COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT A

Map Scale: 1:988 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 45 90 180 270

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 Rating Polygons

- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Lines

- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Soil Rating Points

- Capability Class - I
- Capability Class - II
- Capability Class - III
- Capability Class - IV
- Capability Class - V
- Capability Class - VI
- Capability Class - VII
- Capability Class - VIII
- Not rated or not available

Water Features

- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background

- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: San Mateo County, Eastern Part, and San Francisco County, California
Survey Area Data: Version 15, Sep 16, 2019

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

Date(s) aerial images were photographed: Apr 12, 2019—Apr 24, 2019

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

Nonirrigated Capability Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
124	Orthents, cut and fill-Urban land complex, 5 to 75 percent slopes	8	2.2	100.0%
Totals for Area of Interest			**2.2**	**100.0%**

Description

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations that show suitability and limitations of groups of soils for rangeland, for woodland, or for engineering purposes.

In the capability system, soils are generally grouped at three levels-capability class, subclass, and unit. Only class and subclass are included in this data set.

Capability classes, the broadest groups, are designated by the numbers 1 through 8. The numbers indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class 1 soils have few limitations that restrict their use.

Class 2 soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class 3 soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class 4 soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class 5 soils are subject to little or no erosion but have other limitations, impractical to remove, that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that restrict their use mainly to pasture, rangeland, forestland, or wildlife habitat.

Class 7 soils have very severe limitations that make them unsuitable for cultivation and that restrict their use mainly to grazing, forestland, or wildlife habitat.

Class 8 soils and miscellaneous areas have limitations that preclude commercial plant production and that restrict their use to recreational purposes, wildlife habitat, watershed, or esthetic purposes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT B

BIOLOGICAL RESOURCE ASSESSMENT

1750 CORDILLERAS RD.
EMERALD HILLS, CA

PREPARED FOR:

Cordilleras LLC
937 Lakeview Way
Emerald Hills, CA 94062

PREPARED BY:

Coast Ridge Ecology
1410 31st Avenue
San Francisco, CA 94122

Originally Submitted: May 2019
Revised: July 9, 2019

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APPENDICES

I. SUMMARY

This report provides a biological assessment and CEQA analysis of biological resources for a 1.9 acre parcel located at 1750 Cordilleras Rd. Emerald Hills, CA. The property is bounded by Cordilleras Ave to the south, by an undeveloped parcel belonging to the City and County of San Francisco to the west, and by other single-family residences to the north ad east. Cordilleras Creek runs along the southern portion of the parcel. Access to the site is provided from Cordilleras Ave by a driveway bridge which crosses Cordilleras Creek.

The proposed project involves the creation of a minor subdivision by splitting a 1.9 acre site into three separate parcels for the eventual development of two new single-family residences. The project would involve the conversion of the existing driveway into a private street (Ricci Court), and the eventual construction of two new residential homes and private driveways.

Vegetation on the property is comprised of coast live oak woodland with an annual grassland understory. The riparian corridor surrounding Cordilleras Creek is also vegetated with coast live oak woodland species with a predominately non-native herbaceous understory. The property provides good habitat value for common wildlife species.

One special status wildlife species, the San Francisco dusky-footed woodrat, was observed on site during the field surveys. Sixteen wildlife species have a low probability of occurrence onsite. The pallid bat (*Antrozous pallidus*), Townsend's big-eared bat(*Corynorhinus townsendii*), fringed myotis (*Myotis thysanodes*) have some potential to forage on the property but would not roost there. The hoary bat (*Lasiurus cinereus*) could forage and roost on site but is not known to breed in the San Francisco Bay area. The property lacks nesting habitat but provides suitable foraging habitat for the following bird species: American peregrine falcon (*Falco peregrinus anatum*), merlin (*Falco columbarius*), saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*), bank swallow (*Riparia riparia*), and long-eared owl (*Asio otus*). The white-tailed kite (*Elanus leucurus*) could potentially forage and nest on site, however it tends to prefer isolated trees in larger grassland areas to nest in. Marginal habitat exists for California giant salamander (*Dicamptodon ensatus*) and California red-legged frog (*Rana draytonii*). One fish species, steelhead (*Oncorhynchus mykiss irideus*), has low potential to be found in Cordilleras creek. The western bumblebee (*Bombus occidentalis*) and Monarch butterfly (*Danaus plexippus*) could forage on the property. More detail is needed about the Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*) to determine its potential for presence in Cordilleras Creek.

Two special status plant species have low potential to be found on the property within the riparian corridor: Franciscan onion (*Allium peninsulare var. franciscanum*) and San Francisco collinsia (*Collinsia multicolor*).

Avoidance measures for San Francisco dusky-footed woodrat, nesting birds, roosting bats, California red-legged frog, California giant salamander, rare plants, and significant

trees are specified in Chapter X of this report. The riparian corridor and Cordilleras Creek are not anticipated to be impacted by the proposed project.

Table 1, on page 24, provides a list of special status plant and animal species that were considered for their potential to occur within the property. **Appendix A** provides a list of plant and animal species observed on the site, and **Appendix B** provides representative photos of the property.

II. PROJECT/PROPERTY LOCATION

1750 Cordilleras Rd. is a 1.9 acre parcel located Emerald Hills, CA. It is bounded by Cordilleras Rd. to the south, by an undeveloped parcel belonging to the City and County of San Francisco to the west, and by other single-family residences to the north and east. Cordilleras Creek runs along the southern portion of the parcel. Access to the site is provided from Cordilleras Ave by a driveway bridge which crosses Cordilleras Creek. The property is developed with a single-family residential home.

III. PROJECT DESCRIPTION

The proposed project involves the creation of a minor subdivision by splitting a 83,118 ft^2 (1.9 acres) parcel into three parcels (22,223 ft^2, 17,815 ft^2, and 43,071 ft^2). The current project would involve minor grading for the conversion of the existing driveway into a private street (Ricci Court). Future projects would involve the development of two new private residential units and associated driveways. Swales may be installed along the two new driveways and along Ricci Court to capture surface runoff and direct water to rip-rap filled dissipators. Construction of the new driveways would involve the removal of several native oak trees. All project impacts would occur over 20' away from the top of bank of Cordilleras Creek, with the exception of the installation of the rip-rap filled stormwater dissipators which would be place nearer the top of bank.

IV. METHODS

Coast Ridge Ecology biologist Suk-Ann Yee performed an initial site visit on March 22, 2019. An additional site visit was performed on April 26; the site and surrounding areas were surveyed for biological resources, with a focus on the riparian corridor along Cordilleras Creek. Weather at the time of the surveys ranged form overcast with calm winds and temperatures in the low 50's ºF on March 22, to clear and sunny with winds ~ 5mph and temperatures in the low 70's ºF on April 26. All plant and animal species observed were documented and plant communities and habitats were assessed for their potential to support special status species. The California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CNDDB) was consulted for known occurrences of sensitive plant, animal, and natural plant communities of concern found within the Woodside and eight surrounding 7.5' USGS topographic quadrangles (CNDDB 2019). Data from the CNDDB, California Native Plant Society (CNPS) On-Line Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2019), knowledge of

regional biota, and observations made during the field survey, were used to evaluate on-site habitat suitability for special status plant and wildlife species within the property. In addition other background databases and documents were reviewed including the National Wetlands Inventory (USFWS 2019) and Web Soil Survey (NRCS 2019).

V. EXISTING SETTING

The site is currently a single-family residential property developed with a single-family residential home, a driveway, and a bridge to provide road access across Cordilleras Creek. In addition, several corrugated metal sheds are present on the property as well as an RV and piles of chainlink fence, lumber, and other construction materials. The site is vegetated with native and ornamental trees and shrubs, with areas of open grassland areas, and with riparian woodland vegetation along Cordilleras Creek. A portion of Cordilleras Creek east (downstream) of the access road has concrete walls installed for bank stabilization on both sides of the creek. A sandbag lined drainage on the southeastern corner of the site connects a concrete culvert underneath Cordilleras Rd. to the creek. The elevation of the site ranges from 126' to 172' above mean sea level. The property is located within the Residential Hillside Districts/ Design Review Districts (RH/DR) per the San Mateo County Zoning Regulations. **Appendix B** provides representative photos of the property.

Soils

There is one known soil type mapped on the property, and in the immediate surrounding area: Orthents, cut and fill-Urban land complex, 5 to 75 percent slopes (NRCS 2019). Orthents are formed from Alluvium and found in upland areas. This soil type is well drained with a depth to water table of more than 80 inches. Orthent soils are not considered hydric soils. Orthents, cut and fill-Urban land complex, 5 to 75 percent slopes are found at elevations of 80 to 790 feet. There are no serpentine or sandy soils present on the property.

Hydrology

The property contains a gentle slope with the highest part of the site in the north corner of the site, (172'), and the lowest elevations in Cordilleras Creek (140' at top of bank and 126' at the toe of bank). Cordilleras Creek runs along the southern edge of the property parallel to Cordilleras Rd. Water likely drains off impermeable surfaces (driveway and paved areas around the existing home) into vegetated area where it permeates through soils on the site and may create minimal surface or subsurface runoff into Cordilleras Creek during times of heavy precipitation. An existing concrete culvert captures run off from Cordilleras Rd. and drains into Cordilleras Creek through a channel lined with concrete sandbags. Portions of Cordilleras Creek, east (downstream) of the on-site bridge, have been improved with concrete retaining walls on the lower banks of the creek. Cordilleras Creek flows northeast into a slough which connects to the San Francisco Bay, located 2.3 miles to the northeast.

Figure 1: Project Location Map
1750 Cordilleras Road, Emerald Hills, CA

0 0.4 0.8 1.6 2.4 Miles

Project Location

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

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Figure 2: Project Site Detail
1750 Cordilleras Road, Emerald Hills, CA

Feet
0 35 70 140 210

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and

- Site Parcel Boundary
- Cordilleras Creek (Approximate)
- Riparian Corridor (Approximate)
- San Francisco Dusky-Footed Woodrat Midden

VI. PLANT COMMUNITIES AND HABITAT TYPES

Vegetation

Vegetation on the property is comprised of coast live oak woodland with an annual grassland understory. The riparian corridor surrounding Cordilleras Creek is also vegetated with coast live oak woodland species with a predominately non-native herbaceous understory.

Coast live oak (*Quercus agrifolia*) and several California bay (*Umbellularia californica)* trees comprise the canopy of the Cordilleras Creek riparian corridor. Several smaller valley oak (*Quercus lobata*) trees were observed between the creek corridor and Cordilleras Rd. Woody understory species observed were predominately native and included California buckeye (*Aesculus californica*), poison oak (*Toxicodendron diversilobum*), coyote brush (*Baccharis pilularis*), coffeeberry (*Frangula californica*), and snowberry (*Symphoricarpus albus*). Non-native woody species included French broom (*Genista monspessulana*) and wolly cotoneaster (*Cotoneaster pannosus*), which are both listed as invasive species by the California Invasive Plant Council (Cal-IPC). Herbaceous understory species were comprised by non-native species including ripgut brome (*Bromus diandrus),* Italian thistle (*Carduus pychnocephalus*), cutleaf geranium (*Geranium dissectum*), crane's bill geranium (*Geranium molle*), greater periwinkle (*Vinca major*), tall sock-destroyer (*Torolis arvensis*), spring vetch (*Vicia sativa*), and Bermuda buttercup (*Oxalis pes-caprae*). Native herbaceous species observed included miner's lettuce (*Claytonia perfoliata*), California brome (*Bromus carinatus*), goose grass (*Galium aparine*), California figwort (*Scrophularia californica*) and man-root (*Marah sp.*). Coast live oak is not generally considered a riparian species as it can easily grow in upland habitats as well. However for the purpose of this biological resource assessment, the coast live oak canopy immediately adjacent to Cordilleras Creek is considered a part of the riparian corridor and is mapped as such in **Figure 2**.

Outside of the riparian corridor, the property is vegetated with oak woodland species with an annual grassland understory. The dominant tree species observed was coast live oak with several blue oak (*Quercus douglasiana*) in the upland areas. Dominant herbaceous species included ripgut brome, slender wild oats (*Avena barbata*), foxtail barley (*Hordeum murinum*), hop clover (*Trifolium campestre*), Italian thistle, miner's lettuce, goose grass and cutleaf geranium. The vast majority of species in the grassland understory were non-native.

A number of non-native ornamental tree and shrub species were observed planting around the existing single-family home and along the property boundary/ fenceline to the northwest. These included blackwood acacia (*Acacia melonoxylon*), olive (*olea europaea*) chasmanthe (*Chasmanthe floribunda*), lavender (*Lavendula*) and rosemary (*Rosmarinus officinalis*).

There are no rare plant communities located within the property (Sawyer, et al. 2009). A list of all plant and animal species identified on site is provided in **Appendix A**.

Wetlands/Water Features

To meet the US Army Corps of Engineers (USACE) definition of wetland, an area must demonstrate three critical characteristics: wetland vegetation, wetland hydrology, and wetland soils (Federal Interagency Committee for Wetland Delineation 1989). Additionally, to fall under jurisdiction of the USACE, a wetland must have some evident hydrological connection to other wetlands and/or waters of the United States. The US Fish and Wildlife Service definition of wetland is similar: at least periodically, the land must support predominantly hydrophytes; the substrate must be predominantly undrained hydric soil; or the substrate is non-soil that is saturated with water or covered by shallow water at some time during the growing season of the year (Cowardin, et al. 1979).

Cordilleras Creek runs through the southern edge of the property, parallel to Cordilleras Road. The section of Cordilleras Creek that runs through the project site is characterized as Freshwater Forest/Shrub Wetland (PFOA: Palustrine, Forested, Temporary Flooded) by the National Wetlands Inventory (USFWS 2019). Sections of Cordilleras Creek both upstream and downstream of the property are characterized as Riverine habitat (R4SBC: Riverine, Intermittent, Streambed, Seasonally Flooded). On site observations suggest that the section of Cordilleras Creek which runs through the property would be more accurately characterized as a riverine, rather than a palustrine wetland.

Implementation of the proposed project would not impact any wetland or waters features present on site. A 20-foot setback from the top of bank is proposed as the limits to project disturbance. A waters of the U.S. and wetland delineation would be required to determine the exact limits of jurisdictional waters on site.

Wildlife

The property provides good value for smaller wildlife species such as birds and small mammals. Bird species observed on site include oak titmouse (*Baeolophus inornatus*), Anna's hummingbird (*Calypte anna*), dark-eyed junco (*Junco hyemalis*), lesser goldfinch (*Spinus psaltria*), bushtit (*Psaltriparus minimus*), chestnut-backed chickadee (*Poecile rufescens*) and spotted towhee (*Pipilo maculatus*). Other bird species observed near, but not within, the property included American Crow (*Corvus brachyrhnynchos*), American robin (*Turdus migratorius*), and red-shouldered hawk (*Buteo lineatus*). The smaller songbirds are likely to nest in the vegetation on site, while crows and hawks would generally opt for taller trees in the surrounding neighborhood. Two small mammals, eastern grey squirrel (*Scirius carolinensis*), and sign of Botta's pocket gopher (*Thomomys bottae*) were observed during the site visits. In addition two middens (stick nests) belonging to the San Francisco dusky-footed woodrat (*Neotoma fuscipes annectans*), a California Species of Special Concern, were observed within the riparian corridor. Other mammals including striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), mule deer

(*Odocoileus hemionus*), or gray fox (*Urocyon cinereoargenteus*) could occasionally forage on the property.

Potential exists for bats to forage over the property, and individual bats could roost within tree cavities and foliage on site. There is some minimal potential for bats to nest within tree cavities or in unused sheds or other buildings on site.

Good habitat exists for small reptiles and amphibians to be found within the property. Two reptiles, western skink (*Plestiodon skiltonianus*) and western fence lizard (*Sceloporus occidentalis*), were observed on site. One amphibian, Pacific tree frog (*Pseudacris regilla*) was observed on property during the March site visit. A variety of insects and insect larvae were observed on site including ants, centipedes, caterpillars, damselflies, crane flies, millipede, woodlouse and spiders. These species, along with earthworms, provide a good food source for reptiles, amphibians, birds and small mammals to forage on within the property.

Cordilleras Creek, an intermittent stream, likely provides habitat for common fish species such as California roach (*Hesperoleucus symmetricus*) though no fish species were observed during the site visit.

Wildlife Movement Corridors

Wildlife movement corridors are important for wildlife that have large home range sizes, or require multiple habitat types for different parts of their life cycle (i.e., breeding, rearing, feeding, dispersal, hibernation /aestivation) within a given region. Habitat linkages or corridors facilitate movement within discrete areas as well as movement in-between larger meta-populations in the region. Wildlife movement includes migration (i.e., usually one direction per season), inter-population movement (i.e., long-term genetic exchange) and small travel pathways (i.e., daily movement within an animal's home range).

The coast live oak woodland surrounding Cordilleras Creek and the creek itself provides an important movement corridor for wildlife species. Wildlife may use the creek to move up and downstream and to access surrounding open space areas including Edgewood Park and Natural Preserve which is located one mile to the west. The proposed project is not expected to impact the riparian corridor and all work will follow a 20-foot setback from the top of bank as shown in the project plans.

VII. SPECIAL STATUS PLANTS, ANIMALS, AND NATURAL COMMUNITIES

The California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CNDDB) maintains records of reported occurrences of sensitive plant, animal and natural plant communities of concern. CNDDB records provide useful information about what species have been found in a given project area, and what species may be expected in similar habitat types. An area that has not been surveyed or visited may support sensitive species that have not been discovered and reported and in addition, may require site-specific surveys to rule out special status species occurrences. The U. S. Fish and Wildlife

Service (USFWS), Sacramento, also maintains lists of listed species and other species of concern that may occur in or be affected by projects in a given USGS topographic quadrangle. Information on special status plant species was obtained from the CNPS On-line Inventory of Rare, Threatened, and Endangered Plants of California.

The CNDDB records for the Woodside 7.5 minute topographic quadrangle and eight surrounding quadrangles were reviewed for sensitive element occurrences that could be found within the property (CNDDB 2019). The potential for the presence of these special status species based on proximity to the site, or similar habitat utilization is provided in **Table 1** at the end of this report**.**

One special status wildlife species, the San Francisco dusky-footed woodrat, was observed on site during the field surveys. No special status plant species or sensitive habitats were observed on site during the field surveys.

Fifteen wildlife species have a low probability of occurrence onsite, based on habitat types and/or recorded observations within three miles of the property. The pallid bat *(Antrozous pallidus),* Townsend's big-eared bat *(Corynorhinus townsendii)*, and fringed myotis *(Myotis thysanodes)* have some potential to forage on the property but would not roost there. The hoary bat (*Lasiurus cinereus*) could forage and roost on site but is not known to breed in the San Francisco Bay area. The property lacks nesting habitat but provides suitable foraging habitat for the following bird species: American peregrine falcon *(Falco peregrinus anatum)*, merlin (*Falco columbarius*), saltmarsh common yellowthroat *(Geothlypis trichas sinuosa)*, bank swallow *(Riparia riparia)*, and long-eared owl *(Asio otus)*. The white-tailed kite *(Elanus leucurus)* could potentially forage and nest on site, however it tends to prefer isolated trees in larger grassland areas to nest in. Marginal habitat exists for the California giant salamander (*Dicamptodon ensatus)* and California red-legged frog (*Rana draytonii*). One fish species, steelhead (*Oncorhynchus mykiss irideus*), has low potential to be found in Cordilleras creek. The western bumblebee (*Bombus occidentalis)* and Monarch butterfly (*Danaus plexippus)* could forage on the property. More detail is needed about the Ricksecker's water scavenger beetle (*Hydrochara rickseckeri)* to determine its potential for presence in Cordilleras Creek.

Based on the habitat types present and the field surveys conducted on the property, two special status plant species have low potential to be found on the property: Franciscan onion *(Allium peninsulare* var. *franciscanum)* and San Francisco collinsia (*Collinsia multicolor).* Due to the disturbed nature of the majority of the site (the existing home was built in 1956), there is no potential for these species to be found within the upland areas of the property. There is some low potential for these species to be found underneath the oak riparian canopy particularly along the portion of the creek west (upstream) of the bridge crossing. The creek banks east (downstream) of the bridge crossing have been previously disturbed during the implementation of concrete retaining walls on both sides of the creek, and the installation of the concrete culvert which drains to the creek.

Two sensitive stream habitats (North Central Coast California Roach/Stickleback/ Steelhead Stream, and North Central Coast Steelhead/Sculpin Stream) have low potential to be found onsite. Insufficient information is available to determine whether steelhead use

Cordilleras creek to spawn; there are no documented occurrences of steelhead in the creek (Leidy, R.A., G.S. Becker, B.N. Harvey 2005; CNDDB 2019).

Figure 3 shows the location of the recorded occurrences of special status species within a three-mile radius of the property. Species accounts are provided for Federally and State Listed Endangered or Threatened Species with potential to occur on site, and for the San Francisco dusky-footed woodrat, a California Species of Special Concern which was observed on site.

