µm		10
3.5-µm		8
2.2-µm		8
Colloids		6



Sandraya Heights Rd.
Scotts Valley

305065-001

DIRECT SHEAR continued

ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

Broing #6 @ 3.5 - 4.0'

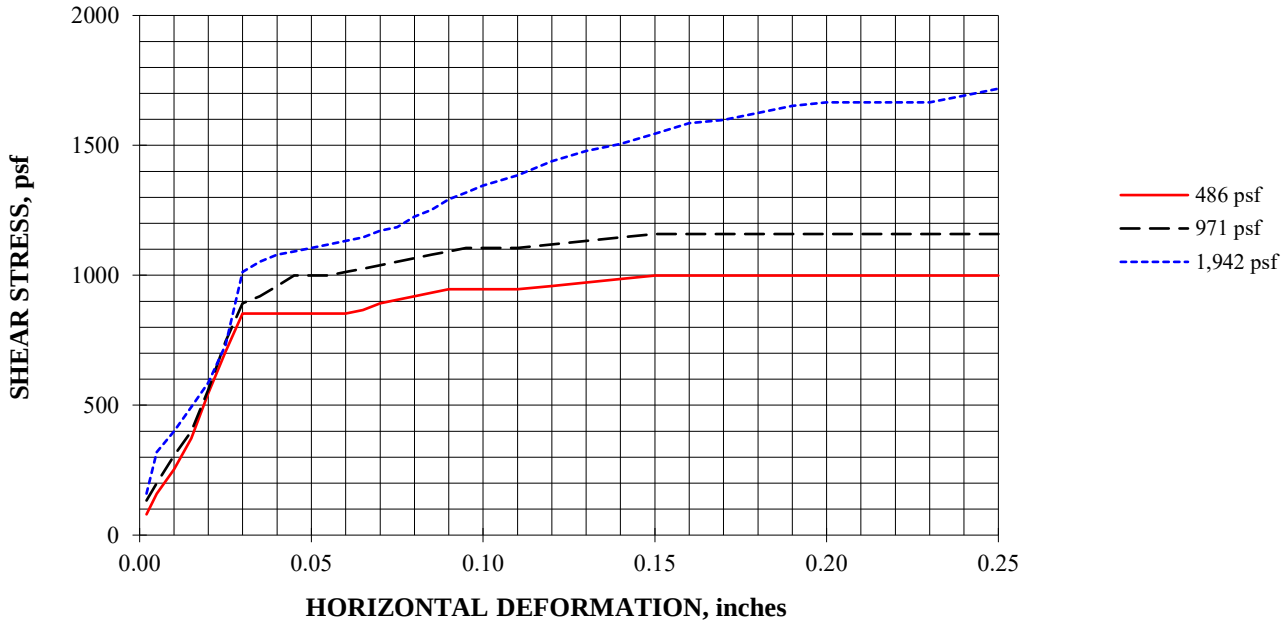
January 4, 2022

Sandy Lean Clay (CL)

Ring sample, saturated

SPECIFIC GRAVITY: 2.70 (assumed)

SAMPLE NO.:	1	2	3	AVERAGE
INITIAL				
WATER CONTENT, %	26.1	26.1	26.1	26.1
DRY DENSITY, pcf	83.2	89.2	85.6	86.0
SATURATION, %	68.8	79.3	72.8	73.7
VOID RATIO	1.024	0.889	0.968	0.960
DIAMETER, inches	2.410	2.410	2.410	
HEIGHT, inches	1.00	1.00	1.00	
AT TEST				
WATER CONTENT, %	36.9	31.7	33.7	
DRY DENSITY, pcf	84.4	91.7	89.0	
SATURATION, %	100.0	100.0	100.0	
VOID RATIO	0.996	0.838	0.893	
HEIGHT, inches	0.99	0.97	0.96	



Sandraya Heights Rd.
Scotts Valley

305065-001

DIRECT SHEAR

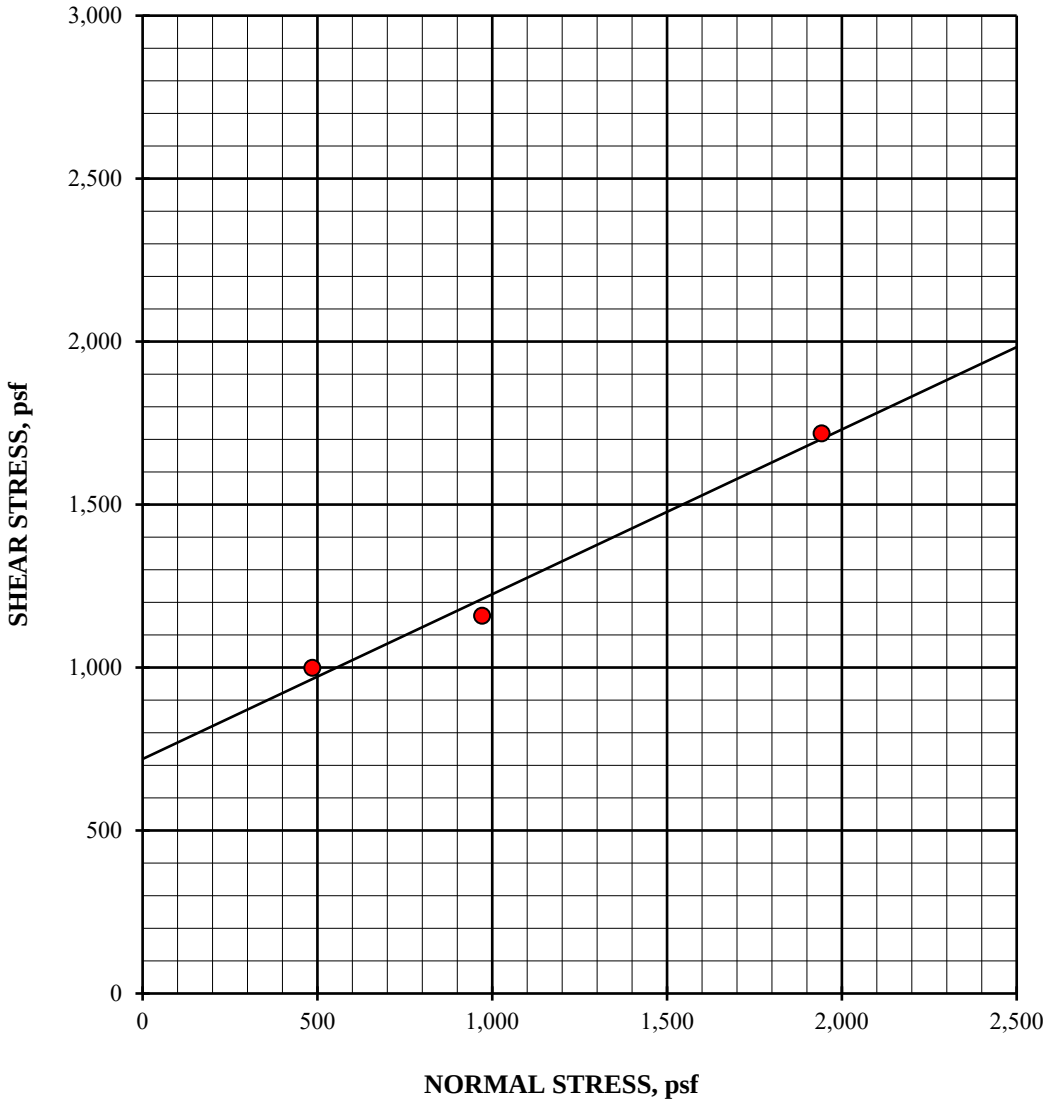
ASTM D 3080/D3080M-11 (modified for consolidated, undrained conditions)

January 4, 2022

Broing #6 @ 3.5 - 4.0'
Sandy Lean Clay (CL)
Ring sample, saturated

INITIAL DRY DENSITY: 86.0 pcf
INITIAL MOISTURE CONTENT: 26.1 %
PEAK SHEAR ANGLE (Ø): 27°
COHESION (C): 719 psf

SHEAR vs. NORMAL STRESS



Sandraya Heights Rd.
Scotts Valley

305065-001

RESISTANCE '*R*' VALUE AND EXPANSION PRESSURE

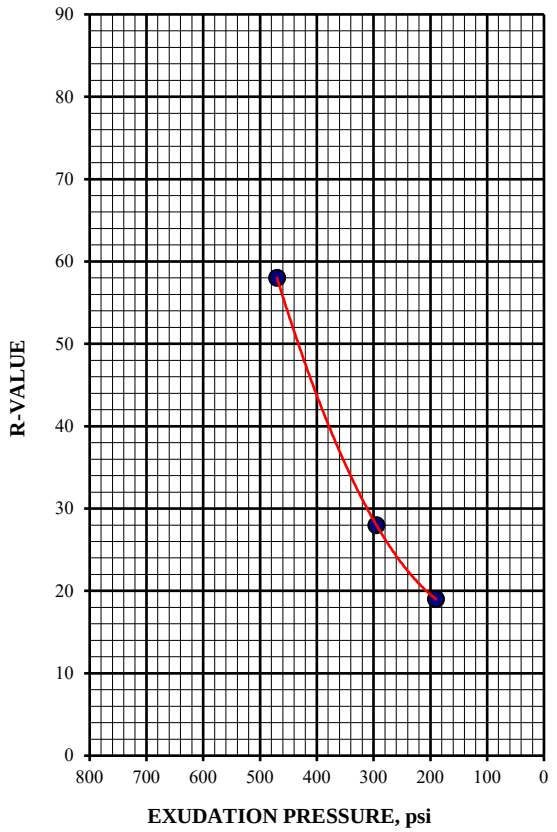
ASTM D 2844/D2844M-18

January 4, 2022

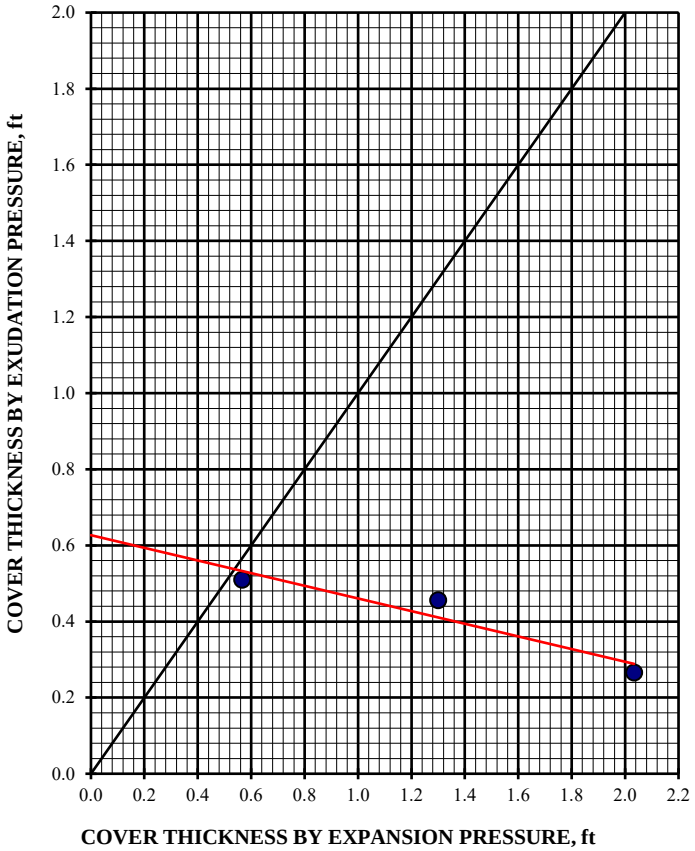
Composite Sample
Brown Clayey Sand (SC)
Specified Traffic Index: 5.0

Dry Density @ 300 psi Exudation Pressure: 119.5-pcf
%Moisture @ 300 psi Exudation Pressure: 18.9%
R-Value - Exudation Pressure: 29
R-Value - Expansion Pressure: 15
R-Value @ Equilibrium: 15

EXUDATION PRESSURE CHART



EXPANSION PRESSURE CHART



APPENDIX C

Infiltation Test Results

Project: Sandraya Heights Road, Scotts Valley

File No. 305065-001

INFILTRATION TEST RESULTS

INFILTRATION TEST: I-1

TEST HOLE DIAMETER: 6 inches

DATE DRILLED: 12/17/2021

CASING DIAMETER: 3 inches

DATE TESTED: 12/17/2021

TEST HOLE DEPTH: 2.8 feet

TECHNICIAN: AH

RISER HEIGHT: 0.9 feet

CONSTANT HEAD DATA

TEST DURATION: 2.5 hours

Time of Constant Head: 30 minutes

Reference of Measurement: Top of Riser

Volume Added During Constant Head: 0.67 cubic feet

Water Present at: 2 feet

FALLING HEAD DATA

INTERVAL (Minutes)	READING (Feet)	INCREMENTAL FALL (Feet)	INFILTRATION RATE (Minutes / Inch)	INFILTRATION RATE (Inches / Hour)
Start	0.78	---	---	---
20	1.10	0.32	5.2	11.5
20	1.14	0.04	41.7	1.4
20	1.15	0.01	166.7	0.4
20	1.16	0.01	166.7	0.4
20	1.17	0.01	166.7	0.4
20	1.17	0.00	#DIV/0!	0.0

Project: Sandraya Heights Road, Scotts Valley

File No. 305065-001

INFILTRATION TEST RESULTS

INFILTRATION TEST: I-2

TEST HOLE DIAMETER: 6 inches

DATE DRILLED: 12/17/2021

CASING DIAMETER: 3 inches

DATE TESTED: 12/17/2021

TEST HOLE DEPTH: 5.2 feet

TECHNICIAN: AH

RISER HEIGHT: 1.60 feet

CONSTANT HEAD DATA

TEST DURATION: 2.5 hours

Time of Constant Head: 30 minutes

Reference of Measurement: Top of Riser

Volume Added During Constant Head: 0.67 cubic feet

Water Present at: 4 feet

FALLING HEAD DATA

INTERVAL (Minutes)	READING (Feet)	INCREMENTAL FALL (Feet)	INFILTRATION RATE (Minutes / Inch)	INFILTRATION RATE (Inches / Hour)
Start	1.65	---	---	---
20	1.75	0.10	16.7	3.6
20	1.80	0.05	33.3	1.8
20	1.85	0.05	33.3	1.8
20	1.90	0.05	33.3	1.8
20	1.95	0.05	33.3	1.8
20	2.00	0.05	33.3	1.8

Project: Sandraya Heights Road, Scotts Valley

File No. 305065-001

INFILTRATION TEST RESULTS

INFILTRATION TEST: I-3

TEST HOLE DIAMETER: 6 inches

DATE DRILLED: 12/17/2021

CASING DIAMETER: 3 inches

DATE TESTED: 12/17/2021

TEST HOLE DEPTH: 9.15 feet

TECHNICIAN: AH

RISER HEIGHT: 1.85 feet

CONSTANT HEAD DATA

TEST DURATION: 2.5 hours

Time of Constant Head: 30 minutes

Reference of Measurement: Top of Riser

Volume Added During Constant Head: 2.67 cubic feet

Water Present at: N/A

FALLING HEAD DATA

INTERVAL (Minutes)	READING (Feet)	INCREMENTAL FALL (Feet)	INFILTRATION RATE (Minutes / Inch)	INFILTRATION RATE (Inches / Hour)
Start	1.96	---	---	---
20	2.08	0.12	13.9	4.3
20	2.12	0.04	41.7	1.4
20	2.13	0.01	166.7	0.4
20	2.13	0.00	#DIV/0!	0.0
20	2.13	0.00	#DIV/0!	0.0
20	2.13	0.00	#DIV/0!	0.0

Appendix E

Stormwater Control Plan

PRELIMINARY

Stormwater Control Plan

for

The Casa Way Residential Development

Revised March 23, 2023

Granite Ridge Properties
255 Demeter St.
East Palo Alto, California 94303
(408) 799-7395

prepared by:

C2G/Civil Consultants Group, Inc.
4444 Scotts Valley Drive, Suite 6
Scotts Valley, California 95066
(831) 438-4420

Table of Contents

I. Project Data 3

II. Setting 4

II.A. Project Location and Description 4

II.B. Existing Site Features and Conditions 5

II.C. Opportunities and Constraints for Stormwater Control 5

III. Low Impact Development Design Strategies 6

III.A. Optimization of Site Layout 6

III.A.1. Limitation of development envelope 6

III.A.2. Preservation of natural drainage features 6

III.A.3. Setbacks from creeks, wetlands, and riparian habitats 6

III.A.4. Minimization of imperviousness 6

III.A.5. Use of drainage as a design element 6

III.B. Use of Permeable Pavements 6

III.C. Dispersal of Runoff to Pervious Areas 6

IV. Documentation of Drainage Design 7

IV.A. Descriptions of each Drainage Management Area 7

IV.A.1. Table 2: Drainage Management Areas 7

IV.A.2. Drainage Management Area Descriptions 7

IV.B. Tabulation and Sizing Calculations 9

IV.B.1. Table 3: Information Summary for LID Facility Design 9

IV.B.2. Self-Treating Areas 9

IV.B.3. Self-Retaining Areas 9

IV.B.4. Areas Draining to Self-Retaining Areas 9

IV.B.5. Table 4: Areas Draining to Bioretention Facilities (Tier 4 Projects) 10

V. Source Control Measures 10

V.A. Site activities and potential sources of pollutants 14

V.B. Table 5: Source Control Table 14

V.C. Features, Materials, and Methods of Construction of Source Control BMPs 14

VI. Stormwater Facility Maintenance 15

VI.A. Ownership and Responsibility for Maintenance in Perpetuity 15

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility 15

VII. Construction Checklist 15

VIII. Certifications 16

Tables

Table 1. Project Data 1
Table 2 Drainage Management Areas 4
Table 3 Information Summary for LID Facility Design 4
Table 4 Areas Draining to Bioretention Facilities 5
Table 5. Source Control 6

Figures

Vicinity Map 2

Attachments

Attachment A: C4.2 Stormwater Control Plan
Attachment B: Soils Data
Attachment C: Stormwater Control Measures Sizing Calculator
SWM-17, SV BMP Sizing Calculator, Restrictor Calculator, Prinsco Hydrostar Calculator
Attachment D: Underground Stage Storage for SCMs 10, 11, 12 & 13

Appendices

I. Project Data

Table 1. Project Data

Project Name/Number	Casa Way Residential Subdivision
Application Submittal Date	TBD
Project Location	APN 023-113-36
Project Phase No.	NA
Project Type and Description	9 new single family residential parcels
Total Project Site Area (acres)	5.714
Total Impervious Surface Area	79,118
Watershed Management Zone(s)	1
Design Storm Frequency and Depth	95th percentile – 24 hr rainfall depth = 2.6”
Urban Sustainability Area	None

II. Setting

II.A. Project Location and Description

The project is located North of the intersection of Scotts Valley Drive and Granite Creek Road where a vacant lot now exists. The project proposes to create 9 residential parcels. Various aspects of the site and the proposed development were considered in the design of the Stormwater Best Management Practices (BMPs). The design incorporates the Infiltration/Harvesting and Use Feasibility worksheet. Due to the drainage patterns and soil classification of the proposed site, the project is divided into thirty-four (34) drainage management areas (DMA). This project implements the installation of underground storage and infiltration chambers as well as bio-retention areas for post-construction storm water best management practices (BMP's), treating the site runoff from new and/or replaced impervious areas.

The proposed development is comprised of 9 single-family residential buildings. Access is provided by a new access road off of Casa Way with a Cul de Sac and concrete drive aprons to 6 lots as well as connecting the driveway entrances to four of the existing lots on Sandraya Heights Road (210, 212, 214 & 216 Sandraya Heights Road. An additional Cul de Sac is provided on San Augustine Way to give access to the remaining 3 proposed lots. There are a number of additional parking proposed within the new access road. All the roofing materials are also considered to be essentially impervious. See Attachment A for C5.1 the project stormwater control plan. This plan shows the locations of all stormwater mitigation facilities.

See Figure 1: Vicinity map on page 2 with a red arrow pointing to the project location indicated by a gray box.

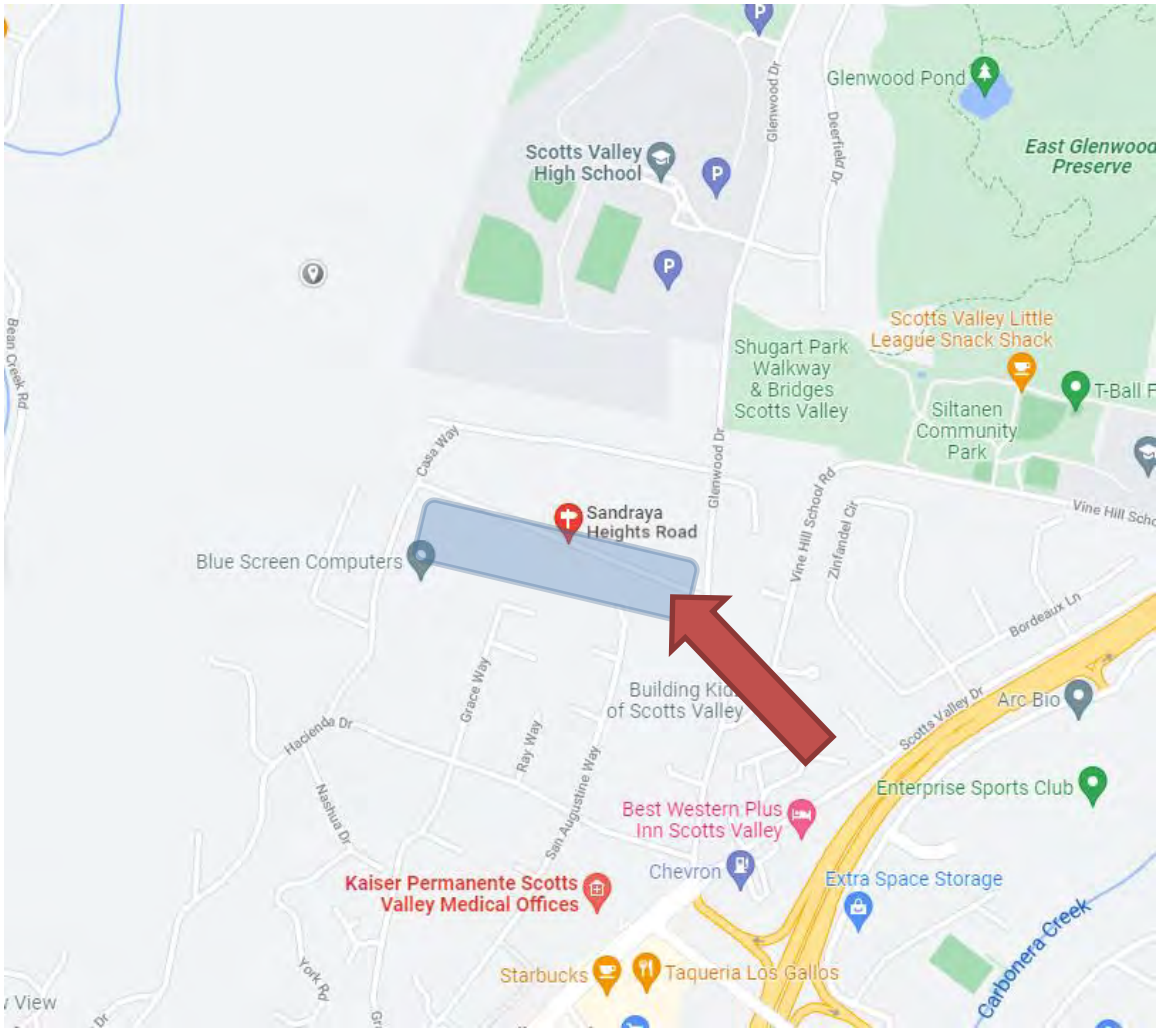


Figure 1: Vicinity map

II.B. Existing Site Features and Conditions

The site is an irregular polygon formed by an existing lot along Sandraya Heights Road, immediately east of the intersection with Glenwood Drive. The Casa Way Development project abuts Casa Way to the West and a portion abuts Glenwood Drive to the East. The entirety of the project is surrounded by single family zoning parcels with the exception of the Scotts Valley fire district across Sandraya Heights Road at the Northeast side of the lot.

Soils at the site consist primarily of Bonnydoon loam (Soil Type 116). A map indicating the extents of both soil types is included in Attachment B, along with complete soil data for both soil types.

II.C. Opportunities and Constraints for Stormwater Control

The site presents several conditions that help determine appropriate stormwater control measures for the project. The site slopes down towards Glenwood Drive from Casa Way. The site area is comprised primarily of Soil Type 116, which features an infiltration rate per the National Resources Conservation Service (NRCS) ranging from a low of 0.03-in/hr to a high of 0.28-in/hr. Onsite percolation tests were conducted by the project geotechnical engineer. Three tests were conducted. Of the three, two tests concluded very low infiltration rates and the third had a moderately high infiltration rate however, groundwater was encountered only 4-feet below grade. The findings from

the onsite infiltration test demonstrate the infeasibility to retain the volume of the 85th percentile storm due to soil type significantly limiting infiltration.

With the inability to infiltrate onsite for treatment and LID practices, the proposed storm water design includes bio-retention areas in order to allow stormwater to infiltrate through the imported high-infiltrating soil (5 inch per hour minimum infiltration rate).

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

III.A.1. Limitation of development envelope

Proposed improvements on the site are proposed in a way to mimic existing runoff pathways. This limitation of the development envelope provides a minimization of earthwork needed on site.

III.A.2. Preservation of natural drainage features

The site has no natural drainage features (creeks, swales, etc.), but rather provides a generalized sheet flow across the entirety of the site. This sheet flow condition is maintained outside of the development envelope.

III.A.3. Setbacks from creeks, wetlands, and riparian habitats

No such features affect the site.

III.A.4. Minimization of imperviousness

Buildings are single-family residentioal, reducing roof area, and majority are clustered close to Sandraya Heights Road, reducing the need for extended impervious driveways.

III.A.5. Use of drainage as a design element

Wherever possible, surface drainage is used as a design element.

III.B. Use of Permeable Pavements

Turf Block (Grass Pavers) designed to withstand H-20 loading is being proposed at the EVA between proposed lots 4 and 5.

III.C. Dispersal of Runoff to Pervious Areas

Runoff from pervious areas is allowed to sheet flow across downslope pervious areas. Runoff from impervious areas is collected and conveyed to storm water treatment areas.

IV. Documentation of Drainage Design

IV.A. Descriptions of each Drainage Management Area

IV.A.1. Table 2: Drainage Management Areas

DMA Name	Surface Type	Area (square feet)
1A	Roof	3,110
1A	Conc. Dwy	1,309
1A	Landscape	1,171
1B	Landscape	4,821
1C	Landscape	10,626
2A	Roof	2,903
2A	Conc. Dwy	1,480
2A	Landscape	1,172
2B	Landscape	4,470
2C	Landscape	12,828
3A	Roof	3,154
3A	Conc. Dwy	649
3A	Landscape	1,981
3B	Landscape	4,087
3C	Landscape	11,635
4A	Roof	2,903
4A	Conc. Dwy	1,043
4A	Landscape	1,996
4B	Landscape	2,972
4C	Landscape	11,380
5A	Roof	2,903
5A	Conc. Dwy	972
5A	Landscape	1,848
5B	Landscape	5,256
5C	Landscape	9,500
6A	Roof	3,154
6A	Conc. Dwy	581
6A	Landscape	710
6B	Landscape	7,196
6C	Landscape	8,189
7A	Roof	2,903
7A	Conc. Dwy	1,030
7A	Landscape	678
7B	Landscape	9,018
7C	Landscape	6,612
8A	Roof	3,110
8A	Conc. Dwy	962
8A	Landscape	544
8B	Landscape	9,175
8C	Landscape	6,100
9A	Roof	3,154
9A	Conc. Dwy	1,669
9B	Conc.	339
9B	Landscape	2,296
9C	Landscape	7,074
9D	Landscape	5,547
CA1	Asphalt	14,294
CA1	Conc.	7,591
CA1	Turf Block	3,448
CA1	Landscape	10,529
CA2	Asphalt	8,349
CA2	Con.	2,787
CA2	Landscape	2,183
CA3	Conc.	3,323
CA3	Landscape	4,617
CA4	Asphalt	4,581
CA4	Conc.	689
CA4	Landscape	226

IV.A.2. Drainage Management Area Descriptions

DMA 1A, totaling 5,590 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 1.

DMA 1B, totaling 4,821 square feet, landscape area only. DMA drains to the SCM 1.

DMA 1C, totaling 10,626 square feet, landscape area only. (Self-treating)

DMA 2A, totaling 5,555 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 2.

DMA 2B, totaling 4,470 square feet, landscape area only. DMA drains to the SCM 2.

DMA 2C, totaling 12,828 square feet, landscape area only. (Self-treating)

DMA 3A, totaling 5,784 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 3.

DMA 3B, totaling 4,087 square feet, landscape area only. DMA drains to the SCM 3.

DMA 3C, totaling 11,635 square feet, landscape area only. (Self-treating)

DMA 4A, totaling 5,942 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 4.

DMA 4B, totaling 2,972 square feet, landscape area only. DMA drains to the SCM 4.

DMA 4C, totaling 11,380 square feet, landscape area only. (Self-treating)

DMA 5A, totaling 5,723 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 5.

DMA 5B, totaling 5,256 square feet, landscape area only. (Self-treating)

DMA 5C, totaling 9,500 square feet, landscape area only. (Self-treating)

DMA 6A, totaling 4,445 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 6.

DMA 6B, totaling 7,196 square feet, landscape area only. DMA drains to the SCM 6.

DMA 6C, totaling 8,189 square feet, landscape area only. (Self-treating)

DMA 7A, totaling 4,611 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 7.

DMA 7B, totaling 9,018 square feet, landscape area only. (Self-treating)

DMA 7C, totaling 6,612 square feet, landscape area only. DMA drains to the SCM 7.

DMA 8A, totaling 4,616 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 8.

DMA 8B, totaling 9,175 square feet, landscape area only. (Self-treating)

DMA 8C, totaling 6,100 square feet, landscape area only. DMA drains to the SCM 8.

DMA 9A, totaling 4,823 square feet, drains roofs, driveways, walkways, and minimal landscaping. DMA drains to the SCM 9.

DMA 9B, totaling 2,635 square feet, walkways, and landscape. DMA drains to the SCM 9.

DMA 9C, totaling 7,074 square feet, landscape area only. (Self-treating)

DMA 9D, totaling 5,547 square feet, landscape area only. DMA drains to the SCM 9.

DMA CA1, totaling 35,862 square feet, driveways, walkways, asphalt, and landscape area. DMA CA1 drains to SCM 10

DMA CA2, totaling 13,319 square feet, driveways, walkways, asphalt, and landscape area. DMA CA2 drains to SCM 11

DMA CA3, totaling 7,940 square feet, walkways, and landscape area. DMA CA3 drains to SCM 12

DMA CA4, totaling 5,496 square feet, driveways, asphalt, and minimal landscape area. DMA CA4 drains to SCM 12

IV.B. Tabulation and Sizing Calculations

IV.B.1. Table 3: Information Summary for LID Facility Design

Total Project Area (Square Feet)	248,825
Design Storm Depth	2.6-in
Applicable Requirements	Tier 1/Tier 2/Tier 3/Tier 4

IV.B.2. Self-Treating Areas

DMA Name	Area (square feet)
1C	*10626*
2C	*12828*
3C	*11635*
4C	*11,380*
5C	*9500*
6C	*8189*
7B	*9018*
8B	*9175*
9C	*7074*
9D	*5547*

IV.B.3. Self-Retaining Areas

None

IV.B.4. Areas Draining to Self-Retaining Areas

No project areas drain to self-retaining areas

IV.B.5. Table 4: Areas Draining to Bioretention Facilities

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 1 (Bio-retention Area)		
1A	3,110	Roof	0.9	2,799			
1A	1,309	Conc. Dwy	0.9	1,178			
1A	1,171	Landscape	0.25	293	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
1B	4,821	Landscape	0.25	1,205			
Total>				5,475	0.04	219	339

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 2 (Bio-retention Area)		
2A	2,903	Roof	0.9	2,613			
2A	1,480	Conc. Dwy	0.9	1,332			
2A	1,172	Landscape	0.25	293	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
2B	4,470	Landscape	0.25	1,118			
Total>				5,356	0.04	214	409

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 3 (Bio-retention Area)		
3A	3,154	Roof	0.9	2,839			
3A	649	Conc. Dwy	0.9	584			
3A	1,981	Landscape	0.25	495	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
3B	4,087	Landscape	0.25	1,022			
Total>				4,940	0.04	209	339

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 4 (Bio-retention Area)		
4A	2,903	Roof	0.9	2,613			
4A	1,043	Conc. Dwy	0.9	939			
4A	1,996	Landscape	0.25	499	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
4B	2,972	Landscape	0.25	743			
Total>				4,794	0.04	203	517

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 5 (Bio-retention Area)		
5A	2,903	Roof	0.9	2,613			
5A	972	Conc. Dwy	0.9	875			
5A	1,848	Landscape	0.25	462	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
5B	5,256	Landscape	0.25	1,314			
Total>				5,264	0.04	210	367

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 6 (Bio-retention Area)		
6A	3,154	Roof	0.9	2,839			
6A	581	Conc. Dwy	0.9	523			
6A	710	Landscape	0.25	178	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
6B	7,196	Landscape	0.25	1,799			
Total>				5,466	0.04	214	468

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 7 (Bio-retention Area)		
7A	2,903	Roof	0.9	2,613			
7A	1,030	Conc. Dwy	0.9	927	SCM Rough Sizing	Minimum SCM	Proposed SCM

7A	678	Landscape	0.25	170	factor	Size	Size
7C	6,612	Landscape	0.25	1,653			
Total>				5,363	0.04	215	364

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 8 (Bio-retention Area)		
8A	3,110	Roof	0.9	2,799			
8A	962	Conc. Dwy	0.9	866			
8A	544	Landscape	0.25	136	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
8C	6,100	Landscape	0.25	1,525			
Total>				5,326	0.04	213	344

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 9 (Bio-retention Area)		
9A	3,154	Roof	0.9	2,839			
9A	1,669	Conc. Dwy	0.9	1,502			
9B	339	Conc.	0.9	305	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
9B	2,296	Landscape	0.25	574			
Total>				5,220	0.04	208	261

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 10 (Bio-retention Area)		
CA1	0	Roof	0.9	0			
CA1	21,885	Conc / Asphalt	0.9	19,697			
CA1	3,448	Grass Pavers	0.15	517	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
CA1	10,529	Landscape	0.25	2,632			
Total>				22,402	0.04	914	914

DMA Name	DMA Area (square feet)	Post-project surface type	DMA Runoff factor	DMA Area × runoff factor	SCM Name		
					SCM 11 (Bio-retention Area)		
CA2	0	Roof	0.9	0			
CA2	8,349	Asphalt	0.9	7,514			
CA2	2,787	Conc.	0.9	2,508	SCM Rough Sizing factor	Minimum SCM Size	Proposed SCM Size
CA2	2,183	Landscape	0.25	546			
Total>				10,568	0.04	423	432

IV.B.6. Areas Draining to Tree Filter Boxes

DMA CA4 has space limitations that does not easily allow for bio-retention treatment. A Tree Filter Box has been proposed within the new Cul-de-sac to treat the storm water runoff. The Tree Filter Box utilizes high-infiltrating soil media for the storm water to infiltrate through, treating it prior to it releasing into the public storm water system. The Impervious Area for CA4 = 5,270 sq. ft. (0.121 acres). This amount also totals the entire DMA.