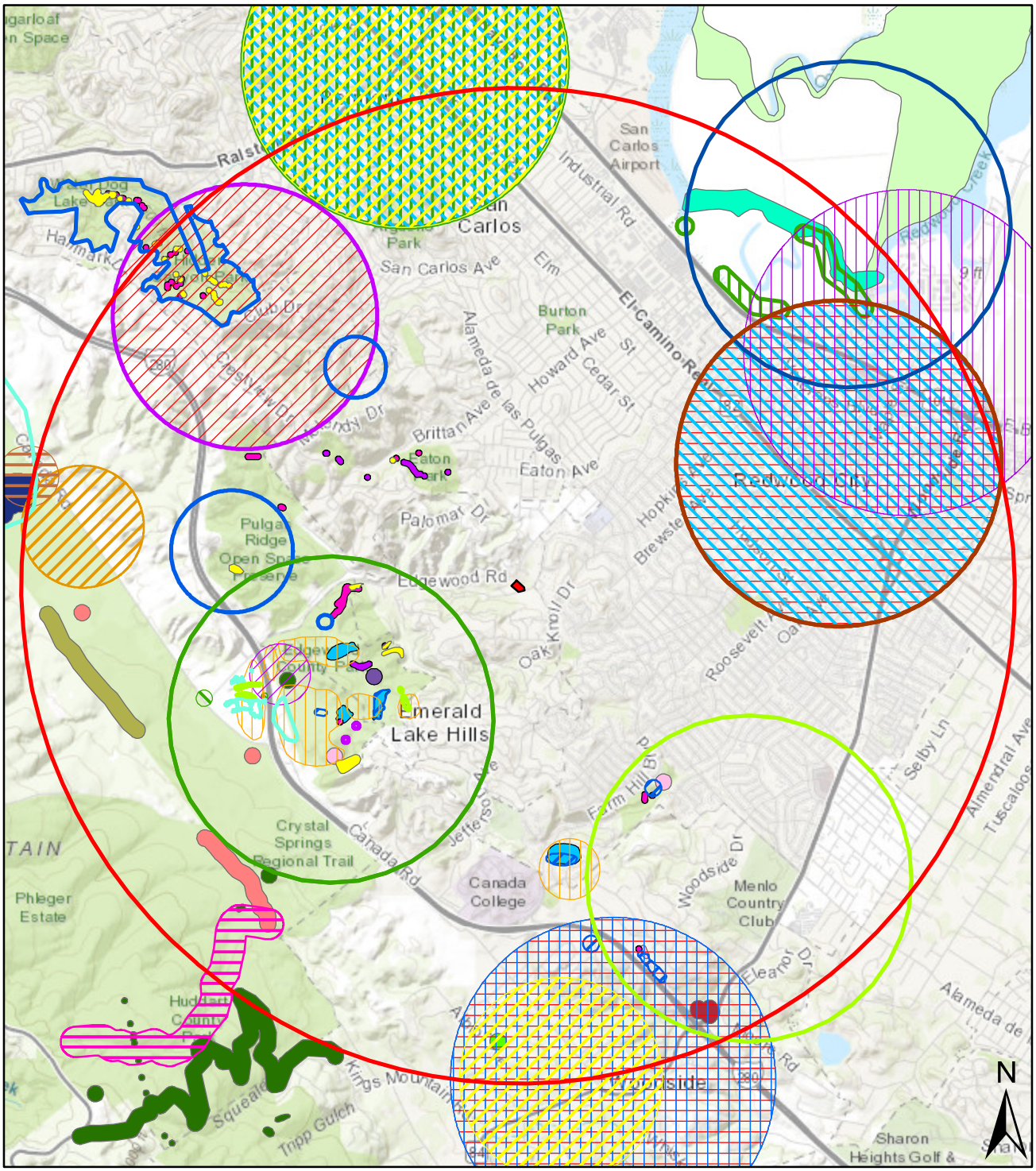

Figure 3: CNDDB Map

1750 Cordilleras Road, Emerald Hills, CA

Source: CNDDB, 2019

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri

- Project Location
- 3 mile buffer

Special-status Species

- Acanthomintha duttonii
- Allium peninsulare var. franciscanum
- Ambystoma californiense
- Amsinckia lunaris
- Aneides flavipunctatus niger
- Antrozous pallidus
- Arctostaphylos regismontana
- Bombus caliginosus
- Bombus occidentalis
- Calicina minor
- Charadrius alexandrinus nivosus
- Cirsium fontinale var. fontinale
- Collinsia multicolor
- Coturnicops noveboracensis
- Dicamptodon ensatus
- Dipodomys venustus venustus
- Dirca occidentalis
- Euphydryas editha bayensis
- Falco peregrinus anatum
- Fritillaria biflora var. ineziana
- Fritillaria liliacea
- Geothlypis trichas sinuosa
- Hesperolinon congestum
- Hydrochara ricksecker
- Lasiurus cinereus
- Lessingia arachnoidea
- Malacothamnus arcuatus
- Melospiza melodia pusillula
- Microcina edgewoodensis
- Monolopia gracilens
- Neotoma fuscipes annectens
- Pentachaeta bellidiflora
- Plagiobothrys chorisianus var. chorisianus
- Rallus obsoletus obsoletus
- Rana boylii
- Rana draytonii
- Reithrodontomys raviventris
- Senecio aphanactis
- Serpentine Bunchgrass
- Silene verecunda ssp. verecunda
- Thamnophis sirtalis tetrataenia

San Francisco Dusky-Footed Woodrat (Neotoma fuscipes annectens)

The San Francisco dusky-footed woodrat (SFDFW) is a California species of special concern. It is one of eleven subspecies of the dusky-footed woodrat and is found throughout the San Francisco Bay area. The SFDFW is a mid-sized rodent with a body length of 7 3/5 to 9 inches. It is brown or grey in color, with a white/light grey underside and feet. The tail is hairy and dark brown, with a lighter colored underside.

The SFDFW is found in scrub, woodland and grassland areas. They are good climbers and can live in both arboreal homes and ground-based middens built of sticks and branches up to several feet high. Middens are built in areas of dense foliage or under forest canopy. Woodrats consume a variety of nuts, fruits, foliage, and fungi (CSUS ESRP 2013).

Two SFDFW middens were observed on the property within the riparian corridor. One midden was located on the ground underneath the oak canopy, and the other was located within the canopy of a coast live oak tree. The locations of both middens are mapped in **Figure 2.** These middens would not be impacted by the proposed project as they are outside of the project grading areas.

California Red-legged Frog (Rana draytonii)

The California red-legged frog (CRF) is a federally listed Threatened species and a California Species of Special Concern.

Red-legged frogs are known to occur in slow-flowing streams, and marshes with heavily vegetated shores for breeding as well as grasslands, riparian woodland, oak woodland, and coniferous forests. These frogs stay near the shore hidden in vegetation rather than in open water. Seasonal bodies of water are frequently occupied by red-legged frogs, and in some areas these may be critical for persistence. It is speculated that California red-legged frogs may lie dormant during dry periods of the year or during drought. California red-legged frogs are thought to disperse widely during autumn, winter, and spring rains. Juveniles use the wet periods to expand outward from their pond of origin and adults may move between aquatic areas. Frogs disperse through many types of upland vegetation and use a broader range of habitats outside of breeding season. CRF have been observed to move extensively and travel up to two miles or more between breeding ponds without apparent regard to topography, vegetation type, or riparian corridors (Bulger in litt.1998, *in* USFWS 2002).

The breeding season for CRF generally begins in January and lasts through March. Minimum breeding age appears to be two years in males and three years in females (Jennings and Hayes 1985). Females lay 750-4000 eggs in clusters attached to aquatic vegetation, two to six inches below the water surface. Eggs hatch in two to three weeks. Once hatched, the tadpoles generally take between 11 and 20 weeks to metamorphose, doing so between May and August. Although most tadpoles are expected to transform in the summer, they can also over-winter, so transformation can take from about 4 to13 months. CRF typically require a permanent water source with a minimum depth of 0.7 meters (2.5 feet) (USFWS 2004). Successful breeding has been observed in sub-optimal

habitats with little or no emergent vegetation present (USFWS, 2004). In the absence of vegetation CRF will attach their eggs to rocks, wood, or other debris.

CRF has been extirpated from 70 percent of its former range and now is found primarily in coastal drainages of central California, from Marin County, California, south to northern Baja California, Mexico. Potential threats to the species include elimination or degradation of habitat from land development and land use activities and habitat invasion by non-native aquatic species (USFWS, 2002).

The nearest recorded occurrence of CRF is approximately two miles southwest of the property near Cañada Rd. Due to the presence of dispersion barriers such as roads, fences and structures, this species is unlikely to be found on the project site.

Steelhead, Central California Coast ESU (Oncorhynchus mykiss)

Steelhead within the Central California Coast Evolutionary Significant Unit (ESU) are a federally Threatened Species. This ESU includes streams in the San Francisco Bay Area that drain into the Pacifica Ocean or San Francisco Bay from the Russian River south to Soquel and Aptos Creek, and the drainages of San Francisco and San Pablo Bays, including the Napa River. Steelhead require freshwater streams with beds of clean gravel for spawning and pools that last year round for rearing. Often found in streams with dense riparian canopy and cool oxygenated water, they must have access to the San Francisco Bay or Pacific Ocean for migration as they spend one to two years in the ocean before returning to spawn in their natal stream.

Steelhead are the anadromous form of rainbow trout, and only have protected status in the anadromous form. Rainbow trout populations that are 'landlocked" and do not have access to the ocean or San Francisco Bay do not have protected status, though they are the same species, and may even be of the same genetic stock as a population of steelhead in the same watershed. Steelhead are often not present in urbanized creeks where significant physical barriers (i.e. dams or drop structures) or 'velocity' barriers are present. Velocity barriers are areas with sustained high-velocity flow, sometimes present in concrete engineered flood control channels (Kobernus 1998).

Insufficient information is available to determine whether steelhead use Cordilleras creek to spawn; there are no documented occurrences of steelhead in the creek (Leidy, R.A., G.S. Becker, B.N. Harvey 2005; CNDDB 2019). Steelhead are known to use the San Francisquito watershed and associated creeks to spawn several miles to the south. Avoidance measures for steelhead are not included in this report as impacts to Cordilleras Creek and the creek corridor are not anticipated.

VIII. REGULATORY CONSIDERATIONS

Federal and state-listed species (endangered, threatened, and CA fully-protected) receive various levels of legal protection under the federal and state endangered species acts and

the California Fish and Wildlife Code. The federal Migratory Bird Treaty Act of 1918 and Section 3500 of the California Fish and Wildlife Code protect active nests of migratory and other birds, and provide criminal penalties for take of hawks, owls, and take or disturbance of all bird nests or eggs. Potential impacts to other special status or otherwise sensitive species must be disclosed and evaluated pursuant to the California Environmental Quality Act (CEQA).

A. Federal and State Endangered Species Acts

The United States Endangered Species Act (ESA) is administered by the United States Fish and Wildlife Service (USFWS). The California Endangered Species Act (CESA), the Native Plant Protection Act (NPPA), and CEQA afford protection to species of concern included on State-maintained lists. The California Department of Fish and Wildlife (CDFW) has statutory responsibility for the protection of State listed species and is a trustee agency under CEQA.

Both the Federal and State endangered species acts provide protection for listed species. In particular, the Federal act prohibits "take." "Take" is defined by the ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect a federally listed, endangered species of wildlife, or to attempt to engage in any such conduct." Take not specifically allowed by Federal permit under Section 10(a)(1)(B) of the ESA is subject to enforcement through civil or criminal proceedings under Section 9 of the ESA.

While "take" is easily understood in the sense of deliberately capturing or killing individual animals, Federal regulations also define take to include the incidental destruction of animals in the course of an otherwise lawful activity, such as habitat loss due to development. Under those rules the definition of take includes significant habitat modification or degradation that actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR Section 17.3).

Section 10(a) of the ESA permits the incidental take of an endangered or threatened species. Similarly, Section 2081 of the CDFW Code or use of the CESA allows the Department to enter into management agreements that make lawful activities which may otherwise result in habitat loss or take of individuals of a state listed species.

B. Species of Special Concern

The California Department of Fish and Wildlife has designated certain animal species as "Species of Special Concern" due to concerns about declining population levels, limited ranges, and continuing threats that have made these species vulnerable to extinction. The goal of this designation is to bring attention to these species in the hope that their population decline will be halted through mitigation or project redesign to avoid impact. Species of special concern are protected only through environmental review of projects under CEQA. The California Department of Fish and Wildlife is a trustee agency and is solicited for its comments during the CEQA process.

C. Nesting Birds

Nesting birds, including raptors, are protected by the California Department of Fish and Wildlife Code 3503, which reads, "It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto." Passerines and non-passerine landbirds are further protected under the Federal Migratory Bird Treaty Act. As such, the CDFW typically recommends pre-construction surveys for potentially suitable nesting habitat that will be directly (actual removal of trees/vegetation) or indirectly (noise disturbance) impacted by construction-related activities.

D. California Native Plant Society and CEQA

The California Native Plant Society (CNPS) has developed a rating system for the state's rare, threatened and endangered plants. Plants rated by CNPS are subject to protection under CEQA and may also be protected by state and federal endangered species laws if they are listed by the state or federal government.

E. San Mateo County Ordinance Code/ Significant Tree Ordinance

The Significant Tree Ordinance of San Mateo County provides regulations on the removal and trimming of County designated Significant Trees (Part Three of Division VIII of the San Mateo County Ordinance Code). Section 12,001 declares that the "preservation and replacement of significant tree communities on private and public property is necessary to protect the natural beauty of the area, protect property values, and prevent undesirable changes in the environment."

A Significant Tree is defined as "any live woody plant rising above the ground with a single stem or trunk of a circumference of thirty-eight inches (38") or more measured at four and one half feet (4 1/2') vertically above the ground or immediately below the lowest branch, whichever is lower, and having the inherent capacity of naturally producing one main axis continuing to grow more vigorously than the lateral axes."

In the RH/DR Zone Districts (where the property is located), the definition of a significant tree "shall include all trees in excess of nineteen inches (19") in circumference."

A tree cutting permit is required for the removal of a significant tree or community of trees. In addition, a permit is required for trimming of significant indigenous trees in the RH/DR Zone Districts where trimming results in the removal of a branch 19 inches or more in circumference.

Section 12,020.5 of the County Ordinance specified that a Tree Protection Plan must be put in place for any proposed development projects which would involve impact to a significant tree.

F. San Mateo County General Plan

Chapter 1 of the San Mateo County General Plan specifies Vegetative, Water, Fish and Wildlife Resources Policies. Goals and objectives include:

(1.1) Conserve, Enhance, Protect, Maintain and Manage Vegetative, Water, Fish and Wildlife Resources
Promote the conservation, enhancement, protection, maintenance and managed use of the County's Vegetative, Water, Fish and Wildlife Resources.

(1.2) Protect Sensitive Habitats
Protect sensitive habitats from reduction in size or degradation of the conditions necessary for their maintenance.

Sensitive habitats are defined in the plan as: "any area where the vegetative, water, fish and wildlife resources provide especially valuable and rare plant and animal habitats that can be easily disturbed or degraded. These areas include but are not limited to: (1) habitats containing or supporting rare or unique species; (2) riparian corridors; (3) marine and estuarine habitats; (4) wetlands; (5) sand dunes; (6) wildlife refuges, reserves, and scientific study areas; and (7) important nesting, feeding, breeding or spawning areas.

Riparian corridors "include the vegetative, fish and wildlife habitats adjacent to and within all perennial and intermittent streams, their tributaries, and other freshwater bodies, such as lakes, ponds, and reservoirs. These corridors are characterized by the presence of riparian vegetation (vegetation normally found near streams, lakes, and other freshwater bodies)."

Policies regarding sensitive habitats include:

(1.28) Regulate Development to Protect Sensitive Habitats: Regulate land uses and development activities within and adjacent to sensitive habitat in order to protect critical vegetative, water, fish and wildlife resources; protect rare, endangered, and unique plants and animals from reduction in their range or degradation of their environment; and protect and maintain the biological productivity of important plant and animal habitats.

(1.29) Establish Buffer Zones
a. Establish necessary buffer zones adjacent to sensitive habitats which include areas that directly affect the natural conditions in the habitats and areas expected to experience changing vulnerabilities due to impacts of climate change.
b. As part of Countywide efforts to foster resilience and adapt to impacts of climate changes, establish wildlife corridors in appropriate locations to maintain a functional network of connected wildlands, to support native biodiversity, and to encourage movement of wildlife species.

(1.30) Uses Permitted in Sensitive Habitats: Within sensitive habitats, permit only those land uses and development activities that are compatible with the protection of sensitive habitats, such as fish and wildlife management activities, nature education

and research, trails and scenic overlooks and, at a minimum level, necessary public service and private infrastructure.

(1.31) Uses Permitted in Buffer Zones: Within buffer zones adjacent to sensitive habitats, permit the following land uses and development activities: (1) land uses and activities which are compatible with the protection of sensitive habitats, such as fish and wildlife management activities, nature education and research, trails and scenic overlooks, and at a minimum level, necessary public and private infrastructure; (2) land uses which are compatible with the surrounding land uses and will mitigate their impact by enhancing or replacing sensitive habitats; and (3) if no feasible alternative exists, land uses which are compatible with the surrounding land uses.

(1.32) Regulate the Location, Siting and Design of Development in Sensitive Habitats: Regulate the location, siting and design of development in sensitive habitats and buffer zones to minimize to the greatest extent possible adverse impacts, and enhance positive impacts.

X. RECOMMENDATIONS

The following recommendations are provided to minimize any potential impacts from the project on special status species and result in less than significant impact to biological resources.

A. San Francisco Dusky-Footed Woodrat

The current proposed project involves the conversion of the existing residential driveway into a private road and would not impact any SFDFW or associated habitat, therefore no avoidance or mitigation measures are recommended. However if future activities should involve impacts to the riparian corridor where the middens are located, a pre-construction survey for San Francisco dusky-footed woodrat middens is recommended within one week prior to the start of vegetation removal. Any active middens should be flagged and avoided if possible. If active middens are found within the work area, CDFW should be consulted to determine the appropriate mitigation measures to avoid impacts to SFDFW. Options may include passive or active relocation of SFDFW, and dismantling of middens as appropriate.

B. Nesting Birds

If vegetation removal or project construction will occur within the nesting bird season (Feb. 1 – Sept. 15), it is recommended that a survey for nesting birds is conducted within the property (i.e. project area and 100-foot buffer around the area of disturbance). The survey would be conducted within one week prior to any ground disturbance and/or vegetation removal associated with the project to minimize impacts to these species. If active bird nests are detected, suitable buffer zones (generally 100 feet, though adjustable

based on the discretion of a qualified biologist) may need to be established to ensure nesting birds are not impacted.

C. Roosting Bats

The current proposed project involves the conversion of the existing residential driveway into a private road and would not impact any roosting bats, therefore no avoidance or mitigation measures are recommended. If future activities should involve impacts to any potential roost sites (i.e. tree foliage, cavities or existing structures), it is recommended that a pre-construction roosting bat survey is conducted by a qualified biologist 24 hours prior to tree or structure removal. This survey can be conducted simultaneously with the nesting bird survey. If roosting bats are found, tree removal should be conducted over a 2 day period. Specifically, removal of surrounding trees and shrubs would be conducted on the 1st day, and the tree with a bat roost would be removed on second day. This would allow any bats to vacate the roost prior to tree removal. The qualified biologist must first confirm that bats are no longer present prior to roost tree removal.

D. California Red-Legged Frog and California Giant Salamander

California red-legged frog and California giant salamander have low potential for occurrence within the project area, but are more likely to be found in the Cordilleras Creek corridor and dispersing during the rainy season. A pre-construction survey conducted by a qualified biologist immediately prior to vegetation removal or ground disturbance is recommended in order to minimize any impacts to these special status species.

E. Rare Plants

There are two special status plant species with low potential to be found on the property: Franciscan onion and San Francisco collinsia. If present, these species would be found in the riparian corridor. These species were not observed during the March and April site visits. No avoidance measures are recommended at this time for rare plants since all work would occur outside of the riparian corridor.

F. Significant Trees

A number of significant trees as defined by the San Mateo County Ordinance Code are present within the property. Significant trees are defined as trees with a 19 inch circumference 4 ½ feet above the ground. A Tree Cutting Permit must be completed prior to any removal of a significant tree and submitted to the County, and a Tree Protection Plan must be developed to minimize impacts to other significant trees present on the site prior to project implementation. The current proposed project (conversion of the existing driveway into a private road) would not involve the removal of any significant trees.