The storm intensity for the 85th percentile storm is approximately 1.6 inches per hour (based on county of Santa Cruz Figure SWM-3)

Peak flow for a 2-year storm in DMA CA4 =

Q = C I A = (0.95) X (1.6) x (0.121) = 0.184 CFS

Tree Filter Box selected consists of an internal Bypass to convey stormwater up to 1.89 CFS

IV.B.7. Runoff Retention

Due to the site soil conditions that are prohibiting infiltration a Retention Alternative Compliance Calculation has been prepared. Refer to Table below, which shows that the project SCMs exceed 10% of the project's EISA:

RETENTION ALTERNATIVE COMPLIANCE CALCULATIONS	
EQUIVALENT IMPERVIOUS SURFACE AREA (EISA)	89,372
TOTAL IMPERVIOUS SURFACES	78,601
DISTURBED SOILS (@0.15)	10,771
SCM AREA TOTAL	9,375
BIO-RETENTION	4,653
TURF BLOCK	3,448
CHAMBERS	1,250
FILTERRA DEVICE	24
SCM AREA DIVIDED BY EISA	10.49%

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

Activities on the site include driving, parking, trash collection, landscape fertilization and weed control.

V.B. Table 5: Source Control Table

Potential Pollution Source	Structural Controls	BMPs
On-site storm drain inlets	1. Mark all inlets "No Dumping! Flows to Bay" 2. Bio-retention areas allow for sedimentation and settling of pollutants.	1. Maintain markings 2. Document SWPPP and provide into all new site owners & lessees 3. Include discharge restrictions in all leases. 4.Maintain bio-retention areas
Parking of vehicles in individual interior garages	Garage floor drains shall be plumbed to the sanitary sewer, not the storm drain system	Include floor drain maintenance requirements in all leases.
Outdoor building/landscape maintenance	1. Landscaping designed to minimize runoff 2. Plants selected according to conditions in each location (flooding, adjacent hardscape, etc.)	1. Minimize use of pesticides 2. Provide operational BMPs and procedures to all tenants and any new owners 3. Maximize use of bio-degradable cleaners and other chemicals

V.C. Features, Materials, and Methods of Construction of Source Control BMPs

All runoff from the proposed buildings and driveways are directed to individual SCMs (one per each proposed residential lot) that provides treatment by Bio-retention. These individual SCMs are numbered #1 through #9, which matches the proposed Lot number it resides on.

All runoff from proposed access roads and sidewalk impervious areas is directed to either SCM #11, #12, #13 & #14 which provides treatment by means of bio-retention areas and tree filter box.

V.D. Source Control BMPs For Peak Flow Management

All runoff excluding runoff from 7A, 7C, 8A, 8C, 9A, 9B, and self treating areas are treated in respective Bio-retention areas, or in the case of CA4 a tree filter box with Bio-treatment soil. After treatment stormwater is detained in the underground storage vessel in SCM #12 and released at a 10-year pre-development rate. Runoff from DMAs 7A, 7C, 8A, 8C, 9A, 9B are treated in respective Bio-retention areas with underground storage vessels to detain and release stormwater at a pre-development rate.

Volumes have been sized based on the Santa Cruz County figure SWM-17 and shown in attachment C of this report.

VI. Stormwater Facility Maintenance

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

The Project Developer accepts responsibility for the operation and maintenance of stormwater treatment and flow control facilities for the life of the project. The City's standard Stormwater Maintenance Agreement shall be submitted separately by the Developer. Upon completion of the project, responsibility for all mitigation measures shall become the responsibility of the Homeowner's Association. 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.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

Monthly inspections during the rainy season by the maintenance crew will include checking for trash and debris, checking for standing water, inspecting storm water intermediaries such as downspouts, checking for sediment accumulation, checking health of vegetation and checking appearance of soils in self-retaining areas. The schedule of routine SCM maintenance and inspections shall be bi-annually with additional inspections and/or maintenance as required. If the results of an inspection recommend additional maintenance of the SCM, the inspector shall notify the owner and provide a detailed list of the work to be done.

VII. Construction Checklist

Stormwater Control Plan

ID	BMP Description	See Plan Sheet #s
SCM 1	Bio-retention Area	C2.1 & C5.1
SCM 2	Bio-retention Area	C2.1 & C5.1
SCM 3	Bio-retention Area	C2.1 & C5.1
SCM 4	Bio-retention Area	C2.1 & C5.1
SCM 5	Bio-retention Area	C2.1 & C5.1
SCM 6	Bio-retention Area	C2.1 & C5.1
SCM 7	Bio-retention Area & UG Chamber	C2.1 & C5.1
SCM 8	Bio-retention Area & UG Chamber	C2.1 & C5.1
SCM 9	Bio-retention Area & UG Chamber	C2.1 & C5.1

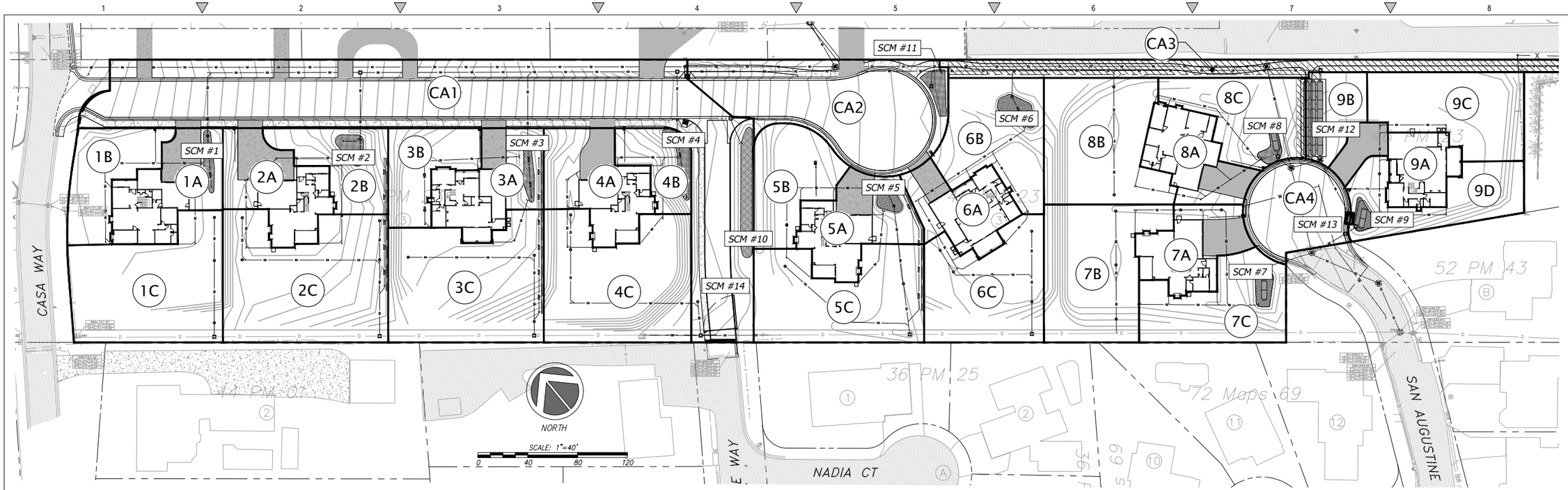
SCM 10	Bio-retention Area	C2.1 & C5.1
SCM 11	Bio-retention Area	C2.1 & C5.1
SCM 12	Underground Chamber System	C2.1 & C5.1
SCM 13	Tree Filter Box	C2.1 & C5.1
SCM 14	Grass Pavers	C2.1 & C5.1

VIII. 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's Stormwater Technical Guide.

ATTACHMENT A

- C5.1 Stormwater Control Plan



GENERAL SITE AND STORM DRAINAGE FACILITY MAINTENANCE

PAVEMENTS:

1. COLLECT TRASH AND SWEEP PAVEMENTS REGULARLY TO PREVENT ACCUMULATION OF SOIL, DEBRIS, AND TRASH.

LANDSCAPING:

1. REMOVE DEBRIS AND TRASH REGULARLY.
2. PRUNE OR CUT BACK PLANTS FOR HEALTH AND TO ENSURE STORMWATER IS ABLE TO FLOW INTO INLETS AND THROUGH CURB CUTS.
3. CONTROL WEEDS BY MANUAL METHODS.
4. EXAMINE THE VEGETATION TO ENSURE THAT IT IS HEALTHY AND DENSE ENOUGH TO PROTECT SOILS FROM EROSION. REMOVE AND REPLACE ALL DEAD AND DISEASED VEGETATION.

STORM DRAIN INLETS AND PIPES

1. CLEAN STORM DRAIN INLETS AND OTHER CONVEYANCE STRUCTURES BEFORE THE WET SEASON TO REMOVE SEDIMENTS, TRASH AND DEBRIS ACCUMULATED DURING THE SUMMER.
2. CONDUCT INSPECTIONS AND CLEAN AND MAINTAIN STORM DRAIN INLETS AND STORM DRAIN PIPES DURING THE RAINY SEASON ON A FREQUENCY NECESSARY TO MAINTAIN THE SYSTEM IN PROPER WORKING ORDER.

ANNUALLY, PRIOR TO THE BEGINNING OF THE RAINY SEASON:

1. REMOVE TRASH, DEBRIS, DEAD VEGETATION, AND ACCUMULATED SEDIMENT.
2. VISUALLY INSPECT ALL FACILITIES TO DETERMINE IF ANY MAINTENANCE ACTIVITIES ARE REQUIRED IN ORDER TO BE PREPARED FOR THE UPCOMING SEASON.
3. INSPECT DRAINAGE OUTLETS FOR SIGNS OF EROSION OR PLUGGING. IF MINOR EROSION IS OBSERVED, BACKFILL THE ERODED AREA. ROCK RIP RAP OR A CONCRETE SPLASH PAD MAY BE NEEDED TO AVOID FUTURE EROSION. IF SIGNIFICANT EROSION IS OBSERVED, CONSULT A CIVIL ENGINEER OR LANDSCAPE ARCHITECT.
4. INSPECT SOIL SLOPES FOR EVIDENCE OF INSTABILITY OR EROSION. IF MINOR EROSION IS OBSERVED, BACKFILL THE ERODED AREA, AND COVER THE AREA WITH MULCH OR EROSION CONTROL BLANKET TO PREVENT FUTURE EROSION. IF SIGNIFICANT EROSION IS OBSERVED, OR IF THERE IS EVIDENCE OF INSTABILITY, CONSULT A CIVIL ENGINEER OR LANDSCAPE ARCHITECT.

ANNUALLY, AT THE END OF THE RAINY SEASON:

1. REMOVE TRASH, DEBRIS, VEGETATION, AND ACCUMULATED SEDIMENT.
2. DETERMINE IF ANY MAINTENANCE, REPAIR, OR REHABILITATION ACTIVITIES SHOULD BE SCHEDULED, SINCE MANY OF THESE ACTIVITIES NEED TO BE PERFORMED DURING THE DRY SEASON.
3. MANUALLY FLUSH ALL IRRIGATION VALVES SERVING SUBSURFACE DRIP IRRIGATION ZONES.

MAINTENANCE SCHEDULE FOR UG CHAMBERS

UNDERGROUND STORAGE CHAMBERS ARE INTENDED TO:

1. STORE STORMWATER ONSITE AND BELOW GRADE.
2. POND WATER BEFORE OVERFLOWING TO A DRAIN INLET.
3. INFILTRATE COMPLETELY FOLLOWING EACH RAIN EVENT.

UNDERGROUND STORAGE CHAMBERS ARE NOT INTENDED TO:

1. ALLOW COLLECTION OF SEDIMENT.
2. BE ACCESSED BY ANYONE OTHER THAN AUTHORIZED PERSONNEL

THE RECOMMENDED ROUTINE MAINTENANCE ACTIVITIES FOR UNDERGROUND STORAGE CHAMBERS ARE:

ON AN AS-NEEDED BASIS:

1. REMOVE ANY SEDIMENT BUILD-UP, FALLEN LEAVES, DEBRIS, AND TRASH.
2. CHECK STORM DRAIN INLET AT OUTLET. REMOVE SEDIMENT BUILD-UP, FALLEN LEAVES, DEBRIS, AND TRASH.

ANNUALLY, PRIOR TO THE BEGINNING OF THE RAINY SEASON:

1. OPEN INSPECTION PORT AND LOOK FOR SIGNS OF SEDIMENT, LEAVES, DEBRIS, AND/OR TRASH COLLECTION WITHIN THE UG CHAMBERS. IF SEDIMENT, LEAVES, DEBRIS, AND/OR TRASH IS OBSERVED, REMOVE BY MEANS OF A VACUUM TRUCK. IF SIGNIFICANT SEDIMENT, LEAVES, DEBRIS, AND/OR TRASH IS OBSERVED, CONSULT A CIVIL ENGINEER OR LANDSCAPE ARCHITECT.
2. ORIFICE SHALL BE INSPECTED AND ANY BLOCKAGE OF ANY KIND (I.E. SEDIMENT, TRASH, ETC.) SHALL BE REMOVED
3. PRE-TREATMENT / CONTAMINANT SCREENING INLET SHALL BE INSPECTED AND ALL TRASH, LEAVES, DEBRIS AND/OR SEDIMENT SHALL BE REMOVED
4. INSPECT CHANNEL ADJACENT TO DRIVEWAY OUT TO COX ROAD. ALL TRASH AND DEBRIS SHALL BE REMOVED.

ANNUALLY, AT THE END OF THE RAINY SEASON:

1. REMOVE TRASH, DEBRIS, VEGETATION, AND ACCUMULATED SEDIMENT IN THE PRE-TREATMENT / CONTAMINANT SCREENING INLET.
2. 1. REMOVE TRASH, DEBRIS, VEGETATION, AND ACCUMULATED SEDIMENT FOUND OTHER INLETS
3. DO NOT INSTALL ANY MATERIAL INTO THE UNDERGROUND STORM CHAMBER VOID SPACE.

MAJOR FACILITY CHANGES OR RENOVATION:

CONTACT THE PROJECT CIVIL ENGINEER (**C2G / CIVIL CONSULTANTS GROUP, INC.**), OR OTHER QUALIFIED ENGINEER OR LANDSCAPE ARCHITECT, IN THE EVENT THAT MAJOR WORK IS CONTEMPLATED IN OR ADJACENT TO THE FACILITY. MAJOR WORK INCLUDES:

- REPLACING FILTER-FABRIC ABOVE THE ROCK EMBEDMENT.
- MODIFYING THE "ENGINEERED" ELEMENTS OF THE FACILITY, INCLUDING DRAIN INLETS, PIPES, SUBSURFACE DRAINS, WATER BARRIERS, AND STRUCTURAL ELEMENTS.
- IMPROVEMENTS IN AREAS WHICH DRAIN TO THE FACILITY; ESPECIALLY IMPROVEMENTS WHICH WOULD INCREASE THE AREA OF IMPERVIOUS SURFACE WHICH DRAINS TO THE FACILITY.

STORM WATER POST-CONSTRUCTION REQUIREMENTS

NET IMPERVIOUS AREA = 56,963

PERFORMANCE REQUIREMENTS 1 THROUGH 4 ARE REQUIRED FOR THIS PROJECT

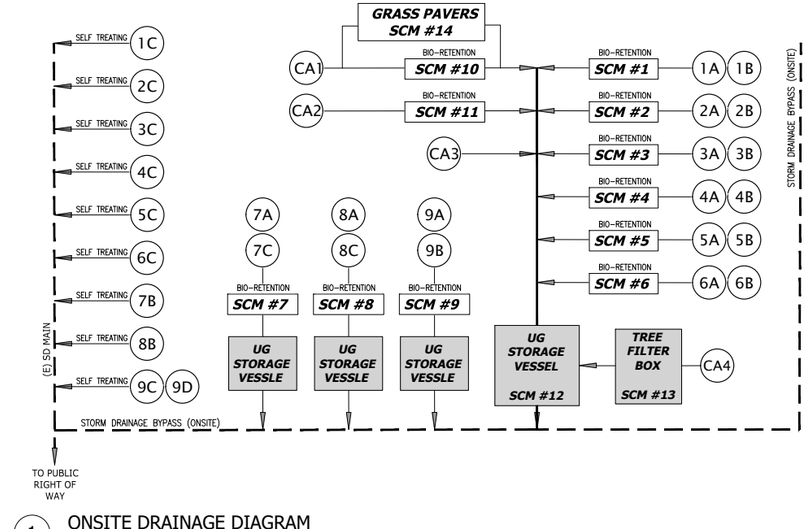
PERFORMANCE REQUIREMENT 1 : SITE DESIGN AND RUNOFF REDUCTION
- INSTALL PERMEABLE PAVERS (GRASS PAVERS)
- DIRECT RUNOFF FROM WALKWAYS, ACCESS ROADS, DRIVEWAYS & BUILDINGS INTO BIO-RETENTION AREAS AND/OR TREE FILTER BOX
-

PERFORMANCE REQUIREMENT 2 : WATER QUALITY TREATMENT
- LOW IMPACT DEVELOPMENT TREATMENT SYSTEM BY MEANS OF BIO-RETENTION.
- BIO-RETENTION TREATMENT AREA REQUIREMENT IS 4% OF NET IMPERVIOUS AREA
- TREE FILTER BOX IS PROPOSED FOR THE SAN AUGUSTINE WAY CUL-DE-SAC

PERFORMANCE REQUIREMENT 3 : RUNOFF RETENTION
- DUE TO THE POOR INFILTRATING SOILS WITHIN THE PROJECT SITE, TECHNICAL INFEASIBILITY HAS BEEN DETERMINED.
- RETENTION ALTERNATIVE COMPLIANCE CALCULATION HAS BEEN PROVIDED SHOWING THAT THE SCM AREA EXCEEDS 10% OF THE EQUIVALENT IMPERVIOUS SURFACE AREA. SEE TABLE ON THIS SHEET.

PERFORMANCE REQUIREMENT 4 : PEAK MANAGEMENT
- PEAK MANAGEMENT WILL BE ADDRESSED BY UNDERGROUND DETENTION LIMITING THE PRE-PROJECT PEAK FLOWS FOR THE 2- THROUGH 10-YEAR STORM EVENTS.
- SEE THE SANTA CRUZ COUNTY FIG. SWM-17 IN THE STORMWATER CONTROL PLAN WHICH DETERMINES DETENTION STORAGE VOLUME AND 10-YEAR PRE DEVELOPMENT RELEASE RATE

RETENTION ALTERNATIVE COMPLIANCE CALCULATIONS	
EQUIVALENT IMPERVIOUS SURFACE AREA (EISA)	89,372
TOTAL IMPERVIOUS SURFACES	78,601
TURF BLOCK (@0.15)	517
DISTURBED SOILS (@0.15)	10,771
SCM AREA TOTAL	9,375
BIO-RETENTION	4,653
TURF BLOCK	3,448
CHAMBERS	1,250
FILTERRA DEVICE	24
SCM AREA DIVIDED BY EISA	10.49%



1 ONSITE DRAINAGE DIAGRAM

Scale: NTS

		1A	1B	1C	2A	2B	2C	3A	3B	3C	4A	4B	4C	5A	5B	5C	6A	6B	6C	7A	7B	7C	8A	8B	8C	9A	9B	9C	9D	CA1	CA2	CA3	CA4	TOTAL
PROPOSED	TOTAL AREA	5,590	4,821	10,626	5,555	4,470	12,828	5,784	4,087	11,635	5,942	2,972	11,380	5,723	5,256	9,500	4,445	7,196	8,189	4,611	9,018	6,612	4,616	9,175	6,100	4,823	2,635	7,074	5,547	35,862	13,319	7,940	5,496	***248,827***
	IMPERVIOUS AREA	4,419	0	0	4,383	0	0	3,803	0	0	3,946	0	0	3,875	0	0	3,735	0	0	3,933	0	0	4,072	0	0	4,823	339	0	0	25,333	11,136	3,323	5,270	82,390
	ROOF	3,110	0	0	2,903	0	0	3,154	0	0	2,903	0	0	2,903	0	0	3,154	0	0	2,903	0	0	3,110	0	0	3,154	0	0	0	0	0	0	0	27,294
	AC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14,294	8,349	0	4,581	27,224
	CONCRETE	1,309	0	0	1,480	0	0	649	0	0	1,043	0	0	972	0	0	581	0	0	1,030	0	0	962	0	0	1,669	339	0	0	7,591	2,787	3,323	689	24,424
	TURF BLOCK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,448	0	0	0	3,448
	EQUIV. IMPERVIOUS AREA	4,419	0	0	4,383	0	0	3,803	0	0	3,946	0	0	3,875	0	0	3,735	0	0	3,933	0	0	4,072	0	0	4,823	339	0	0	22,402	11,136	3,323	5,270	79,459
	*TURF BLOCK ASSUMED 15% IMPERVIOUS																																	
	LANDSCAPE/NATURAL AREAS	1,171	4,821	10,626	1,172	4,470	12,828	1,981	4,087	11,635	1,996	2,972	11,380	1,848	5,256	9,500	710	7,196	8,189	678	9,018	6,612	544	9,175	6,100	0	2,296	7,074	5,547	10,529	2,183	4,617	226	166,437
	RUNOFF COEFICIENT	0.76	0.25	0.25	0.76	0.25	0.25	0.68	0.25	0.25	0.68	0.25	0.25	0.69	0.25	0.25	0.80	0.25	0.25	0.80	0.25	0.25	0.82	0.25	0.25	0.90	0.33	0.25	0.25	0.64	0.79	0.52	0.87	0.45
	TIME OF CONCENTRATION	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	RAINFALL INTENSITY (10YR)	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
	RUNOFF RATE (CFS)	***0.235***	***0.066***	***0.146***	***0.233***	***0.062***	***0.177***	***0.216***	***0.056***	***0.160***	***0.223***	***0.041***	***0.157***	***0.218***	***0.072***	***0.131***	***0.195***	***0.099***	***0.113***	***0.204***	***0.124***	***0.091***	***0.209***	***0.126***	***0.084***	***0.239***	***0.048***	***0.097***	***0.076***	***1.256***	***0.582***	***0.228***	***0.264***	***6.233***
	(25 YR)	*0.282*	*0.080*	*0.176*	*0.280*	*0.074*	*0.212*	*0.259*	*0.068*	*0.192*	*0.268*	*0.049*	*0.188*	*0.261*	*0.087*	*0.157*	*0.234*	*0.119*	*0.135*	*0.245*	*0.149*	*0.109*	*0.251*	*0.152*	*0.101*	*0.287*	*0.058*	*0.117*	*0.092*	*1.507*	*0.699*	*0.274*	*0.317*	*7.479*
	(50 YR)	*0.318*	*0.090*	*0.198*	*0.315*	*0.083*	*0.239*	*0.291*	*0.076*	*0.216*	*0.301*	*0.055*	*0.212*	*0.294*	*0.098*	*0.177*	*0.263*	*0.134*	*0.152*	*0.276*	*0.168*	*0.123*	*0.283*	*0.171*	*0.113*	*0.323*	*0.065*	*0.132*	*0.103*	*1.695*	*0.786*	*0.308*	*0.357*	*8.414*
	(100 YR)	*0.353*	*0.100*	*0.220*	*0.350*	*0.092*	*0.265*	*0.324*	*0.084*	*0.240*	*0.335*	*0.061*	*0.235*	*0.326*	*0.109*	*0.196*	*0.292*	*0.149*	*0.169*	*0.307*	*0.186*	*0.137*	*0.314*	*0.190*	*0.126*	*0.359*	*0.073*	*0.146*	*0.115*	*1.884*	*0.873*	*0.343*	*0.397*	*9.349*

REVISIONS	BY
1 RESPONSE TO CITY COMMENTS 05.20.22	DD
2 RESPONSE TO CITY COMMENTS 08.18.22	DD
3 RESPONSE TO CITY COMMENTS 10.07.22	DD
4 RESPONSE TO CITY COMMENTS 02.24.23	DD

PRELIMINARY STORMWATER CONTROL PLAN

REGISTERED PROFESSIONAL ENGINEER TODD R. CREAMER No. C 64561 Exp. 6/30/23 CIVIL STATE OF CALIFORNIA

C2G / CIVIL CONSULTANTS GROUP, INC.
Engineers/Planners
4444 Scotts Valley Drive / Suite 6
Scotts Valley, CA 95066
831.438.4420

CASA WAY RESIDENTIAL SUBDIVISION
SCOTTS VALLEY, CA
GRANITE RIDGE PROPERTIES

Date:	01.20.23
Scale:	1" = 40'
Drawn:	DD
Job:	2014.01
Sheet:	C5.1
Of	20 Sheets

Drawing: Z:\Drawn\(JOB)\2014\01 - Granite Ridge - Casa Way\Design\(JOB)2014.01 - C5.1 - SWCP.dwg Layout: C5.1 - SWCP Last Saved: Thu Mar 23, 2023 - 2:18pm Last Plotted: Thu Mar 23, 2023 - 2:20pm By: Dave

ATTACHMENT B

- *Project Site Soil Map*
- *Project Site Soil Data*

Soil Map—Santa Cruz County, California
(Casa Way and Sandraya Heights)



Map Scale: 1:2,300 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 10N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

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 15, Sep 9, 2021

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

Date(s) aerial images were photographed: Apr 13, 2020—Apr 24, 2020

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.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
116	Bonnydoon loam, 5 to 50 percent slopes, MLRA 4B	27.3	99.7%
178	Watsonville loam, thick surface, 0 to 2 percent slopes	0.1	0.3%
Totals for Area of Interest		**27.3**	**100.0%**

Santa Cruz County, California

116—Bonnydoon loam, 5 to 50 percent slopes, MLRA 4B

Map Unit Setting

National map unit symbol: 2tyzd
Elevation: 0 to 2,130 feet
Mean annual precipitation: 28 to 44 inches
Mean annual air temperature: 55 to 60 degrees F
Frost-free period: 300 to 360 days
Farmland classification: Not prime farmland

Map Unit Composition

Bonnydoon and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bonnydoon

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave, convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale and/or residuum weathered from mudstone

Typical profile

A1 - 0 to 6 inches: loam
A2 - 6 to 11 inches: loam
Cr - 11 to 60 inches: bedrock

Properties and qualities

Slope: 5 to 30 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Drainage class: Somewhat excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.03 to 0.28 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: R004BC030CA - SHALLOW COARSE LOAMY
Hydric soil rating: No

Minor Components

Aptos

Percent of map unit: 4 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave, convex
Across-slope shape: Convex
Other vegetative classification: LOAMY (015XD047CA_1)
Hydric soil rating: No

Elkhorn

Percent of map unit: 3 percent
Landform: Plains, alluvial fans, terraces
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R014XD034CA - FINE LOAMY
Hydric soil rating: No

Los osos

Percent of map unit: 3 percent
Landform: Mountains, hills
Landform position (two-dimensional): Backslope, summit
Landform position (three-dimensional): Mountainflank, side slope
Down-slope shape: Concave, convex
Across-slope shape: Convex
Ecological site: R015XD024CA - FINE LOAMY
Hydric soil rating: No

Tierra

Percent of map unit: 3 percent
Landform: Fan terraces, marine terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R015XD115CA - CLAYPAN
Hydric soil rating: No

Watsonville, hydric

Percent of map unit: 2 percent
Landform: Fan terraces, marine terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R014XD089CA - CLAYPAN

Hydric soil rating: Yes

Data Source Information

Soil Survey Area: Santa Cruz County, California
Survey Area Data: Version 15, Sep 9, 2021

ATTACHMENT C

- *Project Data Form*
- *SWM- 17 Runoff Detention*
- *Restrictor Calculation*

Version: 1.00

Multi-Family, Commercial, and Others - Project Data Form

Project Name: Casa Way Residential Subdivision

Application/Permit No:

APN: 023-113-36

Address: Casa Way

A. Development Type:

New Development ☑

Redevelopment/Remodel ☐

B. Impervious & Pervious Data:

Pre development

Impervious =	0	SF

Post development

Existing Impervious to Remain =	0	SF
Replaced Impervious =	0	SF
New Impervious =	79,118	SF
Total =	79,118	SF
Reduced Impervious Area Credit=	0	SF
Combined New & Replaced Impervious =	**79,118**	SF
Net Impervious Area =	**79,118**	SF

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

C. Performance Tier (Automatically determined from calculations above)

(≥2,500 SF of new and replaced; <5,000 SF of net Impervious) Tier 1 =	
(≥5,000 SF of net impervious; <15,000 SF of new and replaced) Tier 2 =	
(≥15,000 but <22,500 SF of new and replaced impervious area) Tier 3 =	
(≥22,500 SF new and replaced) Tier 4 =	**x**

D. BMP Requirements

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

WMZ	Tier 1 - BMP & Runoff Reduction	Tier 2 - Water Quality	Tier 3 - Runoff Retention	Tier 4 - Peak Management
1	Required	Required	95th - Optimize Infiltration	10 Yr Storm

E. Reporting Requirements

Tier	Simple Stormwater Control Plan	Stormwater Control Plan	Operation & Maintenance Plan	Maintenance Agreement
4	-	Required	Required	Required

Notes:

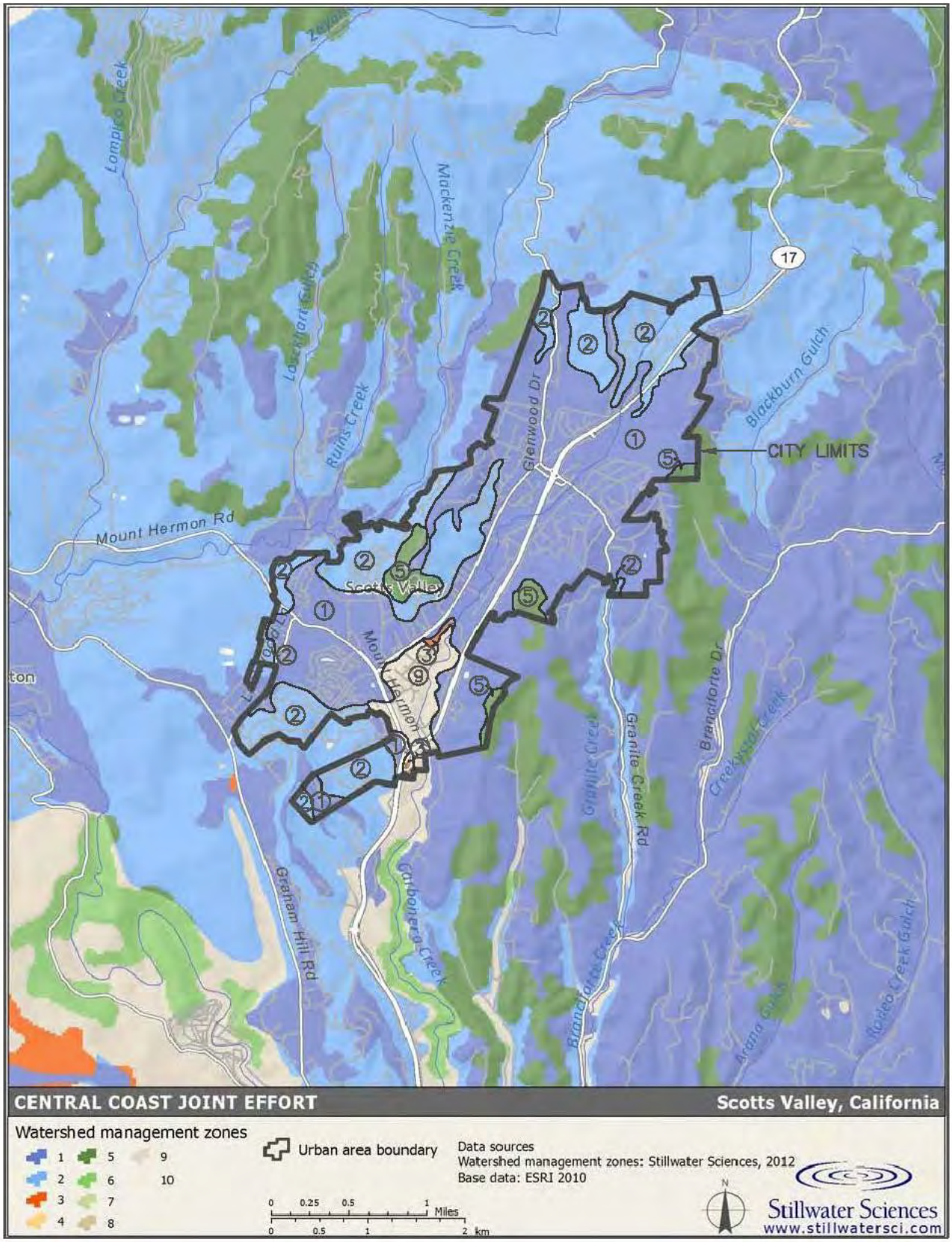
1. Tier 3 or 4 projects that require "Optimize Infiltration" shall design stormwater management facility to provide infiltration as the first priority method of mitigation. Compliance for the retention of the remaining volume must be achieved via storage, rainwater harvesting and/or evapotranspiration.

2. Where optimize infiltration is not required, compliance must be achieved via storage, rainwater harvesting, infiltration, and/or evapotranspiration.