G. Waters of the U.S. /Sensitive Habitats

Potentially jurisdictional waters and/or wetlands of the U.S. and of the state are present on the property within Cordilleras Creek. Riparian corridors are considered a sensitive habitat by the San Mateo County General Plan and avoidance of these habitats are specified as part of the general plan policies. The proposed project would not impact areas of riparian vegetation or areas with potentially jurisdictional waters (Cordilleras Creek). If project plans change in such a way that the riparian corridor and/or Cordilleras Creek would be impacted, a wetland delineation is recommended to determine the boundaries of jurisdictional waters. A 20' buffer is recommended as a setback from top of bank of Cordilleras Creek to avoid impacts to any riparian habitat with the exception of the installation of a riprap filled stormwater disappator which may be placed up to the top of bank.

H. Wildlife Movement Corridors

Cordilleras Creek likely serves as an important movement corridor for small and mid-sized wildlife species including birds and small mammals. A 20' buffer from the top of bank is recommended for project structures that could impact the movement of wildlife. Ground level (or beneath ground level) structures such as a riprap covered storm water disappator may be placed up to the top of bank as long as they do not obstruct wildlife movement.

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Table 1. Special status plant and animal species that were considered for their potential to occur on 1750 Cordilleras Rd.

Species Name	Status	Habitat[1]	Potential to Occur Onsite
Hoary bat *Lasiurus cinereus*	WBWG:M G5 S4	Roosts in dense foliage of deciduous and evergreen trees, forages over streams and ponds. Prefers habitat edges for feeding. Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding.	**Low potential**, species may forage or roost on site. It is not known to breed in the San Francisco Bay area.
Pallid bat *Antrozous pallidus*	CSC WBWG:H G5 S3	Generally found in dry, open habitats including deserts, grasslands, shrublands, woodlands and forests. Roosts in protected structures and rocky outcrops. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Low potential**, foraging only.
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	CSC G5T2T3 S2S3	Inhabits scrub, forested, woodland and grassland areas with moderate canopies and moderate to dense understory. May prefer chaparral & redwood habitats. Constructs nests of shredded grass, leaves & other material. May be limited by availability of nest-building materials.	**Present.** Middens observed on site. Suitable habitat exists along the riparian corridor.
Salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE CFP G1G2 S1S2	Salt and brackish water wetlands in the San Francisco Bay only. Requires pickleweed (*Sarcocornia pacifica)* as cover and forage. Pickleweed is primary habitat, but may occur in other marsh vegetation types and in adjacent upland areas.	**No potential**. Suitable habitat not present.

[1] Habitat requirements summarized from species accounts and descriptions of reported localities (CNDDB 2019, CNPS 2019).

Townsend's big-eared bat *Corynorhinus townsendii*	CSC CC WBWG:H G3G4 S2	Inhabits caves and mines, but may also use bridges, buildings, rock crevices and tree hollows in coastal lowlands, cultivated valleys and nearby hills characterized by mixed vegetation throughout California below 3,300 meters. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	**Low potential**, foraging only.
American badger *Taxidea taxus*	CSC G5 S3	Most abundant in drier open stages of shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	**No potential.** Suitable habitat not present. No burrows observed on site.
Big free-tailed bat *Nyctinomops macrotis*	CSC WBWG:MH G5 S3	Inhabits low-lying arid areas in southern California. Needs high cliffs or rocky outcrops for roosting sites. Feeds principally on large moths.	**No potential**. Suitable habitat not present.
Fringed myotis *Myotis thysanodes*	WBWG:H G4 S3	Inhabits a wide variety of habitats, with optimal habitats pinyon-juniper, valley foothill hardwood, and hardwood conifer. Requires caves, mines, buildings or crevices for maternity colonies and roosts.	**Low potential**. May forage on site and roost in suitable building crevices.
Salt-marsh wandering shrew *Sorex vagrans halicoetes*	CSC G5T1 S1	Inhabits *Salicornia* salt marsh inundated daily by tidal waters. Requires dense cover and continuous ground moisture. Salt marshes of the south arm of San Francisco Bay.	**No potential**. Suitable habitat not present.
Santa Cruz kangaroo rat *Dipodomys venustus venustus*	G4T1 S1	Inhabits chaparral, especially silverleaf manzanita mixed chaparral in the Zayante Sand Hills ecosystem of the Santa Cruz Mountains. Needs soft, well-drained sand.	**No potential**. Suitable habitat not present.
BIRDS			

Alameda song sparrow *Melospiza melodia pusillula*	CSC BCC G5T2? S2S3	Salt marshes bordering south arm of San Francisco Bay. Inhabits *Sarcocornia* marshes and nests in *Grindelia* bushes.	**No potential**. Suitable habitat not present.
American peregrine falcon *Falco peregrinus anatum*	CFP BCC D G4T4 S3S4	Hunts on beaches, mudflats and near water features including wetlands, lakes and rivers. Nests on ledges in cliffs or buildings. Near wetlands, lakes, rivers, or other water. Nest consists of a scrape or a depression or ledge in an open site.	**Low potential**, foraging only.
Burrowing owl *Athene cunicularia*	CSC BCC G4 S3	Grassland, open areas with rodent activity; nest in burrows and is most often associated with the California ground squirrel. Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation.	**No potential**. Suitable habitat not present.
California black rail *Laterallus jamaicensis coturniculus*	CT, FSC CFP BCC NABCI:RWL G3G4T1 S1	Freshwater marsh, wet meadows, and margins of saltwater marshes. Requires water depths of approximately one inch for nesting habitat and dense vegetation.	**No potential**. Suitable habitat not present.
Bald eagle *Haliaeetus leucocephalus*	CE CFP BCC D G5 S3	Inhabits ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	**No potential**. Suitable habitat not present.
California Ridgway's rail *Rallus obsoletus obsoletus*	CE FE CFP NABCI:RWL G5T1 S1	Inhabits salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	**No potential**. Suitable habitat not present.
Saltmarsh common yellowthroat *Geothlypis trichas sinuosa*	CSC BCC G5T3 S3	Marshy, brushy vegetation in or near water. Requires thick continuous cover down to water surface for foraging. Nests in willow, tall grasses, and tule patches. Resident of the San Francisco Bay region, in fresh and salt water marshes.	**Low potential**. Foraging only. Site lacks willow, and marshy/ brushy vegetation this species requires to breed.

Western snowy plover *Charadrius alexandrinus nivosus*	FT, CSC BCC NABCI:RWL G3T3 S2S3	Sandy beaches, salt pond levees, and alkali lake shores. Requires sandy, gravelly soils for nesting.	**No potential**. Suitable habitat not present.
Bank swallow *Riparia riparia*	CT G5 S2	Colonial nester that nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured or sandy soils near streams, rivers, lakes, or ocean to dig nesting hole.	**Low potential**, foraging only.
Black-crowned night heron *Nycticorax nycticorax*	G5 S4	Colonial nester usually in trees, occasionally in tule patches. Rookery sites are located adjacent to foraging areas (lake margins, mud-bordered bays, marshy spots).	**No potential**. Suitable habitat not present.
California least tern *Sternula antillarum browni*	FE, CE, FP NABCI:RWL G4T2T3Q S2	Breeds in colonies on bare soil, sand and mudflats, also landfills or paved areas, along the California coast and the San Francisco Bay Area.	**No potential**. Suitable habitat not present.
Double-crested cormorant *Phalacrocorax auritus*	WL G5 S4	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along sequestered islets, usually on the ground with sloping surface or in tall trees along lake margin.	**No potential**. Suitable habitat not present.
Great blue heron *Ardea herodias*	S G5 S4	Colonial nester in tall trees, cliff sides, and sequestered spots on marshes. Rookery sites in close proximity to foraging areas (marshes, lake margins, tide flats, rivers & streams, wet meadows).	**No potential**. Suitable habitat not present.
Long-eared owl *Asio otus*	CSC G5 S3?	Inhabits riparian and live oak woodlands near meadows and forested habitats. Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses. Occurs in dense conifer stands at higher elevations. Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding. An uncommon species in the San Francisco Bay Area.	**Low potential**. Foraging habitat present.

Marbled murrelet *Brachyramphus marmoratus*	FT, CE NABCI:RWL G3G4 S1	Occurs year-round in marine subtidal and pelagic habits from Oregon to Point Sal, Santa Barbara. Uses stands of mature Douglas fir and redwoods up to 40 miles inland for nesting. Critical Habitat has been designated for the species approximately 1 mile northwest of the site.	**No potential**. Suitable habitat not present.
Merlin *Falco columbarius*	WL G5 S3S4	Inhabits seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees required for roosting in open country.	**Low potential,** foraging only.
Northern harrier *Circus hudsoneus*	CSC G5 S3 AS	Inhabits both freshwater and saltwater marshes and adjacent upland grasslands. Nests on the ground in tall grasses in grasslands and meadows, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**No potential**. Suitable habitat not present.
Short-eared owl *Asio flammeus*	CSC G5 S3	Inhabits swamp lands (fresh & salt), lowland meadows, irrigated alfalfa fields. Requires tule patches or tall grass for nesting. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	**No potential.** Suitable habitat not present.
White-tailed kite *Elanus leucurus*	CFP G5 S3S4	Inhabits grasslands, agriculture fields, oak woodlands, savannah and riparian habitats in rural and urban areas. Nests near open foraging areas or water bodies. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Low potential.** Suitable habitat present, but kites tend to nest in isolated trees, not within denser woodlands.
Yellow rail *Coturnicops noveboracensis*	CSC BCC NABCI:RWL G4 S1S2	Inhabits freshwater marshlands, meadows and seeps.	**No potential**. Suitable habitat not present.
AMPHIBIANS & REPTILES			

San Francisco garter snake* *Thamnophis sirtalis tetrataenia* *confidential location records	FE, CE CFP G5T2Q S2	Near freshwater marshes, ponds, and slow moving streams. Prefers dense cover and water depths of at least one foot. Also found in upland habitats adjacent to water sources. Prefers south or west facing slopes with open habitats with occasional shrubs for cover.	**No potential,** requires dense vegetation cover and open upland habitats not present on site.
California giant salamander *Dicamptodon ensatus*	CSC G3 S2S3	Inhabits wet coastal forests near streams from Mendocino Co. south to Monterey Co. and east to Napa Co. Aquatic larvae require cold clear streams, occasionally in lakes or ponds. Adults found in wet forests under rocks and logs near lakes or streams.	**Low potential.** Species tends to be associated with permanent and semi-permanent streams.
California red-legged frog *Rana draytonii*	FT, CSC G2G3 S2S3	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation.	**Low potential**, could be found in the creek moving through the site, particularly during the rainy season.
California tiger salamander *Ambystoma californiense* Population: Central Valley DPS	FT, CT CWL G2G3 S2S3	Seasonal wetlands in grassland and oak-savannah. Requires underground refuges for cover and vernal pools or other seasonal water sources for breeding.	**No potential.** No suitable habitat present.
Foothill yellow-legged frog *Rana boylii*	CC CSC G3 S3	Partly shaded, shallow streams and riffles with a rocky substrate in a variety of stream habitats. Needs at least some cobble-sized substrate for egg-laying.	**No potential.** Rocky, shaded and shallow streams and riffles present, however species utilizes higher order streams
Red-bellied newt *Taricha rivularis*	CSC G4 S2	Lives in terrestrial habitats, juveniles generally underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean, rocky substrate.	**No potential.** Generally associated with redwood forests and perennial streams.

Santa Cruz black salamander *Aneides flavipunctatus niger*	CSC G3 S3	Adults found under rocks, talus, and damp woody debris. Inhabits mixed deciduous and coniferous woodlands and coastal grasslands in San Mateo, Santa Cruz, and Santa Clara counties.	**No potential.** Generally associated with mixed deciduous and coniferous woodlands not found on site.
Western pond turtle *Emys marmorata*	CSC G3G4 S3	Inhabits ponds, creeks in woodland, grassland. Aquatic species requires deep water ponds, streams, marshes, irrigation ditches with aquatic vegetation and with sunny, emergent basking sites and sunny upland habitat for nesting.	**No potential.** Site lacks the sunny open habitat this species prefers for basking.
FISH & MOLLUSKS			
Steelhead *Oncorhynchus mykiss irideus* (pop. 8) Population: central California coast DPS	FT G5T2T3Q S2S3	Aquatic species inhabits well oxygenated, moderate to fast flowing streams with woody debris, deep pools, riffles, and gravels.	**Low potential.** Cordilleras Creek is not known as a steelhead stream and likely lacks the flow levels needed year round to support this species.
Longfin smelt *Spirinchus thaleichthys*	FC, CT CSC G5 S1	Inhabits coastal bays, estuaries and waters near the coastline from Prince William Sound in Alaska to the Sacramento-San Joaquin Delta. Can be found in completely freshwater to almost pure seawater.	**No potential**. Suitable habitat not present.
Mimic tryonia *Tryonia imitator*	G2 S2	Also known as California brackishwater snail. Found only in permanently submerged areas in a variety of sediment types; able to withstand a wide range of salinities. More data needed for species.	**No potential**. Suitable habitat not present.
Tidewater goby *Eucyclogobius newberryi*	FE CSC G3 S3	Inhabit brackish waters along California coast. Found in shallow lagoons and lower stream reaches. Require fairly still (not stagnant) water with high oxygen levels.	**No potential**. Suitable habitat not present.
INVERTEBRATES			

Bay checkerspot butterfly *Euphydryas editha bayensis*	FT G5T1 S1	Inhabits (restricted to) native grasslands on outcrops of serpentine soils. Host plants include *Plantago erecta, Orthocarpus densiflorus* and *O. purpurscens.*	**No potential**. Suitable habitat not present.
Bumblebee scarab beetle *Lichnanthe ursina*	G2 S2	Inhabits coastal sand dunes from Sonoma County south to San Mateo County. Usually flies close to sand surface or near crest of sand dunes.	**No potential**. Suitable habitat not present.
Crotch bumblebee *Bombus crotchii*	G3G4 S1S2	Inhabits open grasslands and scrub habitats. Coastal California east to the Sierra-Cascade crest and south into Mexico. Requires food plants *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Erigonium.*	**No potential**. Suitable habitat not present.
Edgewood blind harvestman *Calicina minor*	G1 S1	Open grassland in areas of serpentine bedrock, found on the underside of serpentine rocks near permanent springs.	**No potential**. Suitable habitat not present.
Edgewood Park micro-blind harvestman *Microcina edgewoodensis*	G1 S1	Inhabits open grassland in xeric environments. Found beneath serpentine rocks in grassland adjacent to scrub oaks.	**No potential**. Suitable habitat not present.
Mission blue butterfly *Plebejus icarioides missionensis*	FE G5T1 S1	Inhabits the grasslands of the San Francisco Peninsula. Requires 3 larval host plants, *Lupinus albifrons, L.Variicolor, & L. formosus* (*L. albifrons* is favored).	**No potential,** host plants not present.
Monarch butterfly *Danaus plexippus* (pop. 1) Population: California overwintering population	G4T2T3 S2S3	Winter roosts located in wind protected tree groves (eucalyptus, Monterey pine, Monterey cypress) with nectar sources and water nearby.	**Low potential,** suitable roost trees not present.
Myrtle's silverspot *Spyeria zerene myrtleae*	FE G5T1 S1	Coastal habitats with *Viola adunca.* Restricted to foggy dunes and hills of the Point Reyes peninsula. Presumed extirpated from coastal San Mateo County.	**No potential. H**ost plants not present. Suitable habitat not present.

Obscure bumble bee *Bombus caliginosus*	G4? S1S2	Inhabits coastal areas like open grassy coastal prairies and Coast Range meadows. Nests underground and above ground in bird nests. Food plant genera *include Baccharis, Cirsium, Lupinus, Lotus, Grindelia* and *Phacelia*.	**No potential,** food plants not present.
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	G2? S2?	Aquatic habitats, weedy shallow open water, and slow moving stream habitats.	**Low potential.** Suitable aquatic habitat present. Species distribution and specific habitat requirements unknown.
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE G4T1 S1	Inhabits coastal, mountainous areas with grassy ground cover (mainly in the vicinity of San Bruno Mountain). Colonies are located on steep, north-facing slopes within the fog belt. Requires larval host plant *Sedum spathulifolium*.	**No potential**. Suitable habitat not present.
San Francisco forktail damselfly *Ischnura gemina*	G2 S2	Endemic to San Francisco Bay Area. Inhabits small marshy ponds and ditches with emergent and floating aquatic vegetation.	**No potential**. Suitable habitat not present.
Unsilvered fritillary *Speyeria adiaste adiaste*	G1G2T1 S1	Occurs in grasslands, chaparral and oak woodland, where it's host plant (*Viola sp.*) are present.	**No potential**. Host plant not present.
Western bumblebee *Bombus occidentalis*	G2G3 S1	Inhabits open grassy areas, urban parks and gardens, chaparral and shrub areas, and mountain meadows. Once common & widespread, species has declined precipitously.	**Low potential.** Marginally suitable habitat present on site.
PLANTS			
Anderson's manzanita *Arctostaphylos andersonii*	CNPS 1B.2 G2 S2	Broadleaved upland forest, chaparral, north coast coniferous, chaparral, mixed evergreen forest, redwood forest. Elevation: 60-760 meters. Blooming period Nov-May.	**No potential.** Suitable habitat not present. Not observed on site.
Arcuate bush-mallow *Malacothamnus arcuatus*	CNPS 1B.2 G2Q S2	Chaparral, Cismontane woodland. Gravelly alluvium. Elevation: 1-735 m. Blooming period: Apr-Sep.	**No potential.** Suitable habitat not present. Not observed on site.

Ben Lomond buckwheat *Eriogonum nudum* var. *decurrens*	CNPS 1B.1 G5T1	Chaparral, Cismontane woodland, Lower montane coniferous forest (maritime ponderosa pine sandhills). Sandy. Elevation: 50-2625 m. Blooming period: Jun-Oct.	**No potential.** Suitable habitat not present. Not observed on site.
Bent- flowered fiddleneck *Amsinckia lunaris*	CNPS 1B.2 G3 S3	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation: 3 - 795 meters. Blooming period: Mar. – June.	**No potential.** Upland areas of the site are largely disturbed.
Blasdale's bent grass *Agrostis blasdalei*	CNPS 1B.2 G2 S2	Coastal dunes, coastal bluff scrub, coastal prairie. Sandy or gravelly soil close to rocks; often in nutrient-poor soil with sparse vegetation. Elevation: 5-365 m. Blooming period: Apr.-June.	**No potential.** Suitable habitat not present.
Brewer's calandrinia *Calandrinia breweri*	CNPS 4.2 G4 S4	Chaparral, coastal scrub, sandy or loamy, disturbed sites and burns. Elevation 10-4005 m. Blooming period (Jan)Mar-Jun.	**No potential.** Suitable habitat not present.
California androsace *Androsace elongata* ssp. *acuta*	CNPS 4.2 G5?T3T4 S3S4	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Elevation 150-4280 m. Blooming period Mar-Jun.	**No potential.** Suitable habitat not present; upland portions of the site are largely disturbed.
California bottle-brush grass *Elymus californicus*	CNPS 4.3 G4 S4	Broadleafed upland forest, cismontane woodland, North coast coniferous forest, riparian woodland. Elevation 15-1540 m. Blooming period May-Aug(Nov).	**No potential.** Outside current existing range for this species..
Caper-fruited tropidocarpum *Tropidocarpum capparideum*	CNPS 1B.1 G1 S1	Valley and foothill grassland (alkaline hills). Elevation 0-1495 m. Blooming period Mar-Apr.	**No potential.** Suitable habitat not present.
Chaparral ragwort *Senecio aphanactis*	CNPS 2B.2 G3 S2	Chaparral, cismontane woodland, coastal scrub. Sometimes alkaline. Elevation 20-855 m. Blooming period: Jan-Apr(May).	**No potential.** Suitable habitat not present.
Choris' popcornflower *Plagiobothrys chorisianus* var. *chorisianus*	CNPS 1B.2 G3T1Q S1	Chaparral, coastal prairie, coastal scrub, mesic. Elevation: 5-705 meters. Blooming period: Mar. –Jun.	**No potential.** Suitable habitat not present.