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 accuately be located on the map below, use the Google-Earth WMZ file available on the City's website.



PROJECT: Casa Way Subdivision - APN:023-113-36 - SCM 7 **Calc by:** DD **Date:** 11/8/2022

RUNOFF DETENTION BY THE MODIFIED RATIONAL METHOD

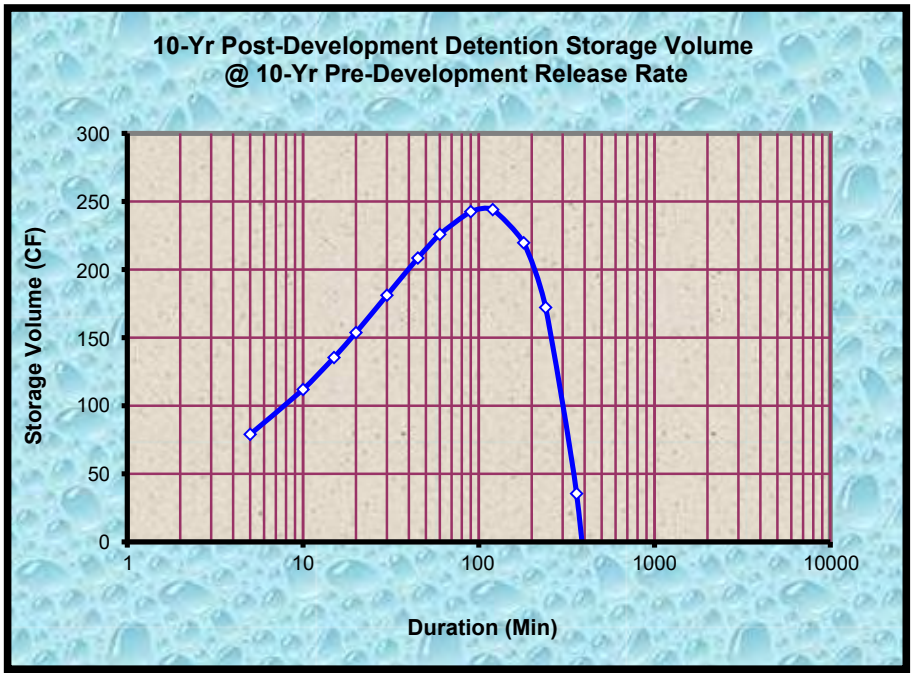
Data Entry: PRESS TAB & ENTER DESIGN VALUES SS Ver: 1.0

Site Location P60 Isopleth:	1.80	Fig. SWM-2 in County Design Criteria	
Rational Coefficients Cpre:	0.25		See note # 2
Cpost:	0.90		See note # 2
Impervious Area:	3933	ft^2	See note # 2 and # 4

STRUCTURE DIMENSIONS FOR DETENTION

244	ft^3 storage volume calculated			
40	% void space assumed			
610	ft^3 excavated volume needed			
Structure	Length	Width*	Depth*	*For pipe, use the square
Ratios	19.10	19.10	4.00	root of the sectional area
Dimen. (ft)	**14.28**	**14.28**	**2.99**	

10 - YEAR DESIGN STORM				DETENTION @ 15 MIN.	
Storm Duration (min)	10 - Year Intensity (in/hr)	10 - Yr. Release Qpre (cfs)	10 - Year Qpost (cfs)	Detention Rate To Storage (cfs)	Specified Storage Volume (cf)
1440	0.34	0.008	0.028	-0.019	-2023
1200	0.36	0.008	0.030	-0.017	-1501
960	0.39	0.009	0.032	-0.014	-1005
720	0.44	0.010	0.036	-0.010	-544
480	0.52	0.012	0.042	-0.004	-136
360	0.58	0.013	0.048	0.001	35
240	0.68	0.016	0.056	0.010	172
180	0.76	0.017	0.063	0.016	220
120	0.90	0.020	0.073	0.027	**244**
90	1.00	0.023	0.082	0.036	243
60	1.18	0.027	0.096	0.050	226
45	1.32	0.030	0.108	0.062	208
30	1.55	0.035	0.127	0.081	181
20	1.82	0.041	0.149	0.102	154
15	2.03	**0.046**	0.167	0.120	135
10	2.39	0.054	0.196	0.149	112
5	3.14	0.071	**0.257**	0.211	79



Notes & Limitations on Use:

1) The modified rational method, and therefore the standard calculations are applicable in watersheds up to 20 acres in size.
2) Required detention volume determinations shall be based on all net new impervious area both on and off-site, resulting from the proposed project. Pervious areas shall not be included in detention volume sizing; an exception may be made for incidental pervious areas less than 10% of the total area.
3) Gravel packed detention chambers shall specify on the plans, aggregate that is washed, angular, and uniformly graded (of single size), assuring void space not less than 35%.
4) A map showing boundaries of both regulated impervious areas and actual drainage areas routed to the hydraulic control structure of the detention facility is to be provided, clearly distinguishing between the two areas, and noting the square footage.
5) The EPA defines a class V injection well as any bored, drilled, or driven shaft, or dug hole that is deeper than its widest surface dimension, or an improved sinkhole, or a subsurface fluid distribution system. Such storm water drainage wells are "authorized by rule". For more information on these rules, contact the EPA. A web site link is provided from the County DPW Stormwater Management web page.
6) Refer to the County of Santa Cruz Design Criteria, for complete method criteria.

PROJECT: Casa Way Subdivision - APN:023-113-36 - SCM 8 **Calc by:** DD **Date:** 11/8/2022

RUNOFF DETENTION BY THE MODIFIED RATIONAL METHOD

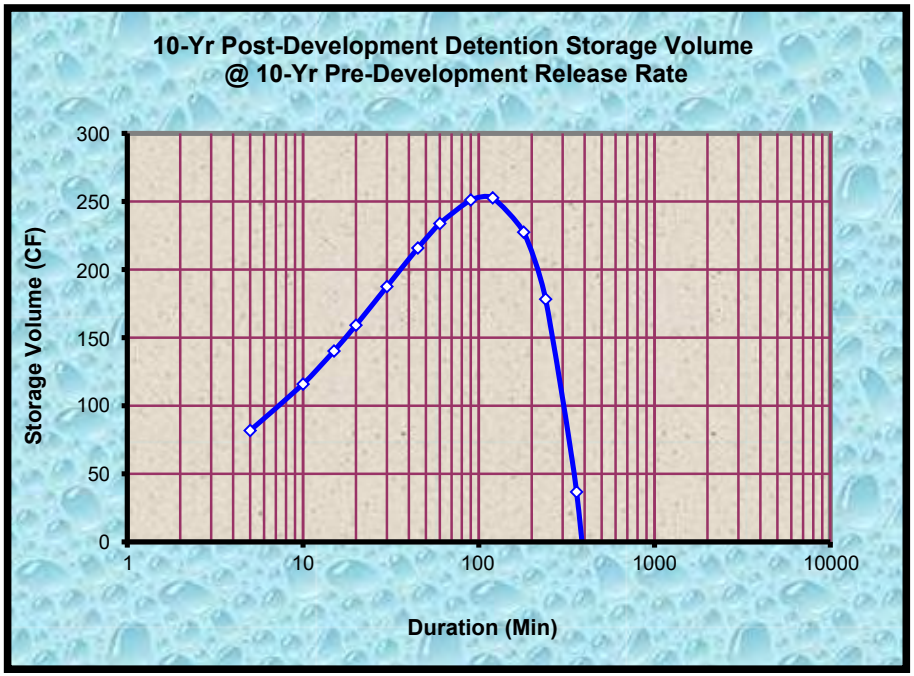
Data Entry: PRESS TAB & ENTER DESIGN VALUES SS Ver: 1.0

Site Location P60 Isopleth:	1.80	Fig. SWM-2 in County Design Criteria	
Rational Coefficients Cpre:	0.25		See note # 2
Cpost:	0.90		See note # 2
Impervious Area:	4072	ft^2	See note # 2 and # 4

STRUCTURE DIMENSIONS FOR DETENTION

253	ft^3 storage volume calculated			
40	% void space assumed			
632	ft^3 excavated volume needed			
Structure	Length	Width*	Depth*	*For pipe, use the square
Ratios	18.54	18.54	4.00	root of the sectional area
Dimen. (ft)	**14.31**	**14.31**	**3.09**	

10 - YEAR DESIGN STORM				DETENTION @ 15 MIN.	
Storm Duration (min)	10 - Year Intensity (in/hr)	10 - Yr. Release Qpre (cfs)	10 - Year Qpost (cfs)	Detention Rate To Storage (cfs)	Specified Storage Volume (cf)
1440	0.34	0.008	0.029	-0.019	-2094
1200	0.36	0.009	0.031	-0.017	-1554
960	0.39	0.009	0.033	-0.014	-1040
720	0.44	0.010	0.037	-0.010	-563
480	0.52	0.012	0.044	-0.004	-141
360	0.58	0.014	0.049	0.001	37
240	0.68	0.016	0.058	0.010	178
180	0.76	0.018	0.065	0.017	227
120	0.90	0.021	0.076	0.028	**253**
90	1.00	0.024	0.085	0.037	251
60	1.18	0.028	0.100	0.052	234
45	1.32	0.031	0.112	0.064	216
30	1.55	0.036	0.131	0.083	188
20	1.82	0.043	0.154	0.106	159
15	2.03	**0.048**	0.173	0.125	140
10	2.39	0.056	0.202	0.155	116
5	3.14	0.074	**0.266**	0.218	82



Notes & Limitations on Use:

1) The modified rational method, and therefore the standard calculations are applicable in watersheds up to 20 acres in size.
2) Required detention volume determinations shall be based on all net new impervious area both on and off-site, resulting from the proposed project. Pervious areas shall not be included in detention volume sizing; an exception may be made for incidental pervious areas less than 10% of the total area.
3) Gravel packed detention chambers shall specify on the plans, aggregate that is washed, angular, and uniformly graded (of single size), assuring void space not less than 35%.
4) A map showing boundaries of both regulated impervious areas and actual drainage areas routed to the hydraulic control structure of the detention facility is to be provided, clearly distinguishing between the two areas, and noting the square footage.
5) The EPA defines a class V injection well as any bored, drilled, or driven shaft, or dug hole that is deeper than its widest surface dimension, or an improved sinkhole, or a subsurface fluid distribution system. Such storm water drainage wells are "authorized by rule". For more information on these rules, contact the EPA. A web site link is provided from the County DPW Stormwater Management web page.
6) Refer to the County of Santa Cruz Design Criteria, for complete method criteria.

PROJECT: Casa Way Development Project APN:023-113-36 - SCM 9 **Calc by:** DD **Date:** 11/8/2023

RUNOFF DETENTION BY THE MODIFIED RATIONAL METHOD

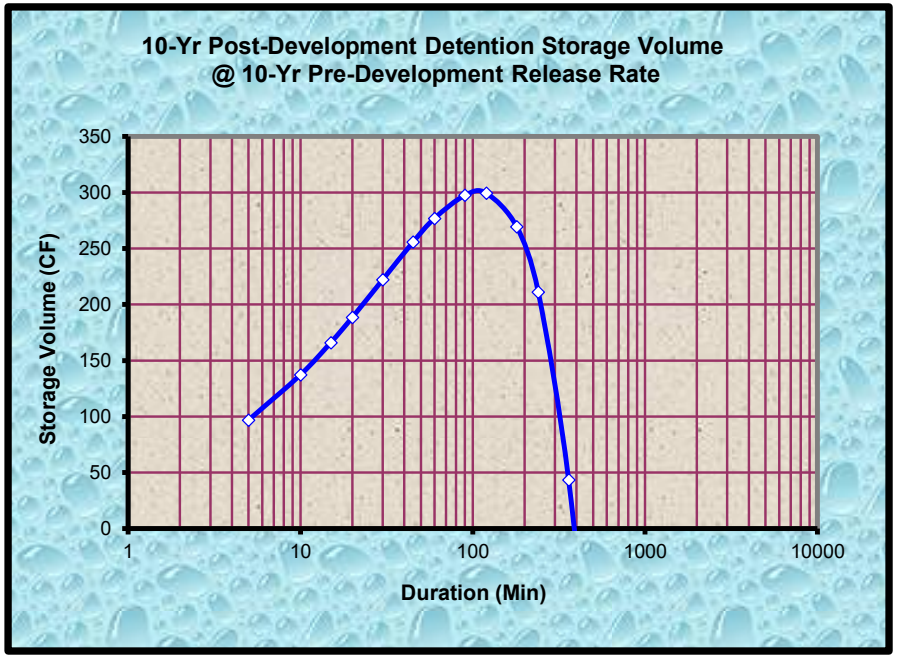
Data Entry: PRESS TAB & ENTER DESIGN VALUES SS Ver: 1.0

Site Location P60 Isopleth:	1.80	Fig. SWM-2 in County Design Criteria	
Rational Coefficients Cpre:	0.25		See note # 2
Cpost:	0.90		See note # 2
Impervious Area:	4823	ft^2	See note # 2 and # 4

STRUCTURE DIMENSIONS FOR DETENTION

299	ft^3 storage volume calculated			
40	% void space assumed			
748	ft^3 excavated volume needed			
Structure	Length	Width*	Depth*	*For pipe, use the square
Ratios	16.16	16.16	4.00	root of the sectional area
Dimen. (ft)	**14.46**	**14.46**	**3.58**	

10 - YEAR DESIGN STORM				DETENTION @ 15 MIN.	
Storm Duration (min)	10 - Year Intensity (in/hr)	10 - Yr. Release Qpre (cfs)	10 - Year Qpost (cfs)	Detention Rate To Storage (cfs)	Specified Storage Volume (cf)
1440	0.34	0.009	0.034	-0.023	-2481
1200	0.36	0.010	0.036	-0.020	-1840
960	0.39	0.011	0.040	-0.017	-1232
720	0.44	0.012	0.044	-0.012	-667
480	0.52	0.014	0.052	-0.005	-167
360	0.58	0.016	0.058	0.002	43
240	0.68	0.019	0.068	0.012	211
180	0.76	0.021	0.077	0.020	269
120	0.90	0.025	0.090	0.033	**299**
90	1.00	0.028	0.101	0.044	297
60	1.18	0.033	0.118	0.062	277
45	1.32	0.037	0.133	0.076	256
30	1.55	0.043	0.155	0.099	222
20	1.82	0.051	0.182	0.126	189
15	2.03	**0.057**	0.204	0.148	166
10	2.39	0.067	0.240	0.183	137
5	3.14	0.088	**0.315**	0.258	97



Notes & Limitations on Use:

1) The modified rational method, and therefore the standard calculations are applicable in watersheds up to 20 acres in size.
2) Required detention volume determinations shall be based on all net new impervious area both on and off-site, resulting from the proposed project. Pervious areas shall not be included in detention volume sizing; an exception may be made for incidental pervious areas less than 10% of the total area.
3) Gravel packed detention chambers shall specify on the plans, aggregate that is washed, angular, and uniformly graded (of single size), assuring void space not less than 35%.
4) A map showing boundaries of both regulated impervious areas and actual drainage areas routed to the hydraulic control structure of the detention facility is to be provided, clearly distinguishing between the two areas, and noting the square footage.
5) The EPA defines a class V injection well as any bored, drilled, or driven shaft, or dug hole that is deeper than its widest surface dimension, or an improved sinkhole, or a subsurface fluid distribution system. Such storm water drainage wells are "authorized by rule". For more information on these rules, contact the EPA. A web site link is provided from the County DPW Stormwater Management web page.
6) Refer to the County of Santa Cruz Design Criteria, for complete method criteria.

PROJECT: Casa Way Development Project APN:023-113-36 - SCM 12 **Calc by:** DD **Date:** 11/8/2022

RUNOFF DETENTION BY THE MODIFIED RATIONAL METHOD

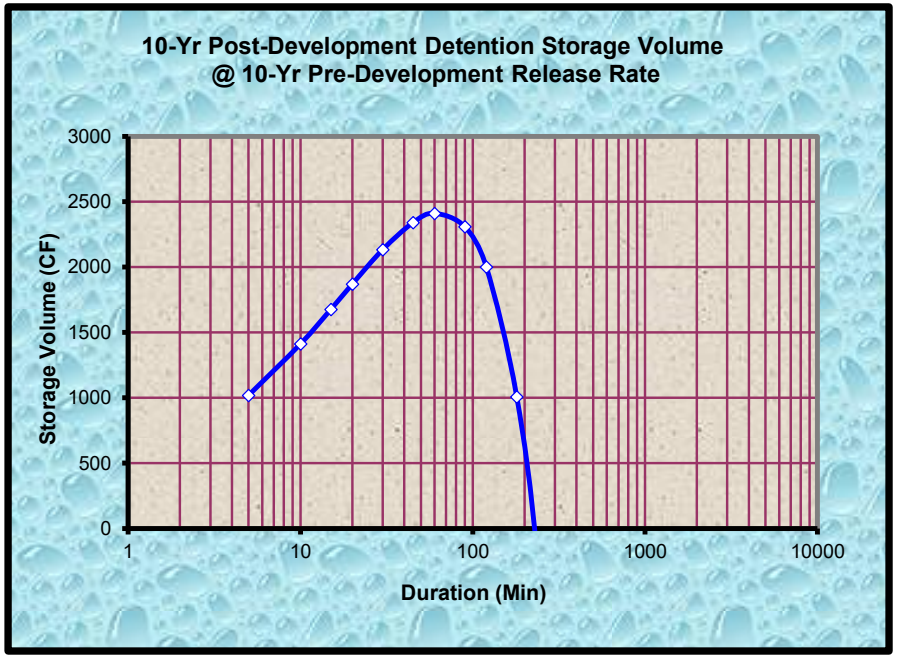
Data Entry: PRESS TAB & ENTER DESIGN VALUES SS Ver: 1.0

Site Location P60 Isopleth:	1.80		Fig. SWM-2 in County Design Criteria
Rational Coefficients Cpre:	0.25		See note # 2
Cpost:	0.73		See note # 2
Impervious Area:	65951	ft^2	See note # 2 and # 4

STRUCTURE DIMENSIONS FOR DETENTION

2412	ft^3 storage volume calculated			
100	% void space assumed			
2412	ft^3 excavated volume needed			
Structure	Length	Width*	Depth*	*For pipe, use the square
Ratios	41.66	41.66	4.00	root of the sectional area
Dimen. (ft)	**29.29**	**29.29**	**2.81**	

10 - YEAR DESIGN STORM				DETENTION @ 15 MIN.	
Storm Duration (min)	10 - Year Intensity (in/hr)	10 - Yr. Release Qpre (cfs)	10 - Year Qpost (cfs)	Detention Rate To Storage (cfs)	Specified Storage Volume (cf)
1440	0.34	0.128	0.375	-0.401	-43346
1200	0.36	0.138	0.403	-0.373	-33608
960	0.39	0.151	0.440	-0.336	-24219
720	0.44	0.169	0.493	-0.284	-15312
480	0.52	0.198	0.578	-0.198	-7134
360	0.58	0.222	0.647	-0.129	-3476
240	0.68	0.260	0.760	-0.017	-297
180	0.76	0.291	0.851	0.075	1009
120	0.90	0.342	0.998	0.222	2000
90	1.00	0.383	1.118	0.342	2309
60	1.18	0.449	1.312	0.536	**2412**
45	1.32	0.503	1.470	0.694	2341
30	1.55	0.591	1.725	0.948	2134
20	1.82	0.693	2.023	1.247	1871
15	2.03	**0.776**	2.266	1.490	1677
10	2.39	0.911	2.659	1.883	1412
5	3.14	1.197	**3.495**	2.719	1020



Notes & Limitations on Use:

1) The modified rational method, and therefore the standard calculations are applicable in watersheds up to 20 acres in size.
2) Required detention volume determinations shall be based on all net new impervious area both on and off-site, resulting from the proposed project. Pervious areas shall not be included in detention volume sizing; an exception may be made for incidental pervious areas less than 10% of the total area.
3) Gravel packed detention chambers shall specify on the plans, aggregate that is washed, angular, and uniformly graded (of single size), assuring void space not less than 35%.
4) A map showing boundaries of both regulated impervious areas and actual drainage areas routed to the hydraulic control structure of the detention facility is to be provided, clearly distinguishing between the two areas, and noting the square footage.
5) The EPA defines a class V injection well as any bored, drilled, or driven shaft, or dug hole that is deeper than its widest surface dimension, or an improved sinkhole, or a subsurface fluid distribution system. Such storm water drainage wells are "authorized by rule". For more information on these rules, contact the EPA. A web site link is provided from the County DPW Stormwater Management web page.
6) Refer to the County of Santa Cruz Design Criteria, for complete method criteria.

C2G /CIVIL CONSULTANTS GROUP, INC.
Engineers/Planners

Project Name: **Casa Way Development - SCM 12**
Job Number: 2014.01
Date: July 21, 2022

RESTRICTOR SIZE, ORIFICE METHOD (Circular Opening)

					Value
1. HIGHWATER ELEVATION					653.52
2. INVERT ELEVATION					648.15
3. DIAMETER OF RESTRICTOR IN INCHES					2.00
4. CROSS SECTIONAL AREA, SQ. FT.					0.02
5. HEAD, FT.					5.29
6. DISCHARGE COEFFICIENT					0.50

SQUARE EDGE 0.79 - 0.82
ROUND EDGE 0.93 - 0.98
SHARP EDGE 0.58 - 0.64
PROJECTING 0.50

7. DISCHARGE, Q, CFS					***0.201***
8. ALLOWABLE RELEASE RATE, Q, CFS					0.201

C2G 4444 Scotts Valley Drive, Suite 6, Scotts Valley, CA 95066-4529
831/438-4420 • Fax 831/438-5829 • [name]@c2gengrs.com • www.civilconsultantsgroup.com

ATTACHMENT D

- Chamber Stage Storage for SCMs 7, 8, 9, 12

SCM #7

Chamber Model	HS75			
Number of Chambers	2			
Number of Endcaps	2			
Stone Voids (porosity)	40%			
Base of Stone Elevation	100	ft		
Recommended Stone Below Chambers*	18	in.	**Include perimeter stone?**	Yes
Recommended Stone Above Chambers*	12	in.	**Standard or metric?**	Standard

Area of System** 364 sq.ft

****Area must be greater than:** 106.31 sq.ft

**The minimum stone below and above the chambers to be determinded by the design engineer.*

System Height (Inches)	Incremental Single Chamber Storage (cu.ft)	Incremental Single End Cap Storage (cu.ft)	Incremental Total Chamber Storage (cu.ft)	Incremental Total End Cap Storage (cu.ft)	Incremental Stone Storage (cu.ft)	Incremental Chamber, End Cap, & Stone (cu.ft)	Cumulative Total Storage for System (cu.ft)	Cumulative System Storage (cu.ft)	Elevation (ft)
60	0.00	0.00	0.00	0.00	12.13	12.13	12.13	790.54	105.00
59	0.00	0.00	0.00	0.00	12.13	12.13	12.13	778.40	104.92
58	0.00	0.00	0.00	0.00	12.13	12.13	12.13	766.27	104.83
57	0.00	0.00	0.00	0.00	12.13	12.13	12.13	754.14	104.75
56	0.00	0.00	0.00	0.00	12.13	12.13	12.13	742.00	104.67
55	0.00	0.00	0.00	0.00	12.13	12.13	12.13	729.87	104.58
54	0.00	0.00	0.00	0.00	12.13	12.13	12.13	717.74	104.50
53	0.00	0.00	0.00	0.00	12.13	12.13	12.13	705.60	104.42
52	0.00	0.00	0.00	0.00	12.13	12.13	12.13	693.47	104.33
51	0.00	0.00	0.00	0.00	12.13	12.13	12.13	681.34	104.25
50	0.00	0.00	0.00	0.00	12.13	12.13	12.13	669.20	104.17
49	0.00	0.00	0.00	0.00	12.13	12.13	12.13	657.07	104.08
48	0.00	0.00	0.00	0.00	12.13	12.13	12.13	644.94	104.00
47	0.12	0.00	0.25	0.00	12.03	12.28	12.28	632.80	103.92
46	0.30	0.00	0.60	0.01	11.89	12.50	12.50	620.52	103.83
45	0.62	0.03	1.23	0.05	11.62	12.90	12.90	608.02	103.75
44	0.85	0.05	1.70	0.09	11.41	13.21	13.21	595.12	103.67
43	1.01	0.07	2.02	0.14	11.27	13.43	13.43	581.91	103.58
42	1.14	0.09	2.28	0.17	11.15	13.60	13.60	568.48	103.50
41	1.24	0.10	2.49	0.21	11.05	13.75	13.75	554.87	103.42
40	1.33	0.12	2.67	0.24	10.97	13.88	13.88	541.12	103.33
39	1.41	0.14	2.82	0.28	10.89	13.99	13.99	527.24	103.25
38	1.48	0.15	2.96	0.31	10.83	14.09	14.09	513.25	103.17
37	1.55	0.17	3.09	0.33	10.76	14.19	14.19	499.16	103.08
36	1.61	0.18	3.22	0.36	10.70	14.28	14.28	484.97	103.00
35	1.67	0.19	3.33	0.39	10.65	14.37	14.37	470.68	102.92
34	1.72	0.21	3.44	0.41	10.59	14.44	14.44	456.32	102.83
33	1.77	0.22	3.54	0.44	10.54	14.52	14.52	441.88	102.75
32	1.81	0.23	3.63	0.46	10.50	14.59	14.59	427.36	102.67
31	1.85	0.24	3.71	0.48	10.46	14.65	14.65	412.77	102.58
30	1.90	0.25	3.79	0.51	10.41	14.71	14.71	398.12	102.50
29	1.93	0.26	3.87	0.53	10.38	14.77	14.77	383.41	102.42
28	1.97	0.27	3.94	0.54	10.34	14.82	14.82	368.64	102.33
27	2.00	0.28	4.01	0.56	10.31	14.87	14.87	353.81	102.25
26	2.03	0.29	4.07	0.58	10.27	14.92	14.92	338.94	102.17
25	2.06	0.30	4.13	0.59	10.24	14.97	14.97	324.02	102.08
24	2.09	0.30	4.19	0.61	10.22	15.01	15.01	309.05	102.00
23	2.12	0.31	4.24	0.62	10.19	15.05	15.05	294.04	101.92
22	2.15	0.32	4.30	0.63	10.16	15.09	15.09	278.99	101.83
21	2.18	0.32	4.35	0.64	10.14	15.13	15.13	263.90	101.75

20	2.20	0.33	4.40	0.65	10.11	15.17	15.17	248.77	101.67
19	2.23	0.33	4.45	0.66	10.09	15.20	15.20	233.60	101.58
18	0.00	0.00	0.00	0.00	12.13	12.13	12.13	218.40	101.50
17	0.00	0.00	0.00	0.00	12.13	12.13	12.13	206.27	101.42
16	0.00	0.00	0.00	0.00	12.13	12.13	12.13	194.13	101.33
15	0.00	0.00	0.00	0.00	12.13	12.13	12.13	182.00	101.25
14	0.00	0.00	0.00	0.00	12.13	12.13	12.13	169.87	101.17
13	0.00	0.00	0.00	0.00	12.13	12.13	12.13	157.73	101.08
12	0.00	0.00	0.00	0.00	12.13	12.13	12.13	145.60	101.00
11	0.00	0.00	0.00	0.00	12.13	12.13	12.13	133.47	100.92
10	0.00	0.00	0.00	0.00	12.13	12.13	12.13	121.33	100.83
9	0.00	0.00	0.00	0.00	12.13	12.13	12.13	109.20	100.75
8	0.00	0.00	0.00	0.00	12.13	12.13	12.13	97.07	100.67
7	0.00	0.00	0.00	0.00	12.13	12.13	12.13	84.93	100.58
6	0.00	0.00	0.00	0.00	12.13	12.13	12.13	72.80	100.50
5	0.00	0.00	0.00	0.00	12.13	12.13	12.13	60.67	100.42
4	0.00	0.00	0.00	0.00	12.13	12.13	12.13	48.53	100.33
3	0.00	0.00	0.00	0.00	12.13	12.13	12.13	36.40	100.25
2	0.00	0.00	0.00	0.00	12.13	12.13	12.13	24.27	100.17
1	0.00	0.00	0.00	0.00	12.13	12.13	12.13	12.13	100.08
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00

SCM #8

Chamber Model	HS75			
Number of Chambers	2			
Number of Endcaps	2			
Stone Voids (porosity)	40%			
Base of Stone Elevation	100	ft		
Recommended Stone Below Chambers*	18	in.	**Include perimeter stone?**	Yes
Recommended Stone Above Chambers*	12	in.	**Standard or metric?**	Standard

Area of System** 346 sq.ft

****Area must be greater than:** 106.31 sq.ft

**The minimum stone below and above the chambers to be determinded by the design engineer.*

System Height (Inches)	Incremental Single Chamber Storage (cu.ft)	Incremental Single End Cap Storage (cu.ft)	Incremental Total Chamber Storage (cu.ft)	Incremental Total End Cap Storage (cu.ft)	Incremental Stone Storage (cu.ft)	Incremental Chamber, End Cap, & Stone (cu.ft)	Cumulative Total Storage for System (cu.ft)	Cumulative System Storage (cu.ft)	Elevation (ft)
60	0.00	0.00	0.00	0.00	11.53	11.53	11.53	754.54	105.00
59	0.00	0.00	0.00	0.00	11.53	11.53	11.53	743.00	104.92
58	0.00	0.00	0.00	0.00	11.53	11.53	11.53	731.47	104.83
57	0.00	0.00	0.00	0.00	11.53	11.53	11.53	719.94	104.75
56	0.00	0.00	0.00	0.00	11.53	11.53	11.53	708.40	104.67
55	0.00	0.00	0.00	0.00	11.53	11.53	11.53	696.87	104.58
54	0.00	0.00	0.00	0.00	11.53	11.53	11.53	685.34	104.50
53	0.00	0.00	0.00	0.00	11.53	11.53	11.53	673.80	104.42
52	0.00	0.00	0.00	0.00	11.53	11.53	11.53	662.27	104.33
51	0.00	0.00	0.00	0.00	11.53	11.53	11.53	650.74	104.25
50	0.00	0.00	0.00	0.00	11.53	11.53	11.53	639.20	104.17
49	0.00	0.00	0.00	0.00	11.53	11.53	11.53	627.67	104.08
48	0.00	0.00	0.00	0.00	11.53	11.53	11.53	616.14	104.00
47	0.12	0.00	0.25	0.00	11.43	11.68	11.68	604.60	103.92
46	0.30	0.00	0.60	0.01	11.29	11.90	11.90	592.92	103.83
45	0.62	0.03	1.23	0.05	11.02	12.30	12.30	581.02	103.75
44	0.85	0.05	1.70	0.09	10.81	12.61	12.61	568.72	103.67
43	1.01	0.07	2.02	0.14	10.67	12.83	12.83	556.11	103.58
42	1.14	0.09	2.28	0.17	10.55	13.00	13.00	543.28	103.50
41	1.24	0.10	2.49	0.21	10.45	13.15	13.15	530.27	103.42
40	1.33	0.12	2.67	0.24	10.37	13.28	13.28	517.12	103.33
39	1.41	0.14	2.82	0.28	10.29	13.39	13.39	503.84	103.25
38	1.48	0.15	2.96	0.31	10.23	13.49	13.49	490.45	103.17
37	1.55	0.17	3.09	0.33	10.16	13.59	13.59	476.96	103.08
36	1.61	0.18	3.22	0.36	10.10	13.68	13.68	463.37	103.00
35	1.67	0.19	3.33	0.39	10.05	13.77	13.77	449.68	102.92
34	1.72	0.21	3.44	0.41	9.99	13.84	13.84	435.92	102.83
33	1.77	0.22	3.54	0.44	9.94	13.92	13.92	422.08	102.75
32	1.81	0.23	3.63	0.46	9.90	13.99	13.99	408.16	102.67
31	1.85	0.24	3.71	0.48	9.86	14.05	14.05	394.17	102.58
30	1.90	0.25	3.79	0.51	9.81	14.11	14.11	380.12	102.50
29	1.93	0.26	3.87	0.53	9.78	14.17	14.17	366.01	102.42
28	1.97	0.27	3.94	0.54	9.74	14.22	14.22	351.84	102.33
27	2.00	0.28	4.01	0.56	9.71	14.27	14.27	337.61	102.25
26	2.03	0.29	4.07	0.58	9.67	14.32	14.32	323.34	102.17
25	2.06	0.30	4.13	0.59	9.64	14.37	14.37	309.02	102.08
24	2.09	0.30	4.19	0.61	9.62	14.41	14.41	294.65	102.00
23	2.12	0.31	4.24	0.62	9.59	14.45	14.45	280.24	101.92
22	2.15	0.32	4.30	0.63	9.56	14.49	14.49	265.79	101.83

21	2.18	0.32	4.35	0.64	9.54	14.53	14.53	251.30	101.75
20	2.20	0.33	4.40	0.65	9.51	14.57	14.57	236.77	101.67
19	2.23	0.33	4.45	0.66	9.49	14.60	14.60	222.20	101.58
18	0.00	0.00	0.00	0.00	11.53	11.53	11.53	207.60	101.50
17	0.00	0.00	0.00	0.00	11.53	11.53	11.53	196.07	101.42
16	0.00	0.00	0.00	0.00	11.53	11.53	11.53	184.53	101.33
15	0.00	0.00	0.00	0.00	11.53	11.53	11.53	173.00	101.25
14	0.00	0.00	0.00	0.00	11.53	11.53	11.53	161.47	101.17
13	0.00	0.00	0.00	0.00	11.53	11.53	11.53	149.93	101.08
12	0.00	0.00	0.00	0.00	11.53	11.53	11.53	138.40	101.00
11	0.00	0.00	0.00	0.00	11.53	11.53	11.53	126.87	100.92
10	0.00	0.00	0.00	0.00	11.53	11.53	11.53	115.33	100.83
9	0.00	0.00	0.00	0.00	11.53	11.53	11.53	103.80	100.75
8	0.00	0.00	0.00	0.00	11.53	11.53	11.53	92.27	100.67
7	0.00	0.00	0.00	0.00	11.53	11.53	11.53	80.73	100.58
6	0.00	0.00	0.00	0.00	11.53	11.53	11.53	69.20	100.50
5	0.00	0.00	0.00	0.00	11.53	11.53	11.53	57.67	100.42
4	0.00	0.00	0.00	0.00	11.53	11.53	11.53	46.13	100.33
3	0.00	0.00	0.00	0.00	11.53	11.53	11.53	34.60	100.25
2	0.00	0.00	0.00	0.00	11.53	11.53	11.53	23.07	100.17
1	0.00	0.00	0.00	0.00	11.53	11.53	11.53	11.53	100.08
0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00