Clustered lady's-slipper *Cypripedium fasciculatum*	CNPS 4.2 G4 S4	Lower montane coniferous forest, North coast coniferous forest, usually serpentinite seeps and streambanks. Elevation 100-7990m. Blooming period Mar-Aug.	**No potential.** Suitable habitat not present.
Coast iris *Iris longipetala*	CNPS 4.2 G3 S3	Coastal prairie, lower montane coniferous forest, meadows and seeps. Mesic. Elevation 0-1970 m. Blooming period Mar-May.	**No potential.** Suitable habitat not present. Not observed on site.
Coast lily *Lilium maritimum*	CNPS 1B.1 G2 S2	Broadleafed upland forest, closed-cone coniferous forest, coastal prairie, Coastal scrub, marshes and swamps (freshwater), North coast coniferous forest. Elevation 5-1560 m. Blooming period May- Aug.	**No potential.** Suitable habitat not present.
Coast yellow leptosiphon *Leptosiphon croceus*	CC CNPS 1B.1 G1 S1	Coastal bluff scrub, coastal prairie. One occurrence known. Elevation: 10-150 m. Blooming period: Apr-Jun.	**No potential.** Suitable habitat not present.
Coast rockcress *Arabis blepharophylla*	CNPS 4.3 G4 S4	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub. Elevation: 3-3610 m. Blooming period: Feb-May.	**No potential.** Suitable habitat not present.
Coastal marsh milk-vetch *Astragalus pycnostachyus* var. *pycnostachyus*	CNPS 1B.2 G2T2 S2	Moist coastal dunes or scrub, coastal salt marshes, streamsides, wetland. Elevation: 0 - 155 meters. Blooming period: (Apr) June-Oct.	**No potential.** Suitable habitat not present.
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	CNPS 1B.1 G3T1T2 S1S2	Sandy or gravelly openings in cismontane woodland, valley and foothill grassland (alkaline /clay). Elevation: 15 - 1200 meters. Blooming period: Mar. –Oct (Nov).	**No potential.** Suitable habitat not present.
Crystal Springs lessingia *Lessingia arachnoidea*	CNPS 1B.2 G2 S2	Cismontane woodland, coastal sage scrub, valley and foothill grassland. Grassy slopes on serpentine; sometimes on roadsides. Elevation: 90 - 200 meters. Blooming period: July- Oct.	**No potential.** Suitable habitat not present. No serpentine soils on site.
Crystal Springs fountain thistle *Cirsium fontinale* var. *fontinale*	FE CE CNPS 1B.1 G2T1 S1	Chaparral, meadow and seep, valley and foothill grassland, wetland, serpentine soil. Elevation: 45- 175 meters. Blooming period: (Apr)May- Oct.	**No potential.** Suitable habitat not present. No serpentine soils on site.

Davidson's bush-mallow *Malacothamnus davidsonii*	CNPS 1B.2 G2 S2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland. Elevation: 185-3740 m. Blooming Period: Jun-Jan.	**No potential.** Not observed on site.
Dudley's lousewort *Pedicularis dudleyi*	CR CNPS 1B.2 G2 S2	Habitat consists of Chaparral (maritime), Cismontane woodland, North Coast coniferous forest and Valley and foothill grassland. Deep shady woods of older coast redwood forests; also in maritime chaparral. Elevation: 60-330 m. Blooming Period: Apr- Jun.	**No potential.** Suitable habitat not present.
Fragrant fritillary *Fritillaria liliacea*	CNPS 1B.2 G2 S2	Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually on clay, in grassland. Elevation: 3-385 m. Blooming period: Feb-Apr.	**No potential.** Suitable habitat not present.
Franciscan onion *Allium peninsulare* var. *franciscanum*	CNPS 1B.2 G5T2 S2	Inhabits cismontane woodland, valley and foothill grassland. Clay soils, often on serpentine, sometimes volcanics. Dry hillsides. Elevation: 5-320 m. Blooming: period: May-June.	**Low potential.** Marginal habitat present within creek corridor.
Franciscan thistle *Cirsium andrewsii*	CNPS 1B.2 G3 S3	Coastal scrub, broadleafed upland forest, coastal bluff scrub, coastal prairie. Ultramafic, sometimes serpentine seeps. Elevation: 0 - 295 meters. Blooming period: Mar. - July.	**No potential.** Suitable habitat not present.
Hall's bush-mallow *Malacothamnus hallii*	CNPS 1B.2 G2 S2	Chaparral, coastal scrub. Elevation: 10-2495 m. Blooming period: (Apr)May-Sep(Oct).	**No potential.** Suitable habitat not present.
Hickman's cinquefoil *Potentilla hickmanii*	FE CE CNPS 1B.1 G1 S1	Coastal bluff scrub, closed-cone coniferous forest, meadows and seeps, marshes and swamps In open or forested areas along the coast. Elevation: 5-125 m. Blooming period: Apr-Aug.	**No potential.** Suitable habitat not present.
Hillsborough chocolate lily *Fritillaria biflora* var. *ineziana*	CNPS 1B.1 G3G4T1 S1	Cismontane woodland, valley and foothill grassland. Probably only on serpentine; most recent site is in serpentine grassland. Elevation: 90-160 m. Blooming period: Mar-Apr.	**No potential.** Suitable habitat not present.

Hoover's button-celery *Eryngium aristulatum* var. *hooveri*	CNPS 1B.1 G5T1 S1	Vernal pools, wetlands Alkaline depressions, vernal pools, roadside ditches and other wet places near the coast. Elevation: 1-50 m. Blooming period: (Jun) Jul(Aug).	**No potential.** Suitable habitat not present.
Indian Valley bush-mallow *Malacothamnus aboriginum*	CNPS 1B.2 G3 S3	Chaparral, cismontane woodland. Rocky, granitic, often in burned areas. Elevation: 150-5575 m. Blooming period: Apr-Oct.	**No potential.** Suitable habitat not present. Not observed on site.
Johnny-nip *Castilleja ambigua* var. *ambigua*	CNPS 4.2 G4T4 S3S4	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margins. Elevation: 0-1425 m. Blooming period: Mar-Aug.	**No potential.** Suitable habitat not present.
Jepson's coyote-thistle *Eryngium jepsonii*	CNPS 1B.2 G2? S2?	Vernal pools, valley and foothill grassland. Clay. Elevation: 3-305m. Blooming period: Apr-Aug.	**No potential.** Suitable habitat not present.
Kellogg's horkelia *Horkelia cuneata* var. *sericea*	CNPS 1B.1 G4T1? S1?	Closed-cone coniferous forest, coastal scrub, coastal dunes, chaparral. Old dunes, coastal sandhills; openings. Sandy or gravelly soils. Elevation: 5-430 m. Blooming period: Apr.- Sep.	**No potential.** Suitable habitat not present.
Kings Mountain manzanita *Arctostaphylos regismontana*	CNPS 1B.2 G2 S2	Broadleaved upland forest, chaparral, North coast coniferous forest. Granitic or sandstone outcrops. Elevation: 240-705 meters.	**No potential.** Suitable habitat not present. Not observed on site.
Legenere *Legenere limosa*	CNPS 1B.1 G2 S2	In beds of vernal pools. Blooming period: Apr-Jun.	**No potential.** Suitable habitat not present.
Lobb's aquatic buttercup *Ranunculus lobbii*	CNPS 4.2 G4 S3	Cismontane woodland, North coast coniferous forest, valley and foothill grassland, vernal pools. Mesic. Elevation 15-1540 m. Blooming period Feb-May.	**No potential.** Suitable habitat not present.
Lost thistle *Cirsium praeteriens*	CNPS 1A GX SX	Habitat unknown. Species possibly extinct. Thought to be similar to Franciscan thistle. Last record 1901. Blooming period: June - July	**No potential**. No thistles observed on site, with the exception of the invasive Italian thistle (*Carduus pychnocephalus*).
Marin checker lily *Fritillaria lanceolata* var. *tristulis*	CNPS 1B.1 G5T2 S2	Coastal bluff scrub, coastal prairie, coastal scrub. Elevation: 15-490 meters. Blooming period Feb-May.	**No potential.** Suitable habitat not present.

Marin western flax *Hesperolinon congestum*	FT CT CNPS 1B.1 G1 S1	Chaparral, valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral. Elevation: 60-400 meters. Blooming period: Apr.-Jul.	**No potential.** Suitable habitat not present.
Marsh microseris *Microseris paludosa*	CNPS 1B.2 G2 S2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation: 3-610 m. Blooming period: Apr-Jun(Jul).	**No potential.** Suitable habitat not present.
Montara manzanita *Arctostaphylos montaraensis*	CNPS 1B.2 G1 S1	Chaparral (maritime), coastal scrub, slopes and ridges. Elevation: 60-760 meters. Blooming period (Nov) Jan-May.	**No potential.** Suitable habitat not present. Not observed on site.
Mountain lady's-slipper *Cypripedium montanum*	CNPS 4.2 G4 S4	Broadleafed upland forest, cismontane woodland, lower montane coniferous forest, North coast coniferous forest. Elevation 185-7300 m. Blooming period Mar-Aug.	**No potential.** Suitable habitat not present. Site is located outside of existing range.
Mt. Diablo cottonweed *Micropus amphibolus*	CNPS 3.2 G3G4 S3S4	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland. Open rocky habitats. Elevation 45-2705 m. Blooming period Mar-May.	**No potential.** Suitable habitat not present.
Oakland star-tulip *Calochortus umbellatus*	CNPS 4.2 G3? S3?	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Often serpentinite. Elevation: 100-2295 m. Blooming period: Mar-May.	**No potential.** Suitable habitat not present.
Ocean bluff milk-vetch *Calochortus umbellatus*	CNPS 4.2 G4T4 S4	Coastal bluff scrub, coastal dunes. Elevation: 3-395 m. Blooming period: Jan-Nov.	**No potential.** Suitable habitat not present.
Oregon polemonium *Polemonium carneum*	CNPS 2B.2 G3G4 S2	Coastal prairie, coastal scrub, lower montane coniferous forest. Elevation: 0-1830 m. Blooming period: Apr-Sep.	**No potential.** Suitable habitat not present.
Ornduff's meadowfoam *Limnanthes douglasii* ssp. *ornduffii*	CNPS 1B.1 G4T1 S1	Meadows and seeps, agricultural fields. Elevation: 5-15m. Blooming period: Nov-May.	**No potential.** Suitable habitat not present.
Pappose tarplant *Centromadia parryi* ssp. *parryi*	CNPS 1B.1 G3T2 S2	Vernally mesic, often alkaline sites in prairies, grassland, and coastal marsh. Also in chaparral, meadows and seeps. 1-500 m. Blooming period: May-Nov.	**No potential.** Suitable habitat not present.

Perennial goldfields *Lasthenia californica* ssp. *macrantha*	CNPS 1B.2 G3T2 S2	Coastal bluff scrub, coastal dunes, coastal scrub. Elevation: 5-185 m. Blooming period: Jan-Nov.	**No potential.** Suitable habitat not present.
Pincushion navarretia *Navarretia myersii* ssp. *myersii*	CNPS 1B.1 G2T2 S2	Vernal pools. Often acidic. Elevation: 20-1085 m. Blooming period: Apr-May.	**No potential.** Suitable habitat not present.
Point Reyes horkelia *Horkelia marinensis*	CNPS 1B.2 G2 S2	Coastal dunes, coastal prairie, coastal scrub. Sandy flats and dunes near coast; in grassland or scrub plant communities. Elevation: 2-775 m. Blooming period: May- Sep.	**No potential.** Suitable habitat not present.
Point Reyes salty bird's-beak *Chloropyron maritimum* ssp. *palustre*	CNPS 1B.2 G4?T2 S2	Hemiparasitic. Marsh and swamp, wetlands, usually in coastal salt marsh with *Salicornia*, *Distichlis, Jaumea, Spartina*, etc. Elevation: 0 - 115 meters. Blooming period: Jun- Oct.	**No potential.** Suitable habitat not present.
Round-headed Chinese-houses *Collinsia multicolor*	CNPS 1B.2 G1 S1	Coastal dunes. Elevation: 0-30 meters. Blooming period: Apr-Jun.	**No potential.** Suitable habitat not present.
Rose leptosiphon *Leptosiphon rosaceus*	CNPS 1B.1 G1 S1	Coastal bluff scrub. Elevation: 10-140 m. Blooming period: Apr-Jul.	**No potential.** Suitable habitat not present.
San Francisco Bay spineflower *Chorizanthe cuspidata* var. *cuspidata*	CNPS 1B.2 G2T1 S1	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub. Sandy soil on terraces and slopes. Elevation 2-550 m. Blooming period Apr-Jul(Aug).	**No potential.** Suitable habitat not present.
San Francisco campion *Silene verecunda ssp. verecunda*	CNPS 1B.2 G5T1 S1	Chaparral, coastal bluff scrub, coastal prairie, coastal scrub, valley and foothill grassland. Often on mudstone or shale, sandy soils, ultramafic. Elevation: 30 - 645 meters. Blooming period: (Feb)Mar-Jun(Aug).	**No potential.** Suitable habitat not present.
San Francisco collinsia *Collinsia multicolor*	CNPS 1B.2 G2 S2	Closed cone coniferous forest, coastal scrub, riparian forest. Ultramafic. On decomposed shale (mudstone) mixed with humus; sometimes on serpentine. Elevation: 10-275 m. Blooming period: (Feb)Mar-May.	**Low potential.** Marginal habitat present; site is largely disturbed.
San Francisco gumplant *Grindelia hirsutula* var. *maritima*	CNPS 3.2 G5T1Q S1	Coastal scrub, coastal bluff scrub, valley and foothill grassland. Sandy or serpentine slopes, sea bluffs Elevation:15-305 m. Blooming period: Jun-Sep.	**No potential.** Suitable habitat not present.

San Francisco owl's-clover *Triphysaria floribunda*	CNPS 1B.2 G2? S2?	Coastal prairie, coastal scrub, valley and foothill grassland. On serpentine and non-serpentine substrate. Elevation: 1-150 m. Blooming period: Apr-Jun.	**No potential.** Suitable habitat not present.
San Francisco wallflower *Erysimum franciscanum*	CNPS 4.2 G3 S3	Chaparral, coastal dunes, coastal scrub, valley and foothill grassland. Often serpentinite or granitic, sometimes roadsides. Elevation 0-1805 m. Blooming period Mar-Jun.	**No potential.** Suitable habitat not present.
Santa Clara red ribbons *Clarkia concinna* ssp. *automixa*	CNPS 4.3 G5?T3 S3	Cismontane woodland, chaparral. On slopes and near drainages. 90-1500 m. Elevation: 30 - 250 meters. Blooming period: (Apr)May-Jun(Jul).	**No potential.** Suitable habitat not present.
Santa Cruz clover *Trifolium buckwestiorum*	CNPS 1B.1 G2 S2	Coastal prairie, broadleafed upland forest, cismontane woodland. Moist grassland. Gravelly margins. Elevation: 30-805 m. Blooming period: Apr-Oct.	**No potential.** Suitable habitat not present. Site lacks moist grassland.
San Mateo thorn-mint *Acanthomintha duttonii*	FE CE CNPS 1B.1 G1 S1	Inhabits chaparral, serpentinite, valley and foothill grasslands. Elevation: 30-300 meters. Blooming period: Apr.-June.	**No potential.** Suitable habitat not present.
San Mateo tree lupine *Lupinus arboreus* var. *eximius*	CNPS 3.2 G2Q S2	Chaparral, coastal scrub. Elevation: 90-1805 meters. Blooming period: Apr.-Jul.	**No potential.** Suitable habitat not present.
Saline clover *Trifolium hydrophilum*	CNPS 1B.2 G2 S2	Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. Elevation: 1-335 m. Blooming period: Apr-Jun.	**No potential.** Suitable habitat not present.
San Mateo woolly sunflower *Eriophyllum latilobum*	FE CE CNPS 1B.1 G1 S1	Cismontane woodland, coastal scrub, lower montane coniferous forest. Ultramafic, often on roadcuts; found on and off of serpentine. 30-610 m. Blooming period: May- Jun.	**No potential.** Suitable habitat not present. Not observed on site.
Scouler's catchfly *Silene scouleri* ssp. *scouleri*	CNPS 2B.2 G5T4T5 S2S3	Coastal bluff scrub, coastal prairie, valley and foothill grassland. Elevation 5-315 m. Blooming period: Jan-Apr(May).	**No potential.** Suitable habitat not present.
Serpentine leptosiphon *Leptosiphon ambiguus*	CNPS 4.2 G4 S4	Cismontane woodland, coastal scrub, valley and foothill grassland, usually serpentinite. Elevation 120-3705 m. Blooming period: Mar-Jun.	**No potential.** Suitable habitat not present.

Short-leaved evax *Hesperevax sparsiflora* var. *brevifolia*	CNPS 1B.2 G4T3 S2	Coastal bluff scrub, coastal dunes, coastal prairie, sandy soils on bluffs and flats. Elevation: 0 - 640 meters. Blooming period: Mar.-Jun.	**No potential.** Suitable habitat not present.
Slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina*	CNPS 2B.2 G5T5 S2S3	Marshes and swamps. Shallow, clear water of lakes and drainage channels. Elevation: 5-2325 m. Blooming period: May-Jul.	**No potential.** Suitable habitat not present.
Two-fork clover *Trifolium amoenum*	FE CNPS 1B.1 G1 S1	Valley and foothill grassland, coastal bluff scrub. Sometimes on serpentine soil, open sunny sites, swales. Sometimes on roadside and eroding cliff face. Elevation: 5-310 m. Blooming period: Apr-Jun.	**No potential.** Suitable habitat not present.
Western leatherwood *Dirca occidentalis*	CNPS 1B.2 G2 S2	Moist ravines, riparian thickets on slopes, broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest. On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. Elevation: 20-640 m. Blooming period: Jan-Mar(Apr).	**No potential.** Not observed on site.
White-rayed pentachaeta *Pentachaeta bellidiflora*	FE CE CNPS 1B.1 G1 S1	Ultramafic grassland. Valley and foothill grassland, cismontane woodland. Open dry rocky slopes and grassy areas. Often on soils derived from serpentine bedrock. Elevation: 35 - 610 meters. Blooming period: Mar-May.	**No potential.** Suitable habitat not present.
White-flowered rein orchid *Piperia candida*	CNPS 1B.2 G3 S3	Broadleafed upland forest, lower montane coniferous forest, North coast coniferous forest. Sometimes on serpentine. Forest duff, mossy banks, rock outcrops, and muskeg. Elevation: 20-1615 m. Blooming Period: Mar – (May) Sep.	**No potential.** Suitable habitat not present.

Woodland woollythreads *Monolopia gracilens*	CNPS 1B.2 G3 S3	Broadleaved upland forest (openings), chaparral, cismontane woodland, North coast coniferous forest (openings), ultramafic, valley and foothill grassland. Grassy sites, in openings; sandy to rocky soils. Elevation: 120-975 m. Blooming period: (Feb)Mar.-Jul.	**No potential.** Suitable habitat not present.
Woolly-headed lessingia *Lessingia hololeuca*	CNPS 3 G3? S3?	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland. Clay, serpentinite. Elevation: 15-1000 m. Blooming period: Jun-Oct.	**No potential.** Suitable habitat not present.
BRYOPHYTES & LICHENS			
Coastal triquetrella *Triquetrella californica*	CNPS 1B.2 G2 S2	Coastal bluff scrub, coastal scrub. Grows within 30m from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. 10-100 m.	**No potential.** Suitable habitat not present.
Island tube lichen *Hypogymnia schizidiata*	CNPS 1B.3 G2 S1	Also known as island rock lichen. Chaparral, closed-cone coniferous forest. On bark and wood of hardwoods and conifers. 260-540 m.	**No potential.** Suitable habitat not present.
Methuselah's beard lichen *Usnea longissima*	CNPS 4.2 G4 S4	North coast coniferous forest, broadleafed upland forest. Grows in the "redwood zone" on tree branches of a variety of trees, including big leaf maple, oaks, ash, Douglas-fir, and bay. 45-1465 m in California.	**No potential.** Suitable habitat not present.
Minute pocket moss *Fissidens pauperculus*	CNPS 1B.2 G3? S2	North coast coniferous forest. Moss growing on damp soil along the coast. In dry streambeds and on stream banks. Elevation 10-1024 m.	**No potential.** Suitable habitat not present.
SENSITIVE NATURAL COMMUNITIES & CRITICAL HABITATS			
Northern Maritime Chaparral	G1 S1.2		Not present on site.
Valley Oak Woodland	G3 S2.1		Not present on site.
Northern Coastal Salt Marsh	G3 S3.2		Not present on site.
Serpentine Bunchgrass	G2 S2.2		Not present on site.
Valley Needlegrass Grassland	G3 S3.1		Not present on site.

N. Central Coast Calif. Roach/Stickleback/Steelhead Stream			**Low potential.** Inconclusive data on whether steelhead are found in the Cordilleras Creek watershed.
North Central Coast Steelhead/Sculpin Stream			**Low potential.** Inconclusive data on whether steelhead are found in the Cordilleras Creek watershed.

KEY to Status Abbreviations

(FE) = Federally listed species as Endangered
(FT) = Federally listed species as Threatened
(FC) = Federal candidate to become a listed Endangered or Threatened Species
(CE) = State of California species listed as Endangered
(CT) = State of California species listed as Threatened
(CR) = State of California species listed as Rare
(CC) = State candidate to become a listed Endangered or Threatened Species
(CSC) = California Species of Special Concern
(CFP) = California Fully Protected Species
(CWL) = California Watch List Species
(BCC) = Federal Birds of Conservation Concern
(AS) = Audubon Society. Species protected when nesting.
(WBWG:M) = Western Bat Working Group: Medium Priority
(WBWG:H) = Western Bat Working Group: High Priority
(NABCI:RWL) = North American Bird Conservation Initiative, Red Watch List
(D) = Delisted from Federal List

California Rare Plant Ranks
California Rare Plant Rank 1A: Plants Presumed Extirpated in California and Either Rare or Extinct Elsewhere
California Rare Plant Rank 1B: Plants Rare, Threatened, or Endangered in California and Elsewhere
California Rare Plant Rank 2A: Plants Presumed Extirpated in California, But Common Elsewhere
California Rare Plant Rank 2B: Plants Rare, Threatened, or Endangered in CA, But More Common Elsewhere
California Rare Plant Rank 3: Plants About Which More Information is Needed - A Review List
California Rare Plant Rank 4: Plants of Limited Distribution - A Watch List
Threat Ranks
0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2-Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)
0.3-Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)

NatureServe Conservation Status Rankings
(G1) = Globally Critically Imperiled. At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
(G2) = Globally Imperiled. At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
(G3) = Globally Vulnerable. At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
(S1) = State Critically Imperiled. At very high risk of extinction due to extreme rarity (often 5 or fewer populations), very steep declines, or other factors.
(S2) = State Imperiled. At high risk of extinction due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors.
(S3) = State Vulnerable. At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
(?) = (status unknown).

APPENDIX A: Plant and Animal Species List

The following species were detected by sight, sound, or sign (e.g. scat, tracks, nests) at 1750 Cordilleras Rd.

	Scientific Name	Common Name
Plants	*Acacia melanoxylon*	blackwood acacia
	Acacia sp.	acacia
	*Aesculus californica**	California buckeye
	Arum italicum	Italian lords and ladies
	*Baccharis pilularis**	coyote brush
	*Bromus carinatus **	California brome
	Bromus diandrus	ripgut brome
	Bromus hordeaceus	soft chess
	Carduus pychnocephalus	Italian thistle
	Cedrus deodora	deodar cedar
	Cersastium glomeratum	sticky mouse-ear chickweed
	Chasmanthe floribunda	Chasmanthe
	*Claytonia perfoliata**	miner's lettuce
	Convolvulus arvensis	Field bindweed
	Cotoneaster pannosus	woolly cotoneaster
	Cotoneaster sp.	cotoneaster
	Crepis vesicaria	beaked hawksbeard
	Ehrharta erecta	panic veldt grass
	Erodium sp.	storks bill
	Eucalyptus globulus	blue gum
	Euphorbia lathyris	compass plant
	Euphorbia peplus	petty spurge
	Festuca myuros	rattail sixweeks grass
	Festuca perennis	Italian rye grass
	*Frangula californica**	coffeeberry
	*Galium aparine**	goose grass
	Genista monspessulana	French broom
	Geranium dissectum	cutleaf geranium
	Geranium molle	crane's bill geranium
	Hedera helix	English ivy
	Helianthus annuus	sunflower
	*Heteromeles arbutifolia**	toyon
	Hordeum murinum	foxtail barley
	Hypochaeris glabra	smooth cat's ear
	*Iris douglasiana**	Douglas iris
	*Juncus bufonius**	toad rush
	Juniperus sp.	juniper
	Lavandula sp.	lavender
	Lepidium didymum	Lesser swine cress
	*Lonicera hispidula**	pink honeysuckle
Plants (cont.)	*Lysimachia arvensis*	scarlet pimpernel

	Malva parviflora	cheeseweed
	Marah sp. *	man-root
	Medicago polymorpha	California burclover
	*Melica torreyana**	Torrey's melic
	Olea europaea	olive
	Oxalis pes-caprae	bermuda buttercup
	*Pellaea andromedifolia**	coffee fern
	*Pentagramma triangularis**	goldback fern
	Poa annua	annual blue grass
	Punica granatum	pomegranate
	*Quercus agrifolia**	coast live oak
	*Quercus douglasiana**	blue oak
	*Quercus lobata**	valley oak
	Rosmarinus officinalis	rosemary
	Rubus armeniacus	himalayan blackberry
	Rumex crispus	curly dock
	Rumex sp.	dock
	*Sambucus racemosa**	red elderberry
	*Sanicula crassicalus**	Pacific sanicle
	*Scrophularia californica**	California figwort
	Solanum americanum	American black nightshade
	Sonchus asper	prickly sow thistle
	Stelleria media	chickweed
	*Symphoricarpos albus**	snowberry
	Taraxacum officinale	common dandelion
	Torilis arvensis	tall sock-destroyer
	*Toxicodendron diversilobum**	poison oak
	Trifolium campestre	hop clover
	*Umbellularia californica**	California bay
	Vicia sativa	spring vetch
	Vinca major	greater periwinkle
*= native species		
	Common Name	**Scientific Name**
Mammals	Botta's pocket gopher	Thomomys bottae
	eastern grey squirrel	Scirius carolinensis
	Common Name	**Scientific Name**
Birds	American crow	*Corvus brachyrhynchos*
	American robin	*Turdus migratorius*
	Anna's hummingbird	*Calypte anna*
	bushtit	*Psaltriparus minimus*
	chestnut-backed chickadee	*Poecile rufescens*
	dark-eyed junco	*Junco hyemalis*
	lesser goldfinch	*Spinus psaltria*
	oak titmouse	*Baeolophus inornatus*
	red-shouldered hawk	*Buteo lineatus*

	spotted towhee	*Pipilo maculatus*
	Common Name	**Scientific Name**
Reptiles and Amphibians	Pacific tree frog	*Pseudacris regilla*
	western skink	*Plestiodon skiltonianus*
	western fence lizard	*Sceloporus occidentalis*
	Common Name	**Scientific Name**
Insects	ants	Formicidae
	centipede	Chilopoda
	crane fly	Tipulidae
	damselfly	Zygoptera
	earthworms	Lumbricidae
	Jeruselum cricket	*Stenopelmatus sp.*
	millipede	Diplopoda
	painted lady	*Vanessa cardui*
	common pill woodlouse	*Armadillidium vulgare*
	Spider	Araneae
	western tussock moth (caterpiller)	*Orgyia vetusta*

APPENDIX B: Representative Photos of 1750 Cordilleras Rd.

Photo 1. View of road/bridge access onto the property, taken from Cordilleras Road. Photo date: April 26, 2019.

Photo 2. Dirt access road to the main bridge, taken from the southeast portion of the site, facing southwest. Cordilleras Creek is on the right of the photo. Photo date: March 22, 2019.

Photo 3. View of the underside of the access bridge over Cordilleras Creek. A coast live oak tree trunk is visible on the right, with California bay, elderberry and poison oak in the left foreground of the photo. Photo date: April 26, 2019.

Photo 4. Cordilleras Creek, taken from the south bank, facing downstream (east). The north bank of this section of the creek (just downstream and east of the bridge) is dominated by French broom, a non-native invasive species. Photo date: April 26, 2019.

Photo 5. View of sandbag and rock-lined channel that connects a concrete culvert under Cordilleras Rd. to Cordilleras Creek. Photo date: March 22, 2019.

Photo 6. A view of Cordilleras Creek upstream of the bridge road crossing, vegetated with California bay, coffeeberry and poison oak. Photo date: April 26, 2019.

Photo 7. A view of the gravel road that leads to the existing single-family home. Cordilleras Creek is located to the left and downslope of the road. Photo date: March 22, 2019.

Photo 8. A San Francisco dusky-footed midden observed under the coast live oak canopy on the top of the bank above Cordilleras Creek. Photo date: April 26, 2019.

Photo 9. Wood piles located under the coast live oak woodland canopy just north of Cordilleras Creek. Photo date: March 22, 2019.

Photo 10. A pile of chain link fence next to an RV and storage container located in the southeastern portion of the site. Photo date: April 26, 2019.

Photo 11. Non-native annual grassland and ornamental plantings including chasmanthe planted along a fence which lies east of the existing single-family home. Photo date: March 22, 2019.

Photo 12. A view of acacia and oak trees planted along the back fence on the northern property boundary. Photo date: March 22, 2019.

Photo 13. A view of the property taken from the northern end of the site, fencing downhill/ south, showing non-native annual grassland with oak trees. Photo date: April 26, 2019.

Photo 14. A view of the property taken from the south end of the site facing north, showing non-native annual grassland and native oak trees. Photo date: March 22, 2019.

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT C

July 2, 2019

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RE: Cultural Resources Review – 1750 Cordilleras Road, Emerald Hills, San Mateo County
PLN2019-00043 1750 Cordilleras Rd

Dear Mr. Lea,

Please let this letter stand as Basin Research Associates' (BASIN) cultural resources review of the above property to comply with the requirements of the San Mateo County Planning and Building Division. The project site, a 1.9 acre parcel, is located at 1750 Cordilleras Road, Emerald Hills, San Mateo County. The proposed project involves the creation of a minor subdivision by splitting the parcel into three separate parcels for the eventual development of two new single family residences. The project would involve the conversion of the existing driveway into a private street (Ricci Court), and the eventual construction of two new residential homes and private driveways.

The research for this report was undertaken to determine if significant cultural resources are present or could be present within the proposed parcel. The information obtained on the location, type and distribution of any resources may be used in determining future actions in accordance with CEQA and development requirements of the County of San Mateo.

PROJECT LOCATION AND DESCRIPTION

The proposed project is located at 1750 Cordilleras Road, Emerald Hills, unincorporated, San Mateo County (APN 570-062-110). The property is bounded by Cordilleras Avenue to the south, by an undeveloped parcel belonging to the City and County of San Francisco to the west, and by other single family residences to the north and east. Cordilleras Creek runs along the southern portion of the parcel. Access to the site is via Cordilleras Ave by a driveway bridge which crosses Cordilleras Creek. Elevation ranges from 126 to 172 feet above mean sea level. The property is located within the Residential Hillside Districts/ Design Review Districts (RH/DR) per the San Mateo County Zoning Regulations. A single family residence constructed in 1956 faces Cordilleras Road (USGS Woodside, CA 1997, T 5S R4W, unsectioned) [Figs. 1-3].

Vegetation on the property is comprised of coast live oak woodland with an annual grassland understory. The riparian corridor surrounding Cordilleras Creek is also vegetated with coast live oak woodland species with a predominately non-native herbaceous understory. T he property provides good habitat value for common wildlife species.

The proposed project involves the creation of a minor subdivision by splitting a 83,118 ft^2 (1.9 acres) parcel into three parcels (22,223 ft^2, 17,815 ft^2, and 43,071 ft^2). The current project will involve minor grading for the conversion of the existing driveway into a private street (Ricci Court). Future projects will involve the development of two new private residential units and associated driveways. Swales may be installed along the two new driveways and along Ricci Court to capture surface runoff and direct water to rip-rap filled dissipators. Construction of the new driveways would involve the removal of several native oak trees.

REGULATORY

Cultural resources include prehistoric and historic archaeological sites, districts, and objects; standing historic structures, buildings, districts, and objects; and locations of important historic events or sites of traditional and/or cultural importance to various groups. The analysis of cultural resources can provide valuable information on the cultural heritage of both local and regional populations. Cultural resources may be determined significant or potentially significant in terms of national, state, or local criteria either individually or in combination. Resource evaluation criteria are determined by the compliance requirements of a specific project.

This report has been prepared to meet applicable California Environmental Quality Act (CEQA) mandates and the County of San Mateo's requirements for historic properties (cultural resources) which require the identification and evaluation of cultural resources that could be affected by the project. The County, as the lead local agency, is required to determine the potential impacts of the construction on both historical and archaeological cultural resources and mitigate impacts on any significant resources located that may be affected by the project to a less than significant effect in accordance with CEQA and the County's General Plan.

STATE

Public agencies under CEQA must consider the effects of their actions on both "historical resources" and "unique archaeological resources." Pursuant to California Public Resources Code (PRC) Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." PRC 21083.2 requires agencies to determine whether a proposed project would have an effect on "unique" archaeological resources.

Historical resource (see PRC 21084.1) and CEQA Guidelines (Sections 15064.5(a) and 15064.5(b)) applies to any resource listed in or determined to be eligible for listing in the California Register of Historic Resources (CRHR). The CRHR includes resources listed in or formally determined eligible for listing in the National Register of Historic Places, as well as some California State Landmarks and Points of Historical Interest. The fact that a resource is not listed or determined to be eligible for listing does not preclude a lead agency from determining that it may be a historical resource (PRC 21084.1 and CEQA *Guidelines* Section 15064.5(a)(4)).

CEQA also distinguishes between two classes of archaeological resources: archaeological sites that meet the definition of a historical resource, as described above, and "unique archaeological resources." Under CEQA, an archaeological resource is considered "unique" if it:

> Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information;
>
> Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
>
> Is directly associated with a scientifically recognized important prehistoric or historic event or person (PRC 21083.2(g)).

CEQA states that if a proposed project would result in an impact that might cause a substantial adverse change in the significance of a historical resource, then an EIR must be prepared and mitigation measures considered. A "substantial adverse change" in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired (CEQA *Guidelines* Section 15064.5(b)(1)).

The CEQA *Guidelines* (Section 15064.5(c)) also provide specific guidance on the treatment of archaeological resources, depending on whether they meet the definition of a historical resource or a unique archaeological resource. If the site meets the definition of a unique archaeological resource, it must be treated in accordance with the provisions of PRC 21083.2. PRC Section 21083.2 requires the lead agency to treat that effect as a significant environmental effect. When an archaeological resource is listed in or is eligible to be listed in the CRHR, PRC Section 21084.1 requires that any substantial adverse effect to that resource be considered a significant environmental effect. PRC Sections 21083.2 and 21084.1 operate independently to ensure that potential effects on archaeological resources are considered as part of a project's environmental analysis. Either of these benchmarks may indicate that a project may have a potential adverse effect on archaeological resources.

Tribal Resources

Assembly Bill 52 (AB 52) provides protections for tribal cultural resources.[1] All lead agencies as of July 1, 2015 approving projects under CEQA are required, if formally requested by a culturally affiliated California Native American Tribe, to consult with such tribe regarding the impacts of a project on tribal cultural resources prior to the release of any negative declaration, mitigated negative declaration or draft environmental impact report. Under PRC Section 21074, tribal cultural resources include site features, places, cultural landscapes, sacred places or objects that are of cultural value to a tribe that are eligible or listed on the CRHR or a local historic register or that the lead agency has determined to be a significant tribal cultural resource.

Tribal consultation is to continue until mitigation measures are agreed to or either the tribe or the lead agency concludes in good faith that an agreement cannot be reached. In the case of agreement, the lead agency is required to include the mitigation measures in the environmental

1. AB 52 amended Section 5097.94 of, and added Sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21083.09, 21084.2 and 21084.3 to, the California Public Resources Code

document along with the related Mitigation Monitoring and Reporting Program (MMRP) (see PRC Section 21084.3). If no agreement is reached, the lead agency must still impose all feasible mitigation measures necessary for a project to avoid or minimize significant adverse impacts on tribal cultural resources (PRC Section 21084.3).

Other California Laws and Regulations

Other state-level requirements for cultural resources management appear in the California PRC Chapter 1.7, Section 5097.5 "Archaeological, Paleontological, and Historical Sites," and Chapter 1.75 beginning at Section 5097.9 "Native American Historical, Cultural, and Sacred Sites" for lands owned by the state or a state agency.

The disposition of Native American burials is governed by Section 7050.5 of the California Health and Safety Code and PRC Sections 5097.94 and 5097.98, and falls within the jurisdiction of the Native American Heritage Commission.

SAN MATEO COUNTY

The County's General Plan *Historical and Archaeological Resources Policies* in the Goals and Objectives section requires the protection of archaeological/paleontological sites (Section 5.3) and encourages the integration of historical preservation into the planning process (Section 5.5). The *Protection of Archaeological/Paleontological Resources* section requires a site survey to determine if locations proposed for new development contain archaeological/ paleontological resources and prior to approval requires a mitigation plan to protect any resources (Section 5.20). In addition, Section 5.21 (Site Treatment) provides guidance in the event of archaeological/paleontological discoveries.

RESEARCH PROTOCOLS

A prehistoric and historic site record and literature search was completed by the California Historical Resources Information System, Northwest Information Center (CHRIS/NWIC) Sonoma State University, Rohnert Park at the request of the county's project planner (File No. 18-1612 by Guldenbrein dated 3/5/2019).

The CHRIS/NWIC recommended the completion of further archival and field studies. The project site contains or is adjacent to a recorded prehistoric archaeological site, P-41-000477 (CA-SMA-304). In addition, the CHRIS/NWIC recommended contacting local Native American tribes regarding traditional, cultural and religious heritage values. Topographic map review also noted the presence of a building within the project area dating from 1961 or earlier and the CHRIS/NWIC also recommended "a formal CEQA evaluation" of the built environment (buildings/structures) 45 years or older.

BASIN reviewed the CHRIS/NWIC findings in addition to internal files and other archival materials for San Mateo County from the Bancroft Library, University of California at Berkeley. The literature review included:

- *National Register of Historic Places* listings for San Mateo County, California (USNPS 2018a-c).

- *California History Plan* (CAL/OHP 1973).
- *California Inventory of Historic Resources* (CAL/OHP 1976).
- *Five Views: An Ethnic Sites Survey for California* (CAL/OHP 1988).
- *Listed California Historical Resources – San Mateo County* [including National Register, State Landmark, California Register, and Point of Interest] (CAL/OHP 2019).
- Local lists, inventories and plans (Brabb et al. 1982; SMa/DEM 1986; Dietz n.d.; SMaCo/ESA/PBD 1999).

The Native American Heritage Commission (NAHC) was not contacted for a review of the Sacred Lands Files by BASIN. The Project Planner, Ms. Kelsey Lang, as the local government representative, is undertaking Native American consultation.

No other agencies, departments or local historical societies were contacted regarding landmarks, potential historic sites or structures due to information in BASIN's internal files on the archaeological resources in the area.

RECORDS SEARCH RESULTS

The CHRIS/NWIC records review noted the presence of P-41-000477/CA-SMA-304 within and adjacent to the project site. The resource was originally recorded in 1976 the Redwood City Planning Department (Rhoads 1976). The site was examined by Stanford University in 1990 (Bocek 1990) and described as a badly disturbed earth midden with shell, burned rock and lithic materials present on the south bank of Cordilleras Creek and on both sides of Cordilleras Road. The site type could not be identified due to the extensive disturbance. The recording team noted that the cultural materials were least dense along the creek bank and increased towards Cordilleras Road.

One previous cultural resources study completed in 1977 includes the general project area and may include project site. No resources were noted as a result of the records search and general reconnaissance for the Emerald Lake Hill Sanitation Facilities Service Area (see Chavez 1977).

No other recorded/reported prehistoric and/or historic era archaeological sites in or adjacent to the project site have been reported. A review of BASIN's internal files was also negative for prior studies and previously recorded archaeological resources within and adjacent to the project site except for P-41-000477/CA-SMA-304. However, the general project area is considered moderately to highly sensitive for prehistoric resources based on our previous studies for the San Francisco Public Utilities Commission (SFPUC) Water Improvement System Project (WSIP) with a focus on the Hetch Hetchy pipeline right of way and conversations with locally knowledge Native Americans including Ms. Irenne Zwierlein, Amah Mutsun Tribal Band, Woodside.

SUMMARY CONTEXT

Cultural resources are traces of human occupation and activity. In northern California, human occupation extends back in time for at least 9,000-11,500 years with Native American occupation and use of the Bay Area extending over 5,000-8,000 years and possibly longer. Evidence for early occupation along the bayshores has been hidden by rising sea levels from

about 15,000 to 7,000 years ago, or was buried under sediments caused by bay marshland infilling along estuary margins from about 7,000 years onward.

Prehistoric use of the general area was heavily influenced by the presence of springs, creeks and rugged terrain. Archaeological information suggests a slow steady increase in the prehistoric population within the San Mateo Peninsula over time with an increasing focus on permanent settlements with large populations in later periods. This change from hunter-collectors to an increased sedentary lifestyle is due both to more efficient resource procurement as well as a focus on staple food exploitation, the increased ability to store food at village locations, and the development of increasing complex social and political systems including long-distance trade networks.

Ethnographically the area is within the boundaries of the group known as the "Costanoan", derived from the Spanish word *Costanos* ("coast people" or "coastal dwellers") who occupied the central California coast as far east as the Diablo Range. The descendants of these Native Americans now prefer to be called Ohlone. In 1770, the Ohlone lived in approximately 50 separate and politically autonomous tribelets with each group having one or more permanent villages surrounded by a number of temporary camps. Physiographic features usually defined the territory of each group which generally supported a population of approximately 200 persons with a range of between 50-500 individuals. The camps were used to exploit seasonally available floral and faunal resources (Levy 1978).

Tribelet boundaries and village locations are inexact due to incomplete historic records, and they remain a subject of anthropological contention and debate. Levy (1978:485, Fig. 1) places the area within the *Ramaytush* subdivision of the Ohlone, which included much of present day San Mateo and San Francisco counties (Levy 1978:485, Fig. 1, #12-13).