SCM #9

Chamber Model	HS180			
Number of Chambers	2			
Number of Endcaps	2			
Stone Voids (porosity)	40%			
Base of Stone Elevation	100	ft		
Recommended Stone Below Chambers*	18	in.	**Include perimeter stone?**	Yes
Recommended Stone Above Chambers*	12	in.	**Standard or metric?**	Standard

Area of System** 292 sq.ft

****Area must be greater than:** 159.06 sq.ft

**The minimum stone below and above the chambers to be determinded by the design engineer.*

System Height (Inches)	Incremental Single Chamber Storage (cu.ft)	Incremental Single End Cap Storage (cu.ft)	Incremental Total Chamber Storage (cu.ft)	Incremental Total End Cap Storage (cu.ft)	Incremental Stone Storage (cu.ft)	Incremental Chamber, End Cap, & Stone (cu.ft)	Cumulative Total Storage for System (cu.ft)	Cumulative System Storage (cu.ft)	Elevation (ft)
75	0.00	0.00	0.00	0.00	9.73	9.73	9.73	884.69	106.25
74	0.00	0.00	0.00	0.00	9.73	9.73	9.73	874.95	106.17
73	0.00	0.00	0.00	0.00	9.73	9.73	9.73	865.22	106.08
72	0.00	0.00	0.00	0.00	9.73	9.73	9.73	855.49	106.00
71	0.00	0.00	0.00	0.00	9.73	9.73	9.73	845.75	105.92
70	0.00	0.00	0.00	0.00	9.73	9.73	9.73	836.02	105.83
69	0.00	0.00	0.00	0.00	9.73	9.73	9.73	826.29	105.75
68	0.00	0.00	0.00	0.00	9.73	9.73	9.73	816.55	105.67
67	0.00	0.00	0.00	0.00	9.73	9.73	9.73	806.82	105.58
66	0.00	0.00	0.00	0.00	9.73	9.73	9.73	797.09	105.50
65	0.00	0.00	0.00	0.00	9.73	9.73	9.73	787.35	105.42
64	0.00	0.00	0.00	0.00	9.73	9.73	9.73	777.62	105.33
63	0.18	0.59	0.37	1.17	9.12	10.66	10.66	767.89	105.25
62	0.31	0.58	0.63	1.17	9.02	10.81	10.81	757.23	105.17
61	0.44	0.58	0.88	1.16	8.91	10.96	10.96	746.42	105.08
60	0.63	0.58	1.25	1.15	8.77	11.18	11.18	735.46	105.00
59	1.02	0.57	2.05	1.14	8.46	11.65	11.65	724.28	104.92
58	1.27	0.56	2.54	1.13	8.26	11.94	11.94	712.63	104.83
57	1.46	0.56	2.92	1.12	8.12	12.16	12.16	700.70	104.75
56	1.62	0.55	3.24	1.10	8.00	12.34	12.34	688.54	104.67
55	1.76	0.54	3.51	1.08	7.90	12.49	12.49	676.20	104.58
54	1.88	0.53	3.76	1.06	7.81	12.62	12.62	663.72	104.50
53	1.99	0.52	3.97	1.04	7.73	12.74	12.74	651.09	104.42
52	2.08	0.51	4.17	1.02	7.66	12.85	12.85	638.35	104.33
51	2.17	0.50	4.35	1.00	7.60	12.94	12.94	625.50	104.25
50	2.26	0.49	4.51	0.97	7.54	13.02	13.02	612.56	104.17
49	2.33	0.47	4.67	0.95	7.49	13.10	13.10	599.54	104.08
48	2.41	0.46	4.81	0.92	7.44	13.18	13.18	586.44	104.00
47	2.48	0.45	4.95	0.90	7.39	13.24	13.24	573.26	103.92
46	2.54	0.44	5.08	0.87	7.35	13.31	13.31	560.02	103.83
45	2.60	0.42	5.21	0.84	7.31	13.37	13.37	546.71	103.75
44	2.66	0.41	5.33	0.82	7.28	13.42	13.42	533.35	103.67
43	2.72	0.39	5.44	0.79	7.24	13.47	13.47	519.93	103.58
42	2.77	0.37	5.55	0.75	7.22	13.51	13.51	506.46	103.50
41	2.82	0.37	5.65	0.73	7.18	13.56	13.56	492.95	103.42
40	2.87	0.35	5.74	0.70	7.16	13.60	13.60	479.39	103.33
39	2.92	0.34	5.83	0.67	7.13	13.64	13.64	465.79	103.25
38	2.96	0.32	5.93	0.64	7.11	13.67	13.67	452.15	103.17
37	3.00	0.30	6.00	0.60	7.09	13.69	13.69	438.48	103.08
36	3.04	0.28	6.07	0.56	7.08	13.71	13.71	424.79	103.00

35	3.07	0.27	6.14	0.53	7.06	13.74	13.74	411.07	102.92
34	3.11	0.25	6.21	0.50	7.05	13.76	13.76	397.34	102.83
33	3.14	0.23	6.28	0.47	7.03	13.78	13.78	383.58	102.75
32	3.17	0.22	6.34	0.44	7.02	13.80	13.80	369.79	102.67
31	3.20	0.20	6.40	0.41	7.01	13.82	13.82	355.99	102.58
30	3.23	0.19	6.46	0.38	7.00	13.84	13.84	342.18	102.50
29	3.26	0.17	6.52	0.35	6.99	13.85	13.85	328.34	102.42
28	3.29	0.16	6.58	0.32	6.97	13.87	13.87	314.48	102.33
27	3.32	0.14	6.64	0.29	6.96	13.89	13.89	300.61	102.25
26	3.35	0.12	6.70	0.25	6.96	13.90	13.90	286.72	102.17
25	3.38	0.10	6.75	0.19	6.95	13.90	13.90	272.82	102.08
24	3.40	0.08	6.81	0.16	6.94	13.92	13.92	258.92	102.00
23	3.43	0.07	6.87	0.14	6.93	13.93	13.93	245.00	101.92
22	3.46	0.05	6.92	0.10	6.92	13.95	13.95	231.07	101.83
21	3.49	0.03	6.98	0.06	6.92	13.96	13.96	217.12	101.75
20	3.52	0.01	7.04	0.03	6.91	13.97	13.97	203.16	101.67
19	3.55	0.00	7.09	0.00	6.90	13.99	13.99	189.19	101.58
18	0.00	0.00	0.00	0.00	9.73	9.73	9.73	175.20	101.50
17	0.00	0.00	0.00	0.00	9.73	9.73	9.73	165.47	101.42
16	0.00	0.00	0.00	0.00	9.73	9.73	9.73	155.73	101.33
15	0.00	0.00	0.00	0.00	9.73	9.73	9.73	146.00	101.25
14	0.00	0.00	0.00	0.00	9.73	9.73	9.73	136.27	101.17
13	0.00	0.00	0.00	0.00	9.73	9.73	9.73	126.53	101.08
12	0.00	0.00	0.00	0.00	9.73	9.73	9.73	116.80	101.00
11	0.00	0.00	0.00	0.00	9.73	9.73	9.73	107.07	100.92
10	0.00	0.00	0.00	0.00	9.73	9.73	9.73	97.33	100.83
9	0.00	0.00	0.00	0.00	9.73	9.73	9.73	87.60	100.75
8	0.000	0.000	0.00	0.00	9.73	9.73	9.73	77.87	100.67

SCM #12

Chamber Model	HS180			
Number of Chambers	21			
Number of Endcaps	6			
Stone Voids (porosity)	40%			
Base of Stone Elevation	100	ft		
Recommended Stone Below Chambers*	18	in.	**Include perimeter stone?**	Yes
Recommended Stone Above Chambers*	12	in.	**Standard or metric?**	Standard

Area of System** 1250 sq.ft

****Area must be greater than:** 1236.95 sq.ft

**The minimum stone below and above the chambers to be determinded by the design engineer.*

System Height (Inches)	Incremental Single Chamber Storage (cu.ft)	Incremental Single End Cap Storage (cu.ft)	Incremental Total Chamber Storage (cu.ft)	Incremental Total End Cap Storage (cu.ft)	Incremental Stone Storage (cu.ft)	Incremental Chamber, End Cap, & Stone (cu.ft)	Cumulative Total Storage for System (cu.ft)	Cumulative System Storage (cu.ft)	Elevation (ft)
75	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,611.21	106.25
74	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,569.54	106.17
73	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,527.88	106.08
72	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,486.21	106.00
71	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,444.54	105.92
70	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,402.88	105.83
69	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,361.21	105.75
68	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,319.54	105.67
67	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,277.88	105.58
66	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,236.21	105.50
65	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,194.54	105.42
64	0.00	0.00	0.00	0.00	41.67	41.67	41.67	4,152.88	105.33
63	0.18	0.59	3.84	3.52	38.73	46.08	46.08	4,111.21	105.25
62	0.31	0.58	6.59	3.50	37.63	47.72	47.72	4,065.13	105.17
61	0.44	0.58	9.29	3.48	36.56	49.33	49.33	4,017.41	105.08
60	0.63	0.58	13.15	3.46	35.02	51.63	51.63	3,968.08	105.00
59	1.02	0.57	21.50	3.43	31.69	56.62	56.62	3,916.45	104.92
58	1.27	0.56	26.71	3.39	29.63	59.73	59.73	3,859.82	104.83
57	1.46	0.56	30.69	3.35	28.05	62.09	62.09	3,800.09	104.75
56	1.62	0.55	34.01	3.30	26.74	64.05	64.05	3,738.00	104.67
55	1.76	0.54	36.89	3.24	25.61	65.75	65.75	3,673.95	104.58
54	1.88	0.53	39.44	3.19	24.62	67.24	67.24	3,608.20	104.50
53	1.99	0.52	41.71	3.12	23.73	68.57	68.57	3,540.97	104.42
52	2.08	0.51	43.76	3.06	22.94	69.76	69.76	3,472.40	104.33
51	2.17	0.50	45.63	2.99	22.22	70.84	70.84	3,402.64	104.25
50	2.26	0.49	47.36	2.92	21.55	71.84	71.84	3,331.79	104.17
49	2.33	0.47	48.98	2.85	20.93	72.77	72.77	3,259.96	104.08
48	2.41	0.46	50.52	2.77	20.35	73.65	73.65	3,187.19	104.00
47	2.48	0.45	51.99	2.70	19.79	74.48	74.48	3,113.55	103.92
46	2.54	0.44	53.37	2.62	19.27	75.26	75.26	3,039.07	103.83
45	2.60	0.42	54.69	2.53	18.78	76.00	76.00	2,963.81	103.75
44	2.66	0.41	55.94	2.45	18.31	76.70	76.70	2,887.81	103.67
43	2.72	0.39	57.12	2.37	17.87	77.36	77.36	2,811.11	103.58
42	2.77	0.37	58.24	2.25	17.47	77.96	77.96	2,733.75	103.50
41	2.82	0.37	59.30	2.19	17.07	78.56	78.56	2,655.80	103.42
40	2.87	0.35	60.30	2.10	16.71	79.11	79.11	2,577.23	103.33
39	2.92	0.34	61.24	2.01	16.37	79.62	79.62	2,498.13	103.25
38	2.96	0.32	62.25	1.91	16.00	80.16	80.16	2,418.51	103.17
37	3.00	0.30	62.97	1.80	15.76	80.53	80.53	2,338.34	103.08

36	3.04	0.28	63.75	1.69	15.49	80.93	80.93	2,257.82	103.00
35	3.07	0.27	64.48	1.60	15.23	81.32	81.32	2,176.89	102.92
34	3.11	0.25	65.21	1.50	14.98	81.69	81.69	2,095.57	102.83
33	3.14	0.23	65.91	1.41	14.74	82.05	82.05	2,013.88	102.75
32	3.17	0.22	66.58	1.31	14.51	82.40	82.40	1,931.82	102.67
31	3.20	0.20	67.24	1.22	14.29	82.74	82.74	1,849.42	102.58
30	3.23	0.19	67.87	1.13	14.07	83.07	83.07	1,766.68	102.50
29	3.26	0.17	68.49	1.04	13.86	83.38	83.38	1,683.62	102.42
28	3.29	0.16	69.12	0.95	13.64	83.71	83.71	1,600.23	102.33
27	3.32	0.14	69.73	0.86	13.43	84.02	84.02	1,516.52	102.25
26	3.35	0.12	70.33	0.74	13.24	84.31	84.31	1,432.50	102.17
25	3.38	0.10	70.91	0.58	13.07	84.56	84.56	1,348.19	102.08
24	3.40	0.08	71.50	0.49	12.87	84.86	84.86	1,263.63	102.00
23	3.43	0.07	72.09	0.41	12.67	85.17	85.17	1,178.77	101.92
22	3.46	0.05	72.70	0.29	12.47	85.46	85.46	1,093.60	101.83
21	3.49	0.03	73.29	0.19	12.27	85.76	85.76	1,008.13	101.75
20	3.52	0.01	73.87	0.08	12.09	86.04	86.04	922.38	101.67
19	3.55	0.00	74.45	0.01	11.88	86.34	86.34	836.34	101.58
18	0.00	0.00	0.00	0.00	41.67	41.67	41.67	750.00	101.50
17	0.00	0.00	0.00	0.00	41.67	41.67	41.67	708.33	101.42
16	0.00	0.00	0.00	0.00	41.67	41.67	41.67	666.67	101.33
15	0.00	0.00	0.00	0.00	41.67	41.67	41.67	625.00	101.25
14	0.00	0.00	0.00	0.00	41.67	41.67	41.67	583.33	101.17
13	0.00	0.00	0.00	0.00	41.67	41.67	41.67	541.67	101.08
12	0.00	0.00	0.00	0.00	41.67	41.67	41.67	500.00	101.00
11	0.00	0.00	0.00	0.00	41.67	41.67	41.67	458.33	100.92
10	0.00	0.00	0.00	0.00	41.67	41.67	41.67	416.67	100.83
9	0.00	0.00	0.00	0.00	41.67	41.67	41.67	375.00	100.75
8	0.000	0.000	0.00	0.00	41.67	41.67	41.67	333.33	100.67

Appendix F

Focused Transportation Study

July 5, 2022

Mr. Sachneel Patel
Granite Ridge Properties
225 Demeter Street
East Palo Alto, CA 94303

DRAFT Focused Transportation Study for the Casa Way Subdivision Project

Dear Mr. Patel;

As requested, W-Trans has prepared a focused transportation study for the proposed Casa Way Subdivision project in the City of Scotts Valley. The purpose of this letter is to present an analysis of the project's potential trip generation, impacts to vehicle miles traveled, and potential conflicts with the proposed access on Casa Way.

Existing Conditions and Project Description

The project site is currently vacant and bound by Sandraya Heights Road to the north, Casa Way to the west, and existing single-family housing to the south and east. Grace Way and San Augustine Way are residential streets that terminate at the project's southern frontage. The project would result in the development of this parcel into ten single-family houses, with access options on Casa Way, Grace Way, and/or San Augustine Way. Sandraya Heights Road is a private road for which project access is not an option.

Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation Manual*, 11th Edition, 2021 for "single family detached housing" (Land Use #210), as this description most closely matches the proposed project. The expected trip generation for the proposed project is indicated in Table 1, and includes an average of 94 trips per day, with seven trips during the a.m. peak hour and nine during the p.m. peak hour.

Table 1 – Trip Generation Summary

Land Use	Units	Daily		AM Peak Hour				PM Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	In	Out
Residential	10 houses	9.43	94	0.70	7	2	5	0.94	9	6	3

Vehicle Miles Traveled Analysis

Senate Bill (SB) 743 established the increase in Vehicle Miles Traveled (VMT) as a result of a project as the basis for determining impacts. Thresholds from *Analyzing Vehicle Miles Traveled for CEQA Compliance; SB 743 Implementation Guidelines for the County of Santa Cruz*, County of Santa Cruz Planning Department, July 2020 were used as this document outlines thresholds of significance, analysis criteria, and other considerations regarding the adoption of VMT for analyzing transportation impacts within the County.

In the *Guidelines* the County indicates that projects which generate fewer than 110 net new trips per day may generally be presumed to have a less-than-significant VMT impact. As the project would have an estimated daily generation of 94 trips, the project would qualify for this screening criterion.

Finding – The project is anticipated to result in a less-than-significant impact on vehicle miles traveled.

Access Analysis

The site design is under development as of the time of this study; however, two alternatives have been produced including one where seven houses would have access via a shared driveway on Casa Way and three would have access on San Augustine Way, for which a cul-de-sac bulb would be constructed as the road currently terminates without an area for drivers to turn around. An alternative would relocate access for four of the seven Casa Way houses to Grace Way, which would also receive a cul-de-sac bulb. On Casa Way, two of the three remaining houses would have direct driveway access while the third would be a flag lot behind the first two. In either alternative, there would be a driveway along the northern border of the site adjacent to Sandraya Heights Road, and the driveway terminus on Casa Way would be adjacent to the Casa Way/Sandraya Heights Road intersection.