The Ohlone aboriginal lifeway apparently disappeared by 1810 due to its disruption by new diseases, a declining birth rate, and the impact of the mission system. The Ohlone were transformed from hunters and gatherers into agricultural laborers who lived at the missions and worked with former neighboring groups such as the Esselen, Yokuts, and Miwok (Levy 1978). Later, because of the secularization of the Missions by Mexico in 1834, most of the aboriginal population gradually moved to ranchos to work as manual laborers.

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 policy (1822-1848) stressed individual ownership of the land (Hart 1987).

The project site is located within *Rancho de las Pulgas* (Flea Ranch), a large land grant originally made to the prominent Arguello family. Jose Dario Arguello, who served as Commandante of both the San Francisco and Santa Barbara presidios, as well as the acting governor of Alta California in 1814. The rancho stretched north to south from San Mateo Creek to San Francisquito Creek, and east to west from the bay to an ill-defined point along the hills (Kyle 1990:380).

No known Hispanic Period expeditions passed through the project area or general vicinity nor have any known historic features (e.g., dwellings, corrals, roads, etc.) been identified within, adjacent or near to the proposed project (e.g., Beck and Haase 1974; Hendry and Bowman 1940;

Hoover et al. 1966).

The Official Map of the County of San Mateo (Cloud 1877) shows Cordilleras Road as Whipple Mill Road continuing past the project site to intersect with Cañada Road and points in the higher elevations. The road was used by Willard Whipple to move redwood logs to the port at Redwood City for processing, export and local use. The USGS topographic quadrangle series indicates that Cordilleras Road was present by 1902 (USGS 1902).

The area is currently residential.

FIELD INVENTORY [Figs. 4-11

A pedestrian field inventory of the 1.9 acre parcel was completed on June 12, 2019 by Mr. Christopher Canzonieri (MA, RPA). The property is located on the north side of Cordilleras Road, with the majority of the parcel north of Cordilleras Creek. Access to the project is via a modern bridge (built 2014). Evidence of earlier (historic?) bank stabilization is visible within the creek channel. Both concrete and stacked stone is visible along the south bank and concrete walls are present east of the bridge along the creek banks.

Several buildings and structures are present including a 1950s ranch style home located at the west end of the parcel, an ancillary building/garage (detached) located at the east end of the parcel and an open shed located at the north end of the parcel. Most of the parcel is covered in dense vegetation, trees with some discarded construction material. Field transects were spaced approximately 5 meters apart and oriented north to south. Surface visibility was generally poor with less than 5% observable.

Creek access was difficult due to steep banks. An area with diffuse shell (*Ostrea sp.*) was noted on the top of the bank and sloped downwards on the south side of the creek. No evidence of shell was present on the north side of the creek or along the lower portions of the creek channel. The shell deposit is within the location mapped for P-41-000447 / CA-SMA-304. Additionally, a single historic clear glass soda/ale bottle was observed eroding out of the south bank of Cordilleras Creek

No other prehistoric cultural materials were present within the parcel except for diffuse shell associated with the previously recorded prehistoric archaeological site.

The one-storey single family ranch style home was constructed in 1956 and is typical of other residences in the area. It has a clay tile roof with an interior chimney, a stucco exterior with brick facing on the lower third, vinyl windows, and an asphalt driveway leading to a two bay rear open carport with an exterior door on the side of the house. The house appears to have been partially remodeled. It does not appear to have any special significance.

FINDINGS

This report was prepared to identify potentially significant archaeological, architectural or Native American, resources listed or eligible for the California Register of Historical Resources (CRHR) within or adjacent to the proposed project.

- The CHRIS/NWIC records review maps one previously recorded prehistoric archaeological resource within and adjacent to the project parcel. The site form update in 1990 noted that the site had been badly disturbed and could not be identified as to type.
- No Native American villages, traditional use areas or contemporary use areas or other features of significance have been identified in or adjacent to the proposed project site.
- No Hispanic era features have been identified in or adjacent to the proposed project site.
- No American Period archaeological sites have been recorded, reported or identified in or adjacent to the proposed project site.
- The field inventory noted a small diffuse shell scatter along Cordilleras Creek within the project parcel that appeared to be associated with the previously recorded archaeological site. Aside from the shell fragments, no artifacts or other ecofacts were noted.
- Built environment – a single family residence constructed in 1956 is present on the property facing Cordilleras Road. The single storey ranch-style house appears to have been remodeled in the past and is typical of similar houses in the area. It has no special significance.
- No listed or known potential National Register of Historic Places and/or California Register of Historical Resources are located in or adjacent to the proposed project site. No other significant 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 site.
- Current archaeological sensitivity within the project site appears to be moderate based on the results of the archival research, the presence of a recorded prehistoric archaeological site within and adjacent to the parcel and the results of the current field inventory.

CULTURAL RESOURCE IMPACTS AND MITIGATION MEASURES

One recorded prehistoric archaeological resource is present within and adjacent to the project site. Previous review in 1990 determined that it has been badly disturbed.

Two potential cultural resources impacts are identified and two mitigation measures are recommended to mitigate to a less-than-significant effect any project impacts associated with unexpected cultural resource discoveries, including Native American burials, during future ground-disturbing activities.

IMPACTS

CEQA states that a project that may cause a substantial adverse change in the significance of a cultural resource may have a significant effect on the environment. Substantial adverse change in the significance of a cultural resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource would be materially impaired. The significance of a cultural resource is materially impaired when a project:

Demolishes or materially alters in an adverse manner those physical characteristics of a cultural resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the CRHR; or,

1. Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of cultural resources pursuant to Public Resources Code Section 5020.1(k) or its identification in a cultural resources survey meeting the requirements of Public Resources Code 5024.1(g), unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or,

2. Demolishes or materially alters in an adverse manner those physical characteristics of a cultural resource that convey its historical significance and that justify its eligibility for inclusion in the CRHR as determined by a lead agency for purposes of CEQA.

POTENTIAL PROJECT IMPACTS

The project could potentially affect as yet unknown prehistoric cultural resources within the project site. Potential impacts include:

Impact CR-1: The potential to cause a substantial adverse change in the significance of archeological resources.

- Future construction operations could result in the inadvertent exposure of buried prehistoric or historic archaeological materials[2] that could be eligible for inclusion on

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2. 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. 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.

the CRHR (Public Resources Code Section 5024.1) and/or meet the definition of a unique archeological resource as defined in Section 21083.2 of the Public Resources Code.

- This significant impact would be reduced to a less-than-significant impact with implementation of Measure CM-1 which requires the review, identification, evaluation and treatment of any significant archaeological finds by a Professional Archaeologist at the time of discovery. This measure will be implemented in accordance with state law and the requirements of San Mateo County.

Impact CR-2: The potential to disturb any human remains, including those interred outside of formal cemeteries.

- Previously unknown Native American human remains could be exposed during ground disturbing construction operations associated with soil removal. Construction operations could result in the inadvertent exposure of buried prehistoric or protohistoric (ethnographic) Native American human remains.
- This significant impact would be reduced to a less-than-significant impact with implementation of Measure CM-2 which requires that the treatment of human remains and or associated or unassociated funerary objects during any soil-disturbing activity must comply with applicable state law for Native American burials.

RECOMMENDED PROTECTION MEASURES

The following protection measures shall be implemented in concert with any specific requirements of the County of San Mateo.

Measure CM-1

(a) The project proponent shall note on any plans that require ground disturbing excavation that there is a potential for exposing buried cultural resources including prehistoric Native American burials.

(b) The project proponent shall retain a Professional Archaeologist to provide construction crew sensitivity training to supervisors, foreman, project managers, and non-supervisory contractor personnel to alert them to the potential for exposing significant prehistoric and historic archaeological resources within the property. The Archaeologist shall develop an ALERT Sheet outlining the potential for the discovery of unexpected archaeological resources and provide protocols to deal with a discovery. The ALERT Sheet and protocols shall be presented as part of the training. The Contractor shall be responsible for ensuring that all workers requiring training are in attendance.

(c) The project proponent shall retain a Professional Archaeologist on an "on-call" basis during ground disturbing construction for the project to review, identify and evaluate cultural resources that may be inadvertently exposed during construction.

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.

The archaeologist shall review and evaluate any discoveries to determine if they are historical resource(s) and/or unique archaeological resources under CEQA.

(d) If the Professional Archaeologist determines that any cultural resources exposed during construction constitute a historical resource and/or unique archaeological resource under CEQA, he/she shall notify the project proponent 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 project proponent in consultation with any regulatory agencies.

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

Measure CM-2

The treatment of human remains and any associated or unassociated funerary objects discovered during any soil-disturbing activity within the project site shall comply with applicable State laws. This shall include immediate notification of the County of San Mateo Medical Examinater (ME) and the project proponent.

In the event of the ME's determination that the human remains are Native American, notification of the Native American Heritage Commission (NAHC), is required who shall appoint a Most Likely Descendant (MLD) (PRC Section 5097.98).

The project sponsor, archaeological consultant, and MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5(d)). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, curation, and final disposition of the human remains and associated or unassociated funerary objects. The California PRC allows 48 hours to reach agreement on these matters. If the MLD and the other parties do not agree on the reburial method, the project will follow PRC Section 5097.98(b) which states that ". . . the landowner or his or her authorized representative shall reinter the human remains and items associated with Native American burials with appropriate dignity on the property in a location not subject to further subsurface disturbance."

MANAGEMENT RECOMMENDATIONS

It is the considered opinion of Basin Research Associates, based on a review of pertinent records, maps and other documents that the proposed project can proceed as planned in regard to prehistoric and historic archaeological resources. No subsurface testing for buried

archaeological resources appears necessary due to the badly disturbed archaeological resources within and adjacent to the project site. Archaeological monitoring during ground disturbing construction is not recommended.

It is recommended that if any significant cultural materials (see Impact CR-1) are exposed or discovered during either site preparation or subsurface construction activities, operations should stop within 50 feet of the find and a professional archaeologist contacted for further review and recommendations (see Measure CM-1). Potential recommendations could include evaluation, collection, recordation, analysis, and reporting of any significant cultural materials.

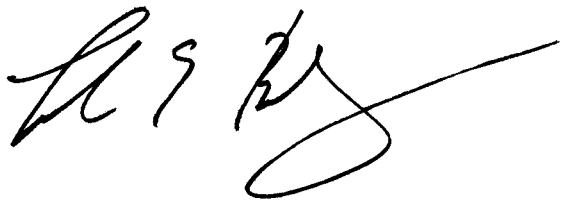
State law shall be followed in regard to Native American burials (Chapter 1492, Section 7050.5 to the Health and Safety Code, Sections 5097.94, 5097.98 and 5097.99 of the Public Resources Code) (see Measure CM-2).

CLOSING REMARKS

This letter should be filed with the Project Planner, Ms. Kelsey Lang (AICP), to indicate compliance with the San Mateo County Planning and Building Division permit requirements.

If I can provide any additional information or be of further service please don't hesitate to contact me.

BASIN RESEARCH ASSOCIATES, INC.



Colin I. Busby, Ph.D., RPA
Principal

CIB/d

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Abbreviations

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

CHRIS/NWIC, Sonoma State University, Rohnert Park is used for material 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 T5S R4W (USGS Woodside, CA 1997 and Palo Alto, CA 1997)
FIGURE 3	Project Area with Photo View Locations (Google Earth 2018)
FIGURE 4	View south from northeast corner of property
FIGURE 5	View northwest towards house from driveway
FIGURE 6	Front façade of house – view to northeast
FIGURE 7	Shed/garage – view to east
FIGURE 8	View east towards bridge and south bank – note stacked stone and concrete
FIGURE 9	View east along creek towards bridge
FIGURE 10	View west along creek from west of bridge
FIGURE 11	*Ostrea sp.* shell observed on south bank of creek

CHRIS/NWIC SEARCH RESULTS

SEARCH	PLN2018-00043, APN 057-062-110. CHRIS/NWIC File. No. 18-1612. Dated March 5, 2019.

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

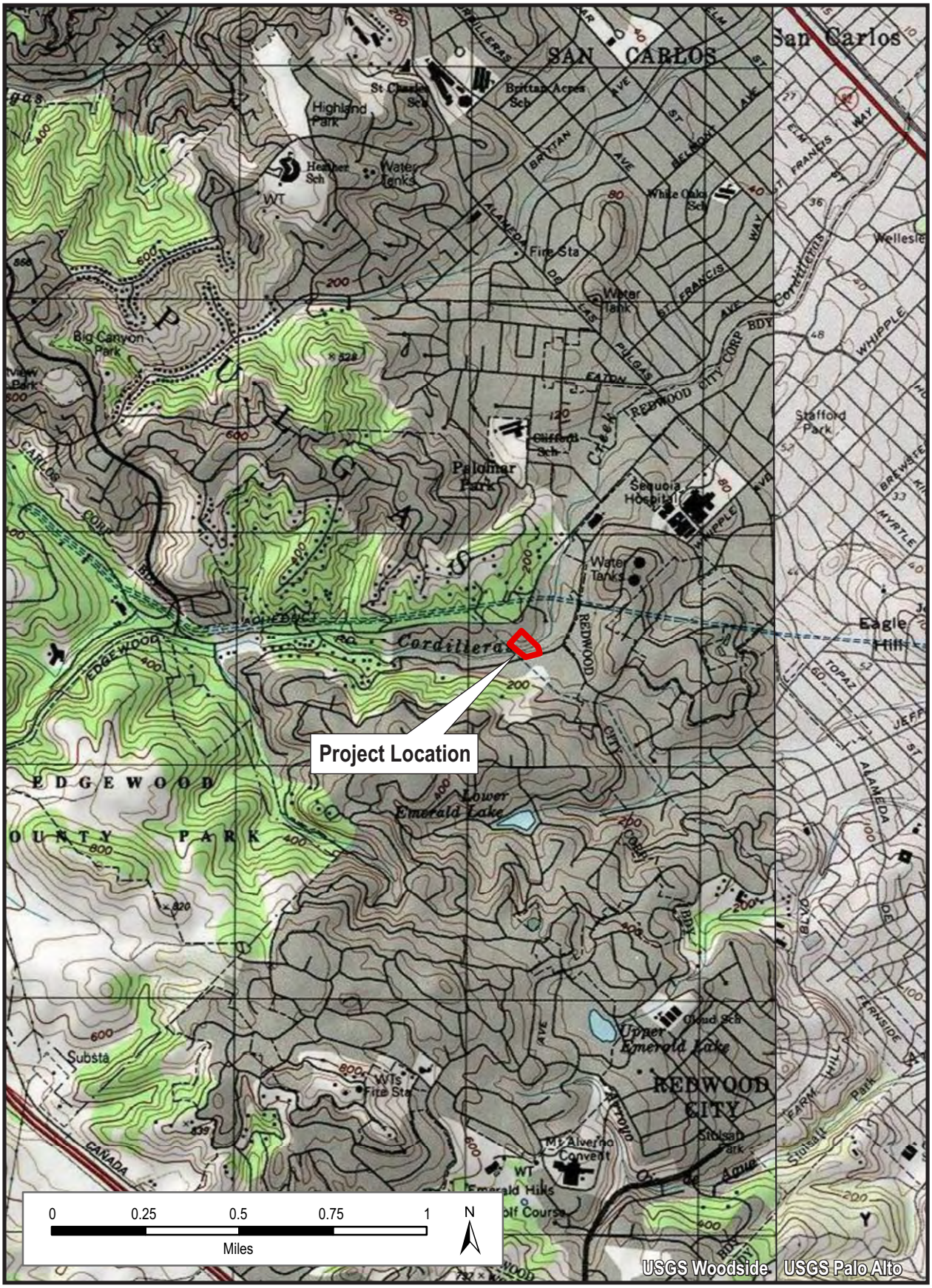

Figure 2: Project Location T5S R4W (USGS Woodside, CA 1997 and Palo Alto, CA 1997)

Figure 3: Project Area with Photo View Locations (Google Earth 2018)

Figure 4: View south from northeast corner of property

Figure 5: View northwest towards house from driveway

Figure 6: Front façade of house – view to northeast

Figure 7: Shed/garage – view to east

Figure 8: View east towards bridge and south bank – note stacked stone and concrete

Figure 9: View east along creek towards bridge

Figure 10: View west along creek from west of bridge

Figure 11: *Ostrea sp.* shell observed on south bank of creek

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

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

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

March 5, 2019 NWIC File # 18-1612

Kelsey Lang, Project Planner
San Mateo County Planning and Building Division
455 County Center
Redwood City, CA 94063

re: PLN2019-00043 / APN 057062110, 1750 Cordilleras Rd

Dear Kelsey Lang,

Records at this office were reviewed to determine if this project could adversely affect cultural resources. **Please note that use of the term cultural resources includes both archaeological sites and historical buildings and/or structures. The review for possible historic-era building/structures, however, was limited to references currently in our office and should not be considered comprehensive.**

Project Description: Minor Subdivision of a 83,118 sq/ft parcel (057-062-110) into 3 parcels, 22,223 s/f, 17,815 s/f, & 43,071 s/f gross). Driveway acces & grading work have been applied for under pending (not issued) BLD2017-00214. This is a complete Resubmittal of the 3-lot SUB (PLN2004-00636) which was approved (with associated grading COMPLETED), but where the Tentative Map approval EXPIRED before the Map was recorded. Zoning: RH/DR.

Previous Studies:

XX This office has record of one previous cultural resource study that included the proposed project area, Study # 3044 (Chavez 1977). S*ee recommendation below*.

Archaeological and Native American Resources Recommendations:

XX The proposed project area contains or is adjacent to the archaeological site P-41-000447, a Native American habitation site. It is recommended that a qualified professional assess the status of the resource and provide project specific recommendations.

XX The survey coverage in Study # 3044 (Chavez 1977) does not clearly describe if APN 057-062-110 was included. Furthermore, due to the passage of time since the previous survey (Chavez 1977) and the changes in archaeological theory and method since that time, we recommend a qualified archaeologist conduct further archival and field study for the entire project area to identify cultural resources.

XX We recommend the lead agency contact the local Native American tribe(s) regarding traditional, cultural, and religious heritage values. For a complete listing of tribes in the vicinity of the project, please contact the Native American Heritage Commission at 916/373-3710.

Built Environment Recommendations:

XX The 1961 USGS Half Moon Bay 15' quad depicts a building in the proposed project area. Since the Office of Historic Preservation has determined that any building or structure 45 years or older may be of historical value, if these, or similarly aged buildings, are present then it is recommended that prior to commencement of project activities, a qualified professional familiar with the architecture and history of San Mateo County conduct a formal CEQA evaluation.

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 California Historical Resources Information System (CHRIS) Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

For your reference, a list of qualified professionals in California that meet the Secretary of the Interior's Standards can be found at http://www.chrisinfo.org. If archaeological resources are encountered during the project, work in the immediate vicinity of the finds should be halted until a qualified archaeologist has evaluated the situation. If you have any questions please give us a call (707) 588-8455.

Sincerely,

Jillian Guldenbrein

Jillian Guldenbrein
Researcher

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT D

GEOTECHNICAL INVESTIGATION

Proposed Residential Subdivision
1750 Cordilleras Road
Redwood City, California

Prepared for:
Lea and Sung Engineering, Inc.
2095 Industrial Parkway West
Hayward, California 94545

Attention: Mr. Jeff Lea, P.E.

Dated: April 5, 2005
Job 1104.06.00

Earth Investigations Consultants
P.O. Box 795
Pacifica, California 94044
Phone 650-557-0262
Fax 650-557-0264
earthinvestigations@comcast.net

Earth Investigations Consultants

April 5, 2005
Job 1104.06.00

Lea & Sung Engineering, Inc.
2095 Industrial Parkway West
Hayward, California 94545

Attention: Mr. Jeff Lea, P.E.

RE: GEOTECHNICAL INVESTIGATION
Proposed Residential Subdivision
1750 Cordilleras Road
Redwood City, California

Ladies and Gentlemen:

INTRODUCTION

Location and Proposed Project

Pursuant to your authorization, we have completed the referenced project, located in the Johnson Subdivision. This area is an unincorporated area of Redwood City, California accessible from Cordilleras Road just west of Oak Knoll Road (Plate 1, Vicinity Map).

We understand that the development plan is a residential subdivision for the benefit of two, 2- to 3-story homes (Photos 1-6). The existing residence will be remodeled. Proposed Cordilleras Place will provide access to the new home sites (Plate 2, Site Plan). A new bridge, to replace the existing, will form the easterly segment of the roadway where it spans Cordilleras Creek near the intersection with Cordilleras Road. We anticipate moderate grading and application of retaining walls to create the house pads and road alignment.

Purpose and Scope of Services

The purpose of this investigation was to characterize the site geotechnical setting and to provide geotechnical design parameters for building and retaining wall foundations, retaining wall design, grading, and site drainage. The scope of services included:

- Review of pertinent geological maps and literature pertaining to the site area;
- Review of black and white, 1956, vertical, stereo photographs covering the site area;
- Site and area reconnaissance mapping onto the project site plan on March 8, 2005;
- Site explorations by advancing 9 borings in the proposed building areas. Soils encountered were sampled by advancing a 1 ½ inch diameter, split spoon sampler with a gas powered Wacker (BHF 30S) percussion hammer that imparts an axial load of 35 ft. lbs. to the sampler at a rate of 1270 blows per minute. The borings were logged and sampled by our field engineer. The Logs of Borings are contained on Plates 3-7. Plates 8 and 9 contain descriptions of the terms and symbols used on the logs;
- Laboratory testing included moisture content, dry density, Atterberg limits and percentage of soil particles passing the ASTM #200 sieve. Laboratory test results are tabulated on the boring logs. The Atterberg limit particle size test results are contained on Plate 10, Plasticity Chart;
- Engineering analysis of the data. Plate 11 depicts a representative geologic cross sections based upon the site observations and boring data;
- Preparation of this report containing pertinent recommendations for the proposed subdivision development.

GEOLOGIC SETTING

The site area of approximately 1.9 acres occupies a relatively gentle, tree and grass covered terrain on the nose of a southeast sloping spur ridge (Plate 1). The landscape is interrupted in the southern part of the site by eastward sloping Cordilleras Creek (Plate 1). Elevation across the site gradually rises from approximately 125 feet above sea level in the southeast corner to approximately 175 feet in the north corner. The channel bank on the northern side of the creek is locally up to 25 feet high with an average gradient of 1 ½:1 (H:V), while the southern channel bank is 10 to 12 feet high with a gradient of up to 1:1.

Runoff across the property sheets across the slopes or is conveyed along the existing driveway to Cordilleras Creek. Local seepage was detected in the northwestern part of Parcel 3.

According to Leighton and Associates (1976) the site is underlain by rocks of the Franciscan complex. Outcrops of hard, massive sandstone occur in the creek channel at the existing and proposed bridge crossing, and along a segment of the existing driveway (Plate 2). Undocumented sliver fill was mapped at the bridge abutments, along the downslope edge of the existing driveway, and on a segment of dirt road near the wooden shed on Proposed Parcel 3. Elsewhere, surface soils are interpreted as native, undivided surficial deposits derived from colluvial and alluvial processes.

There are no mapped bedrock landslides on the property, nor were there any detected on the 1956 stereo aerial photographs interpreted for this investigation, however tree cover obscured direct observation of the creek channel banks.

Site observations revealed debris sliding from locally oversteepened reaches of the creek channel, however bank instability has not encroached into the existing roadway or bridge foundation. We observed impingement erosion of the channel bank at the ends of the revetments adjoining the bridge. Erosion has undermined the northern bridge abutment foundation. However, the bridge foundation was intact. There was no evidence of slope instability in the proposed building areas.

The site lies in a tectonically active region approximately 2 miles northeast of the mapped trace of the San Andreas fault, and approximately 18 miles southwest of the Hayward fault (Jennings, 1994). The San Andreas fault has produced major Bay area earthquakes in 1906 and 1989, and moderate to strong ground shaking in the site area (Lawson, 1908; Plafker and Galloway, 1989). The Hayward fault has also produced at least one major earthquake in the 19th century, and is perceived as having the highest potential for a major earthquake by the year 2020 (Working Group, 1990). There has been no reported earthquake induced ground failure affecting the site (Youd and Hoose, 1978; Plafker and Galloway, 1989).

It is expected that one or more major earthquakes could occur on local faults. Strong to very strong to perhaps violent ground shaking is expected in the site area in the event of a major earthquake on a nearby segment of the San Andreas fault (Borcherdt and others, 1975; Petersen and others, 1999).

SITE CHARACTERISTICS

Surface Features

A timber bridge supported by concrete footings spans Cordilleras Creek, and connects with a paved driveway that leads to the existing house in the southwestern part of the site. There are a series of channel revetments, including stacked rock on the upstream southern side, and a concrete wall on the southerly downstream side. Impingement erosion was observed at the ends of the revetments.

Storm runoff from a catch basin on the shoulder of Cordilleras Road is directed to a concrete swale, and in turn, to the bank of the creek channel approximately 60 feet downstream from the bridge (Plate 2). Riprap has been placed at the end of the swale to fill a gully eroded into the channel bank by runoff.

Landscape features surround the existing house site. Other non-habitable structures on the site include wooden sheds in the northcentral and northwestern parts of the site. An unimproved road leads from the driveway to the shed in the northcentral part.

The site is covered with grasses and brush, and numerous mature oak trees. The banks of the creek channel are covered with riparian vines, grasses and scattered oak trees.

Explorations

The borings encountered a variable thickness of soil overlying sandstone bedrock. Boring 1 drilled near the east bridge abutment encountered 22 feet of soil including approximately 4 ½ feet of soft to firm, sandy clay with gravel fill and 12 ½ feet of intercalated, moderately expansive sandy clays, clayey sands and 5 ½ feet of medium dense sandy gravel. Seepage was encountered at 15 feet. Boring 2 near the west bridge abutment encountered 7 feet of soft to firm, sandy clay fill overlying bedrock.

The other borings drilled in the proposed house sites encountered ½ to 6 ½ feet of soil, including undocumented, generally soft or loose, sliver fills up to 3 feet thick at the Boring 4, 7, 8 and 9 locations. There was no other occurrence of seepage or ground water, however the earth materials encountered in the borings elsewhere on the property were generally damp.

DISCUSSION AND CONCLUSIONS

The results of this investigation indicate that the proposed residential subdivision is feasible from a geotechnical standpoint. This investigation revealed that the proposed building areas occupy stable slopes. This conclusion is supported by the observation of good support over the past 50 years by the existing house and bridge foundations, which appear to be shallow footings. There are no active faults constraining the site. However, strong to perhaps very strong ground shaking should be anticipated in this area in the event of a nearby major earthquake on the San Andreas fault. We consider this fault the design seismic source for the project area.

There are undocumented fills locally overlying native surficial deposits. We anticipate that development can be accomplished by relatively conventional construction techniques, however, given soil thickness and locally expansive quality, we have recommended the building and retaining wall foundations be drilled piers that carry loads to underlying bedrock material. It may be acceptable to support the buildings and retaining walls on spread footings if grading reduces the depth to bedrock to 2 feet or less. This condition appears to exist in proposed Parcel 1. Consequently, you will find design parameters for spread footings in this report. Comprehensive drainage provisions will be required to reduce potential for surface erosion within the site, and surficial landsliding of the channel banks.

It will be necessary for the structural engineer to evaluate the existing residence foundation for new loads that may be associated with the proposed remodel. Similarly, the existing bridge and channel revetment foundation support and proposed new foundation elements should be evaluated with the recommendations in the Foundation section of this report. The same recommendations should be applied to new foundation design. It will be important to protect the ends of the revetments from impingement erosion. We have included recommendations to armor the channel at the bridge crossing to mitigate future scour. In addition, the Cordilleras Road storm drain outfall should be improved utilizing the channel armor recommendations that follow.

RECOMMENDATIONS

Seismic Design

The proposed project should be designed for the following seismic design criteria derived from our subsurface exploration and Chapter 16 in the 1997 Uniform Building Code:

- Seismic Zone: 4 (Z=0.40)
- Seismic Source Type A: San Andreas Fault
- Distance to Seismic Source: approx. 3 km to southwest
- Soil Profile: Sc.

Site Preparation, Grading and Compaction

All existing organic soil and fill should be removed from the foundation and pavement areas. The existing granular fill soil, as assessed by our field engineer during rough grading, can be reused for engineered fill provided organic material, and rocks larger than 6 inches across are removed or crushed. If import fill is required to establish the proposed building pad, it should be non-expansive with a plasticity index of 15 or less. The building site and driveway should be graded to achieve positive flow of runoff away from the foundations.

Prior to placement of engineered fill, building areas, after clearing, should be scarified to a depth of 8 inches, moisture-conditioned to near optimum, and then compacted to 90 percent of the maximum dry density (MDD) of the materials as determined by the ASTM D1557 (latest edition) laboratory compaction test procedure. Engineered fill should be spread in 6- to 8-inch thick, loose lifts, moisture-conditioned to near optimum moisture content, and compacted to at least 90 percent relative compaction. The upper foot of fill placed in pavement areas should be compacted to 95 percent MDD. Where fill is to be placed on slopes between 10 to 20 degrees, we recommend that an equipment-width key be cut at least 3 feet into competent native soil or bedrock, as assessed by our field engineer during grading. Fill on slopes steeper than 20 degrees should be avoided. Keyway construction will require subdrainage that will be specified after the key is excavated. Plan on minimum 4-inch diameter, Schedule 40 or SDR-35 PVC perforated subdrainage pipe, sloped at least 2 percent to discharge, and covered by ¾- to 1 ½-inch crushed rock separated from the adjacent soil by filter fabric. The perforated pipe will be connected to similar rigid solid PVC pipe to carry water to an approved discharge location.

We recommend that unsupported, graded slopes in colluvium have a maximum gradient of 2:1 (H:V). Cut slopes in bedrock can be up to 1 ½:1, as assessed by

the engineering geologist during rough grading. Unsupported, engineered fill and slopes cut into surficial deposits should be no steeper that 2:1.

Armor Stone

We recommend that armor stone be installed to mitigate scour at the toe of the bridge and revetment foundations; and to improve protection of the bank at the Cordilleras Road storm drain outfall downstream from the bridge crossing. The size and height of armor stone should be designed by the project engineer for the anticipated channel flows for a 100-year storm. Stone should be installed in a continuous keyway excavated to a minimum depth of 3 feet into bedrock. Prior to stone placement, all vegetation and loose soil should be removed. Place filter fabric (Mirafi 140N) onto the smooth, uniform grubbed native soil surface. Carefully place the stone to achieve an interlocking configuration to a height of at least 12 inches above the design flow elevation. The finished slope of the stone should not exceed 1 ½:1. It will be important to avoid channel constriction by armor stone, and revetment ends should blend with the channel configuration to create a smooth transition with the adjacent, unprotected bank segments.

Utility Trenches

Vertical trench excavations up to 5 feet deep should be capable of standing with minimal bracing for short construction periods. However, contractors should be alert to potential unstable conditions. Local conditions may require that trenches less than 5 feet be cut and braced as specified in the State of California Safety Ordinance dealing with Excavations and Trenches.

Utility trenches should be designed to prevent the transportation of water into foundations, slabs or pavement subgrade soils. Care should be taken to assure that uncontrolled, concentrated runoff is not conducted toward the existing slopes. In particular, where utilities cross foundations, trenches should be plugged with compacted soil or concrete for their full depth, and for a distance of at least 2 feet on either side of the foundations.

On-site, inorganic soil may be used as utility trench backfill. Special compaction of trench backfill will be necessary under and adjacent to the proposed structures, concrete slabs, and engineered fill. In these areas, backfill should be conditioned with water to produce a soil-water content near the optimum value, and placed in horizontal layers, each not exceeding 6 inches in loose thickness. Each layer should be compacted to a density equivalent to at least 90 percent of the maximum dry density of the soil as determined by ASTM test D1557. The top two feet of trench backfill under slabs and pavements should consist of non-

expansive, granular soils compacted to at least 95 percent of maximum dry density.

Foundations

Structures should be supported in the bedrock underlying the surficial deposits. It is acceptable to utilize footings supported in bedrock provided there is at least 5 feet of horizontal confinement as measured between the bottom front edge of the footing, and nearest slope steeper than 20 degrees.

House and bridge foundations, on slopes steeper than 20 degrees and where surface soils exceed a thickness of 2 feet, should be supported on drilled, cast-in-place concrete piers.

Footings

- House and retaining wall footings should be at least 12 inches wide and extend at least 12 inches into the bedrock materials; 36 inches into bedrock for bridge and channel revetment foundations;
- Passive equivalent fluid pressure of 400 pounds per cubic foot (pcf) beginning at the top of the bedrock surface;
- Coefficient of friction of 0.40
- Allowable bearing value of 3500 pounds per square foot for dead plus live loads. This value should be increased by 1/3 to account for wind and seismic loads

Drilled Piers

- House and deck piers should be at least 12 inches in diameter and extend at least 12 feet below the existing ground surface. Bridge piers should be at least 18 inches in diameter and extend at least 15 feet below the ground surface;
- Skin friction value of 400 psf beginning at a depth of 3 feet for the house and deck piers, and a depth of 5 feet for the bridge. Piers should not be designed for support between the surface and the depth of fixity;
- Piers on slopes steeper than 20 degrees should be designed to resist a lateral creep force of 45 pcf in the upper 3 feet for houses and decks, and the upper 5 feet for the bridge piers. The creep load should be applied over 1 ½ pier diameters;
- A passive equivalent fluid pressure of 400 pcf acting over 1 ½ pier diameters can be assigned at the top of the bedrock surface;

- House piers should be interconnected in the uphill-downhill and side-hill directions with grade beams designed by the project structural engineer to carry the anticipated building loads between the piers. The bridge abutment walls will satisfy this requirement. No piers should be isolated.

Retaining Walls

Retaining walls should be supported on the appropriate foundation as discussed above. Walls should be designed to resist an active equivalent fluid pressure of 50 pcf acting in a triangular pressure distribution for level backfill. Where backfill slopes up to 2:1 (H:V), the walls should be designed for an active equivalent fluid pressure of 70 pcf. Intermediate values can be obtained by interpolation. Walls supporting driveways or parking areas should be designed for an appropriate surcharge load due to vehicular traffic. Any wall that is restrained from rotation should be designed to resist an additional uniform pressure of 100 psf.

Retaining walls should be fully backdrained. The backdrains should consist of either a geosynthetic drainage mat (i.e., Miradrain 5000 or equivalent) or a 4-inch diameter, high crush strength perforated PVC pipe sloped to drain to outlet by gravity, and of clean, free draining crushed rock or gravel. If the crushed rock or gravel alternative is chosen, it should be at least 12 inches wide and extend to within 1 foot of the surface. The upper foot should be backfilled with compacted soil to exclude surface water. Drainrock should be separated from the soil by filter fabric. Class II permeable filter material can be used in lieu of drainrock and filter fabric. Retaining wall backdrainage should be directed to the storm drainage system or other approved discharge location.

Retaining walls should be thoroughly waterproofed to prevent detrimental migration of moisture. Retaining walls will yield slightly during backfilling; therefore, walls should be backfilled prior to building on or adjacent to them.

We recommend that the ground surface behind retaining walls be sloped to drain in a positive manner so that ponding and erosion does not occur. Open, lined gutters or solid pipes should conduct surface runoff from behind retaining walls to erosion-protected surfaces. Under no circumstances should the surface water be diverted into subdrains.

Slabs-on-Grade

We recommend that the living spaces be designed with raised wood floors. Where slabs are required (garage, sidewalks, patios), we recommend that the upper 8 inches of soil be removed and replaced with non-expansive granular fill compacted to 95 percent MDD. Prior to placement of the granular fill, the exposed subgrade, after overexcavation, should be scarified to a depth of 8 inches and compacted to 90 percent MDD.

The concrete slabs should be at least 5 inches thick, and underlain with a capillary moisture break consisting of at least 6 inches of clean, free-draining, crushed rock or gravel. Where migration of moisture vapor through the slabs would be detrimental, an impermeable moisture vapor barrier (an equivalent to 20 mil visqueen) should be provided between the gravel and the slab. Slabs should be reinforced with at least No. 4 bars centralized in the slab at 12-inch center-to-center spacing, in both directions to reduce cracking. The slabs should be structurally separated from the perimeter footings and grade beams to allow for some movement. The slabs should contain control joints to help control the distribution of cracking should it occur.

Pavements

The proposed roadway improvement and driveways should be prepared as discussed in the *Grading* section. The upper foot of exposed native soil after grubbing and fill removal should be scarified and recompacted to at least 90 percent MDD. Final pavement design will be dependent upon the anticipated traffic and the materials exposed at the subgrade levels. For preliminary design purposes, driveway and parking area pavements should contain a section of 2 ½ inches of asphaltic-concrete or 5 inches of reinforced concrete underlain by 8 inches of Class II baserock compacted to at least 95 percent MDD.

Drainage

Comprehensive surface drainage is required. We recommend that the project civil engineer prepare a plan detailing the proposed drainage plan. The objective would be to conduct site storm drainage to an approved discharge location along the creek channel. Otherwise, it may be necessary to construct dry wells to receive storm runoff from the individual house sites.

All building roofs, including the water tank, and all paved areas should drain by way of rigid, minimum 4-inch diameter PVC pipes to the project storm drainage system. We recommend that the project civil engineer evaluate drainpipe sizing.

We recommend that a foundation drain be installed on the uphill side of the houses to reduce soil moisture in the crawl space. (If the uphill side of the house is a foundation wall, a separate foundation drain is unnecessary.) It should extend to a depth of at least 12 inches below the crawl space elevation. The trench should be faced with filter fabric. A minimum 3-inch diameter perforated, Schedule 40 (or approved alternate) drainpipe, laid holes down, should be placed at the bottom of the trench with a minimum slope of 2 percent to drain by gravity. The trench should then be filled to within 6 inches of the surface with ¾- to 1 ½ -inch drainrock. Place filter fabric over the top of the drainrock and fill the balance of the trench with drainrock or decorative cobbles. Sediment that accumulates on the top of the filter fabric should be cleared periodically. Alternatively, the upper 6 inches of the foundation subdrain can be capped with compacted site soil provided the finished ground surface slopes at least 5 percent away from the foundations. Once the foundation drain has reached an area on the sides of the building where there is positive slope away from the foundation, the subdrain can be connected to an equivalent size solid pipe that carries water by gravity to the proposed discharge point. Sweeping wye cleanouts should be provided for the subdrain and solid outfall line where bends exceed 45 degrees and to break runs into maximum 50-foot lengths.

It would be prudent to install a subdrain in the seepage area detected in the northwest part of Parcel 3. Elsewhere, on the individual building sites where foundation subdrainage is impractical, we recommend well-developed surface drainage system consisting of minimum 12-inch square catch basins seated in minimum 3-foot diameter, concentric depressions formed in the adjoining soil. The outer margin of each depression should be located at least 3 inches higher than the catch basin rim elevation so that positive sheet flow to the inlet is maintained. The ground surface adjoining foundations should have positive surface drainage gradients of at least 3 percent for a distance of at least 5 feet.

MAINTENANCE

Periodic land maintenance may be required. Surface and subsurface drainage facilities should be checked frequently, and cleaned and maintained as necessary.

INVESTIGATION LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering principles and practices, and is in accordance with the standards and practices set by the geotechnical consultants in the area. This acknowledgment is in lieu of any warranty. We offer no guarantees.

Subsurface conditions could vary between those indicated by the explorations and interpreted from surface features. A qualified geotechnical consultant should be retained to provide construction observation services, to observe the exposed geotechnical conditions, to modify recommendations, if necessary, and to ascertain that the project is constructed in accordance with the recommendations.

This report is submitted with the understanding that it is the responsibility of the Client (Owner) to ensure that the applicable provisions of the recommendations contained herein are made known to all design professionals involved with the project; that the recommendations are incorporated into the construction drawings; and that the necessary steps are taken to see that the contractor and subcontractors carry out the recommendations in the field.

If conditions different from those described in this report are encountered during construction, or if the project is revised, we should be notified immediately so that we may modify our recommendations, if warranted.

The practice of geotechnical engineering changes, and, therefore, we should be consulted to update this report if construction is not performed within 12 months.

REFERENCES

Borcherdt, R.D., Gibbs, J. F., Lajoie, K.R., 1975, Maps showing maximum earthquake intensity predicted in the southern San Francisco Bay region, California, for large earthquakes on the San Andreas and Hayward faults: U.S. Geological Survey Miscellaneous. Field Studies Map MF-709, scale 1:125,000.

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Leighton and Associates, 1976, Geotechnical hazards synthesis map of San Mateo County, California: Geotechnical consultant's June report to the San Mateo County Planning Department, Sheet 3, scale 1:24,000.

Petersen, M., Beeby, D., Bryant, W, Cao, C., Cramer, C., Davis, J., Reichle, M., Saucedo, G., Tan, S., Taylor, G., Toppozada, T., Treiman, J. and Wills, C., 1999, Seismic shaking maps of California: California Division of Mines and Geology Map 48.

Plafker, G., and Galloway, J. P., 1989, Lessons learned from the Loma Prieta California earthquake of October 17, 1989: U.S. Geological Survey Circular 1045, 48 pgs.

Uniform Building Code, 1997, Chapter 16, Tables 16I and J: International Conference of Building Officials, v. 2, pg. 2-30.

Youd, T.L., and Hoose, S.N., 1978, Historic ground failures in northern California triggered by earthquakes: U.S. Geological Survey Professional Paper P993, 177 pgs. map scale 1:250,000.

AERIAL PHOTOGRAPHS

U.S. Soil Conservation Service, 1956, DDB-3R-45 & 46, scale 1:20,000, good resolution black and white stereo coverage.