The primary concern with the proposed designs is the potential for a roadway user on Casa Way to see the adjacent project driveway and Sandraya Heights Road and assume that the two facilities are one divided roadway, with the driveway serving one-way eastbound and Sandraya Heights Road as one-way westbound. This may lead to wayfinding issues as the driveway and road would not connect, as well as lateral positioning issues from a driver interpreting a two-way facility as one-way. To minimize these concerns, the driveway should be designed to be visually distinct from Sandraya Heights Road, including using different materials (concrete or brick instead of asphalt), having curb cuts instead of curb returns, locating fences, trees, and other visually restricting devices in the area between the driveway and road, providing signage identifying the two separate facilities, and providing as much space as practical between Sandraya Heights Road and the driveway

Copies of both site plan options are enclosed. As an alternative to incorporating these design elements into the proposed driveway, some elements could instead be incorporated into a reconstruction of Sandraya Heights at Casa Way. Enclosed is a design alternative showing the project driveway as having curb returns, compared to Sandraya Heights which would be reconstructed with a curb cut. Additionally, the project driveway is depicted as having a brick apron in contrast to the concrete apron that would be constructed across Sandraya Heights Road.

Finding – The driveway connecting to Casa Way would potentially conflict with Sandraya Heights Road given the proposed proximity of the facilities. This may result in driver confusion if the two facilities appear to be one divided roadway rather than two separate two-way roadways.

Recommendation – The Casa Way driveway should be designed to be visually distinct from Sandraya Heights Road, including physically separating the two, using different materials (concrete, asphalt, brick) for the driveway and for Sandraya Heights Road, using curb returns on one facility and curb cuts on the other, providing identifying signage distinguishing the driveway from the roadway, and locating visually restricting devices such as fences or trees between the two facilities.

Conclusions and Recommendations

- Completion of the proposed project would result in an estimated 94 trips per day, including seven during the a.m. peak hour and nine during the p.m. peak hour.

- As the project would be expected to generate fewer than 110 daily trips, the project is anticipated to have a less-than-significant impact on vehicle miles traveled.

- There is potential for visual conflict between the proposed driveway connecting to Casa Way and Sandraya Heights Road, which to a driver on Casa Way may appear as one divided roadway instead of separate facilities. To minimize this conflict the driveway should be designed to be visually distinct from Sandraya Heights Road.

DRAFT

Thank you for giving W-Trans the opportunity to provide these services. Please call if you have any questions.

Sincerely,

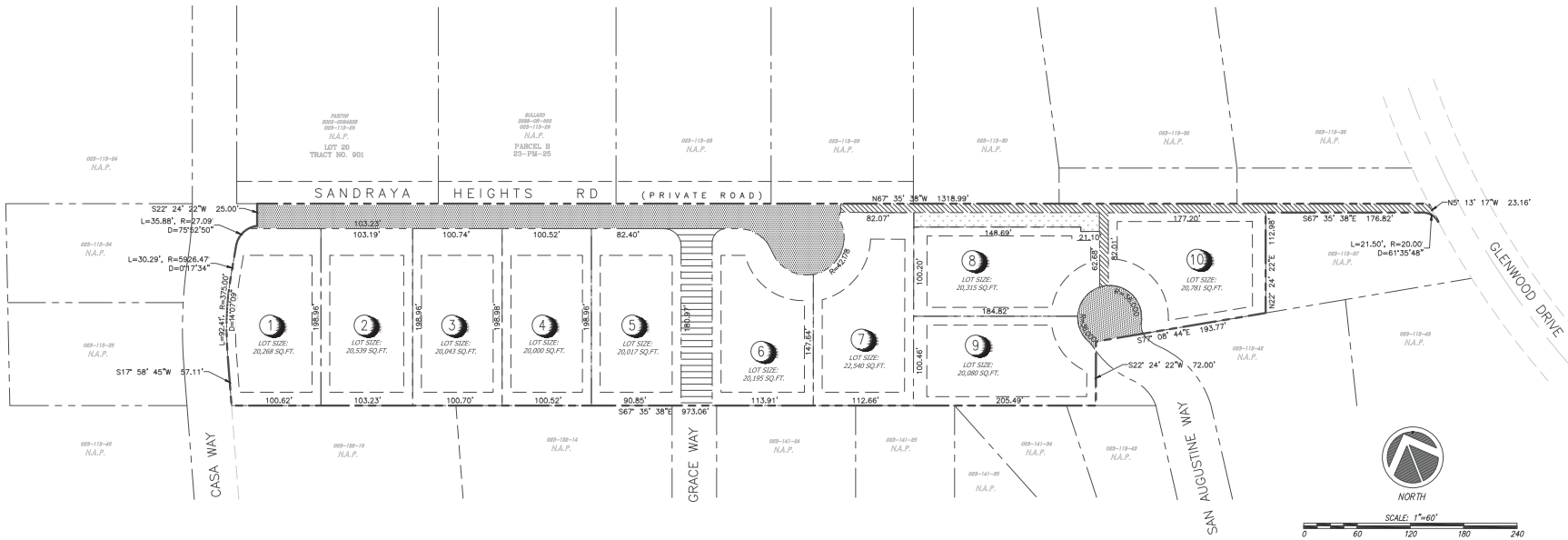
Kevin Carstens, PE, TE
Traffic Engineer

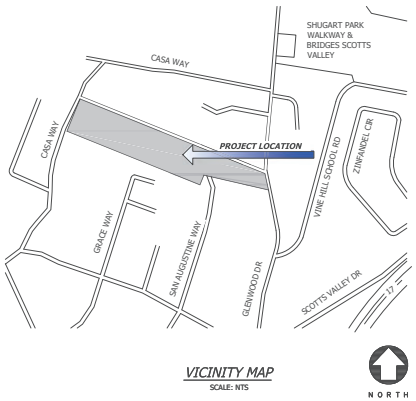
Mark E. Spencer, PE
Senior Principal

MES/krc/SVA016.L1

Enclosures: Site Plans, Alternative Driveway Concept Design

DRAFT





VICINITY MAP
SCALE: NTS

GENERAL

OWNERS / SUBDIVIDER:	GRANITE RIDGE PROPERTIES 225 DEMETER STREET EAST PALO ALTO, CA 94303 408.799.7395
CIVIL ENGINEER:	CIVIL CONSULTANTS GROUP, C2G INC. 4444 SCOTTS VALLEY DRIVE, SUITE 6 SCOTTS VALLEY, CA 95066
SURVEYOR	ALPHA SURVEY 4444 SCOTTS VALLEY DRIVE SCOTTS VALLEY, CA 95066 831.438.4420
EXISTING USE:	-
EXISTING ZONING:	R-1-20 (SINGLE-FAMILY RESIDENTIAL / 20,000 SQ. FT. LOTS)
PROPOSED USE:	RESIDENTIAL
PROPOSED ZONING:	R-1-20 (SAME AS EXISTING)

SETBACKS (PER R-1-20)

FRONT : 30 FT

SIDE YARD : 10% OF LOT WIDTH WITH A MAXIMUM OF 10 FEET

REAR : 15 FT

MAP REFERENCES

A. 23-PM-25
B. 108-M-25
C. 108-M-26
D. 68-M-59
E. 44-PM-01
F. 46-PM-23
G. 36-PM-25
H. CR149
I. 52-PM-43

LEGEND

- PRIVATE STORM DRAIN EASEMENT
- EVAE / PUE
- PUBLIC ACCESS EASEMENT
- TRACT BOUNDARY LINE
- ADJOINING PROPERTY LINE
- BUILDING SETBACKS PER CURRENT ZONING
- (1) NEW RESIDENTIAL LOT ID
- INGRESS/EGRESS & PUE PORTION OF PROPERTY OFFERED FOR DEDICATION TO THE CITY OF SCOTTS VALLEY

USA NORTH 811 Call 811 Before You Dig

REVISIONS	BY

TENTATIVE MAP

REGISTERED PROFESSIONAL ENGINEER TODD R. CREAMER No. C 61561 EXP. 6/30/23 CIVIL STATE OF CALIFORNIA

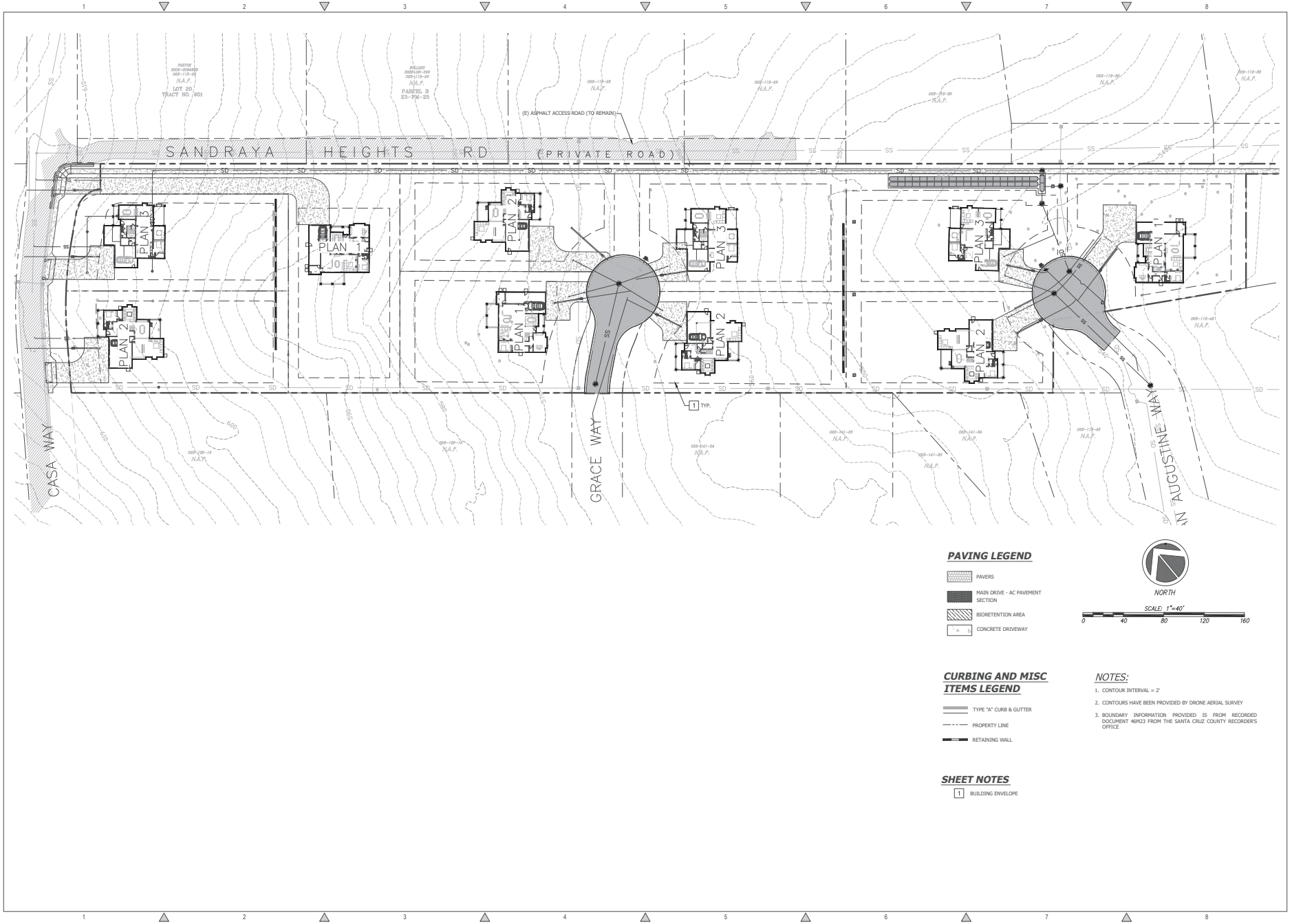
PRELIMINARY

C2G /CIVIL CONSULTANTS GROUP, INC
Engineers/Planners
4444 Scotts Valley Drive / Suite 6
Scotts Valley, CA 95066
831.438.4420

CASA WAY RESIDENTIAL SUBDIVISION
SCOTTS VALLEY, CA
GRANITE RIDGE PROPERTIES

Date:	02.24.22
Scale:	1" = 60'
Drawn:	DD
Job:	2014.01
Sheet:	C0.2
Of	9 Sheets

Drawing: Z:\Shared\CAD\2014.01 - Granite Ridge - Casa Way\Design\CAD\Sheets\2014.01 - C02 - Tent.dwg Layout: C02 Last Saved: Wed Mar 16, 2022 - 2:26pm Last Plotted: Thu Mar 17, 2022 - 2:12pm By: Dave



REVISIONS	BY

BUILDING SITE LAYOUT

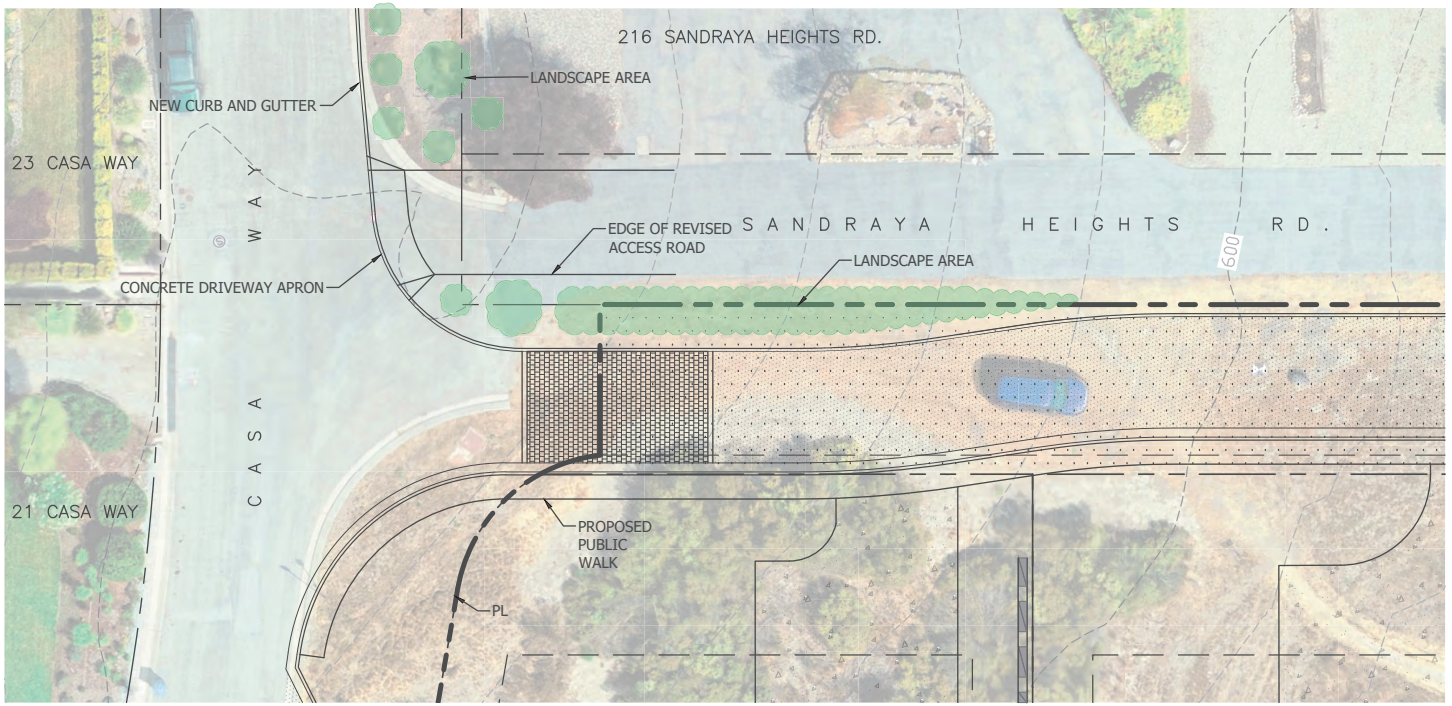
PRELIMINARY

C2G /CIVIL CONSULTANTS GROUP, INC
Engineers/Planners
Scott Scotts Valley Drive / Suite 6
Scotts Valley, CA 95066
831.438.4400

CASA WAY RESIDENTIAL SUBDIVISION
SCOTTS VALLEY, CA
GRANITE RIDGE PROPERTIES

Date:	05.25.22
Scale:	1" = 40'
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Sheet:	C2.2
Of	9 Sheets

Drawing: Z:\Shared\CAD\2014.01 - Granite Ridge - Casa Way\design\CAD\Sheets\2014.01 - C2.2 - SITE.dwg Layout: C2.2 - Site Plan Last Saved: Tue Jun 21, 2022 - 5:53pm Last Plotted: Wed Jun 22, 2022 - 2:59pm By: Dave



NORTH

REVISIONS | BY

ACCESS ROAD LAYOUT

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RESIDENTIAL SUBDIVISION
SCOTTS VALLEY, CA

Date: 06.27.22
Scale: 1":20'
Drawn: DD
Job: 2014.01
Sheet: A
Of 1 Sheets

Drawing: Z:\Shared\CAD\2014.01 - Granite Ridge - Casa Way\Design\Exhibits\2014.01 - CIVIL_A - 06.27.22.dwg Layout: Layout1 Last Saved: Mon Jun 27, 2022 - 9:15am Last Plotted: Mon Jun 27, 2022 - 11:34am By: -