The following photos and plates are attached and complete this report:

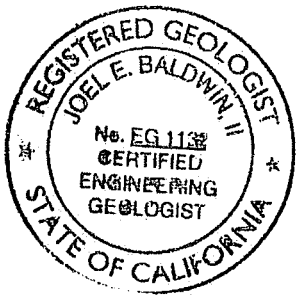
Photo 1 - Northwesterly view from Cordilleras Road...
Photo 2 - Westerly upstream view of bridge abutments...
Photo 3 - Northerly view across Parcel 3...
Photo 4 - Westerly view of existing paved driveway...
Photo 5 - Northeasterly view across front of existing residence...
Photo 6 - Southeasterly view from existing wooden shed...

Plate 1 - Vicinity Map
Plate 2 - Site Plan
Plate 3 - Log of Boring 1
Plate 4 - Logs of Borings 2 and 3
Plate 5 - Logs of Boring 4 and 5
Plate 6 - Logs of Borings 6 and 7
Plate 7 - Logs of Borings 8 and 9
Plate 8 - Key to Borings
Plate 9 - Rock Hardness Criteria
Plate 10 - Plasticity Chart
Plate 11 - Generalized Cross Sections A-A' & B-B'

We trust that this provides you with the information you require at this time. If you have any questions, please call.

Very truly yours,

Earth Investigations Consultants



Joel E. Baldwin, II
Engineering Geologist 1132 (Renewal date 2/28/07)

David W. Buckley
Civil Engineer 34386 (Renewal date 9/30/05)

JEB:DWB:jb:gi
Distribution: 3 copies mailed to addressee

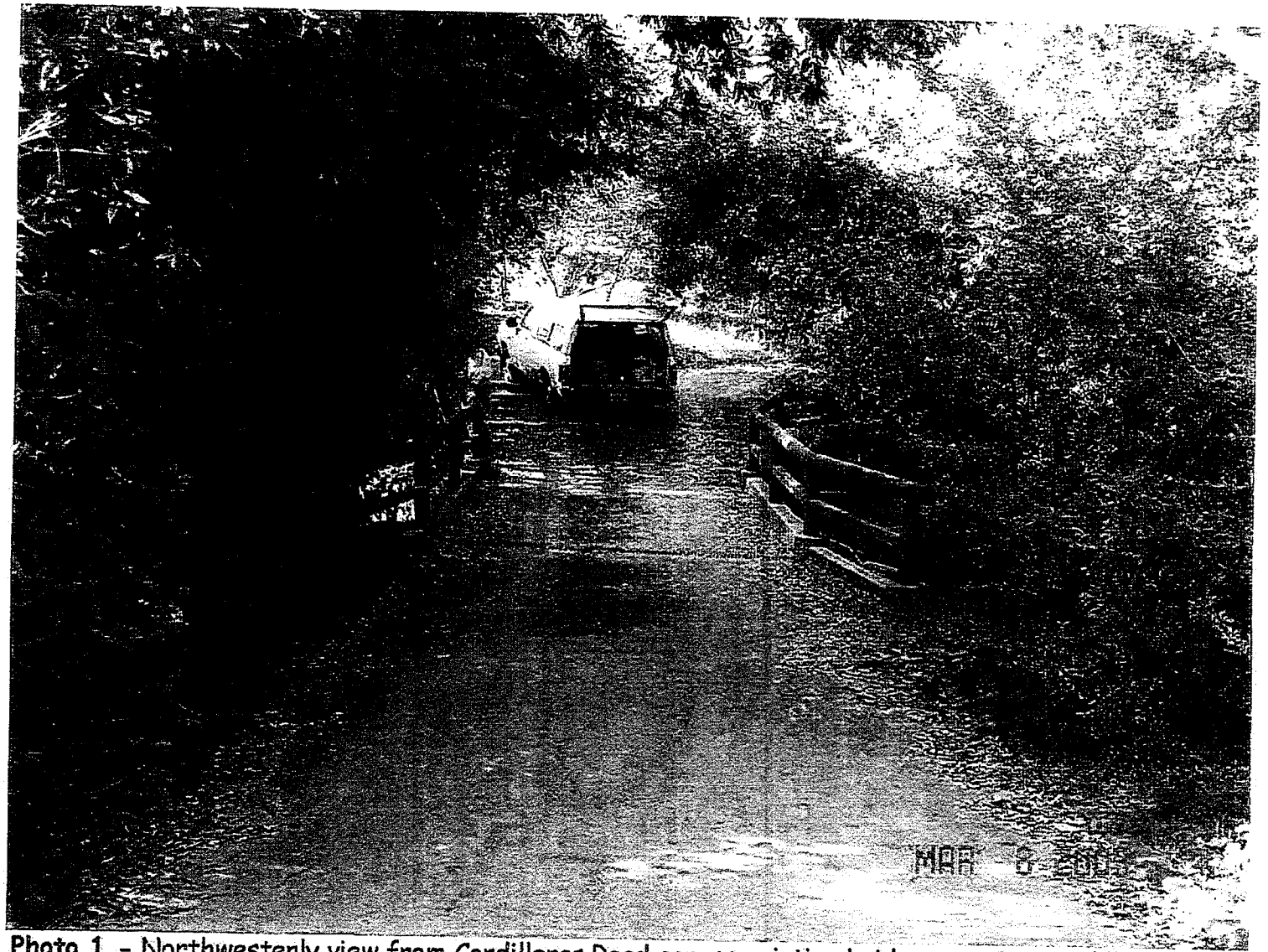


Photo 1 - Northwesterly view from Cordilleras Road across existing bridge spanning Cordilleras Creek.

Photo 2 - Westerly, upstream view of bridge abutments and concrete wall on downstream side. Resistant sandstone lines channel bottom at bridge crossing. Note local bank erosion in distance and end-point erosion at downstream end of wall.

Photo 3 – Northerly view across Parcel 3. Existing wooden shed (to remain), and residence on neighboring property in distance.

Photo 4 - Westerly view of existing paved driveway leading to existing home (to be remodeled) on Parcel 1.

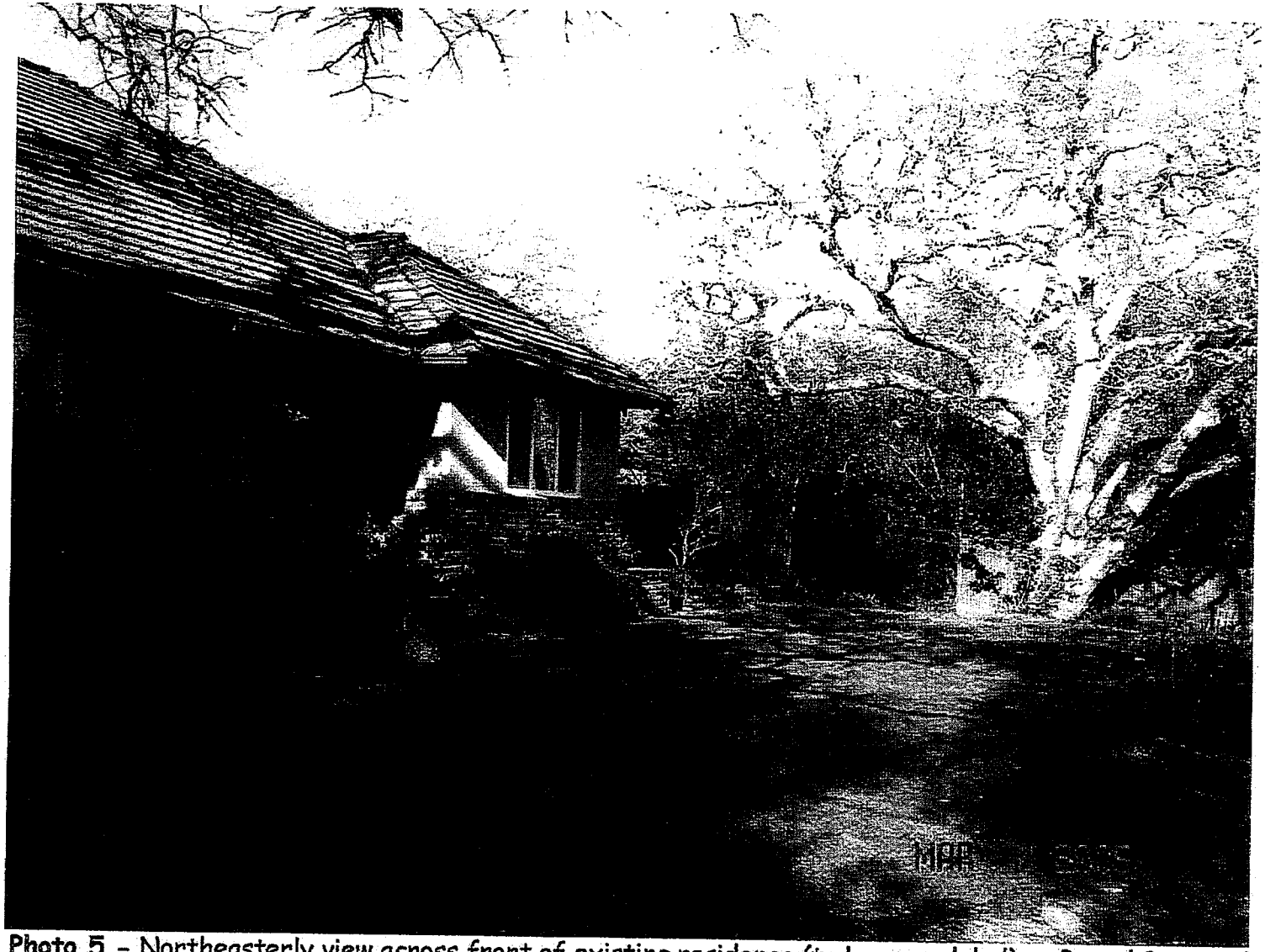
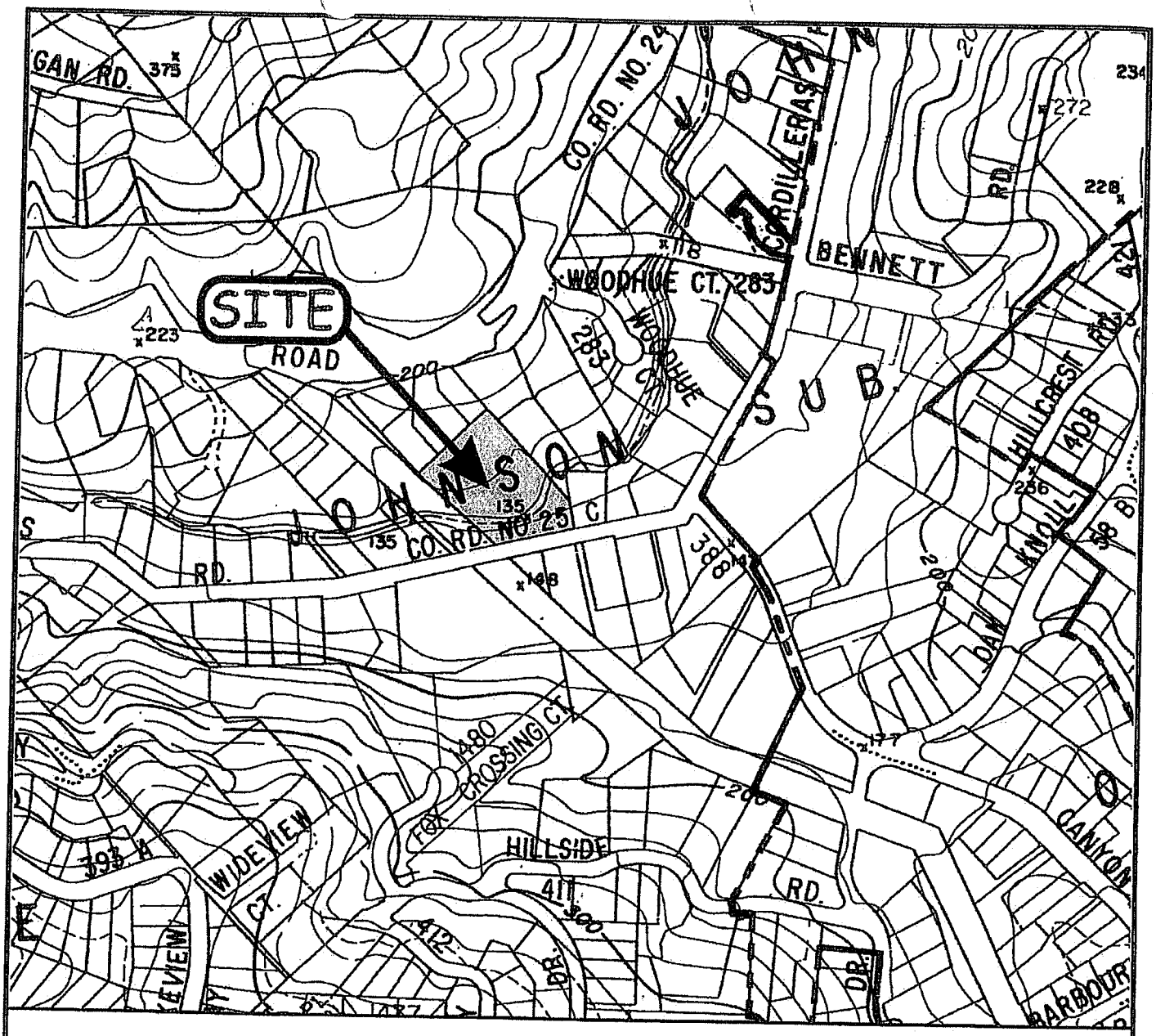


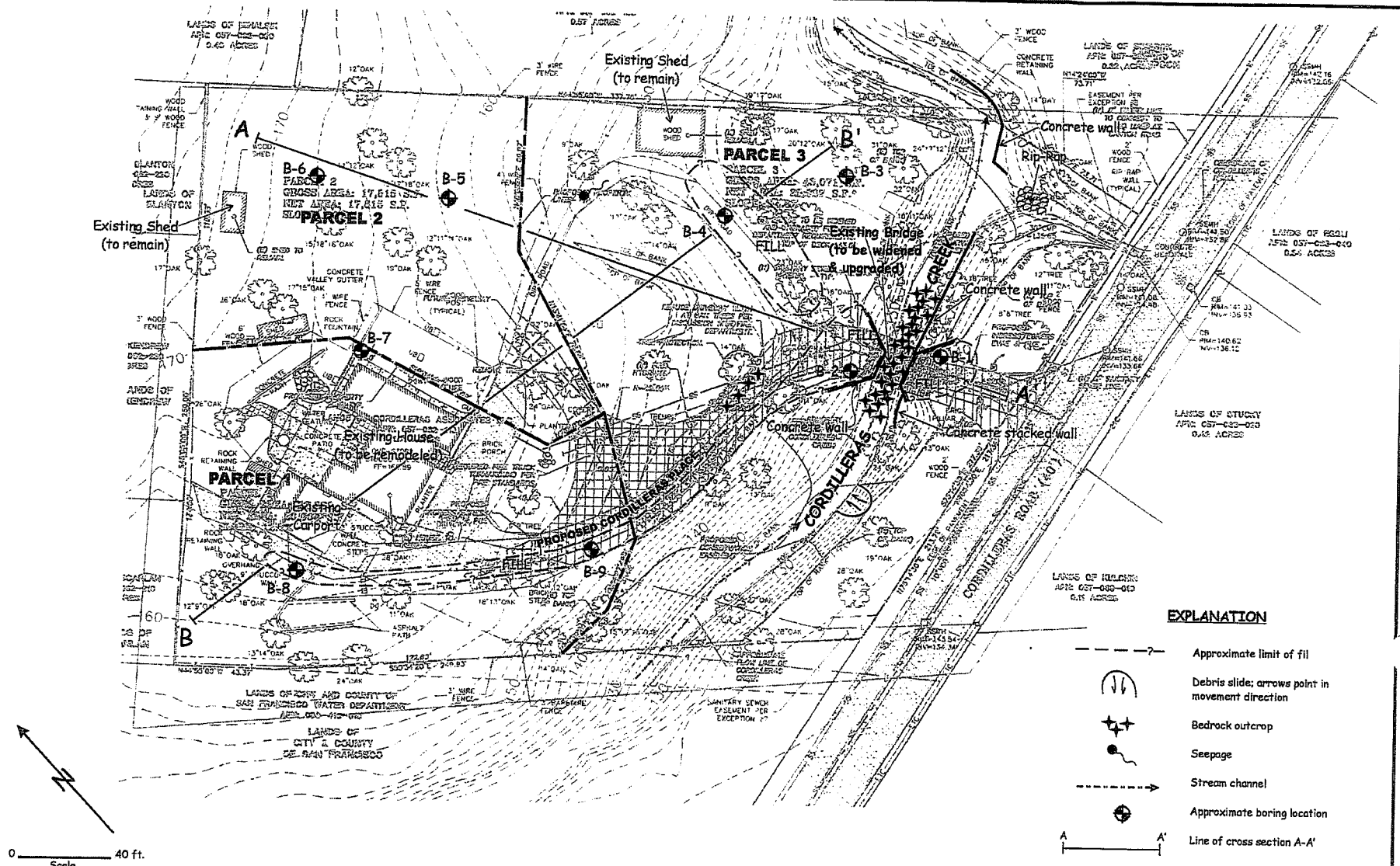
Photo 5 - Northeasterly view across front of existing residence (to be remodeled) on Parcel 3 toward Parcel 2 in distance.

Photo 6 - Southeasterly view from existing wooden shed (to remain) across Parcel 2 building site.



San Mateo County Topographic Map 11G & 12G (1/1/96) Contour interval = 20'

Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	**VICINITY MAP** 1750 Cordilleras Road Redwood City, California	**Plate** 1



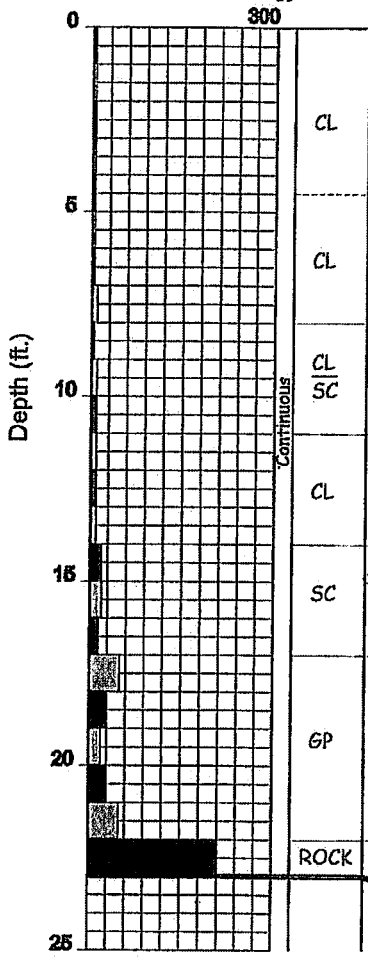
Earth Investigations Consultants	Job No. 1104.06.00 Approved Date 4/5/05	SITE PLAN 1750 Cordilleras Road Redwood City, California	Plate 2

BORING 1

Equipment Portable Percussion Rig

Elevation ~140' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)
96.4	22.1	0.5
105.1	19.2	1.25
104.0	19.6	3.0
115.4	15.7	1.5
110.0	17.9	
110.1	17.6	
139.0	7.7	



USCS		Description
CL		Dark yellowish brown Sandy CLAY with Gravel, damp, soft to firm (FILL?)
CL		Dark yellowish brown Sandy CLAY with gravel, damp, soft to firm (SURFICIAL DEPOSITS)
CL/SC		Dark yellowish brown Sandy CLAY/Clayey SAND, damp, soft to firm/loose to medium dense (SURFICIAL DEPOSITS)
CL		Dark yellowish brown Sandy CLAY damp, firm (SURFICIAL DEPOSITS)
SC	▽	Dark yellowish brown Gravelly Clayey SAND, damp to very damp, medium dense (SURFICIAL DEPOSITS)
GP		Dark yellowish brown Sandy GRAVEL, damp, medium dense (SURFICIAL DEPOSITS))
ROCK		Dark yellowish brown SANDSTONE, very weathered, closely fractured, soft (BEDROCK)

Terminated at 23'

EXPLANATION

▽ Ground water elevation after drilling

Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	LOG OF BORING 1750 Cordilleras Road Redwood City, California	Plate 3

BORING 2

Equipment Portable Percussion Rig

Elevation ~140' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)	Sample	USCS	Description
107.2	14.2	0.25	Continuous	CL	Yellowish brown and dark yellowish brown Sandy CLAY with Gravel, damp, soft to firm (FILL)
112.5	15.1	1.0			
121.2	11.7			ROCK	Yellowish brown SANDSTONE, very weathered, closely fractured, soft (BEDROCK)
					Terminated at 8 ½ '

Penetration Rate (sec./ft.) 0 – 300

Depth (ft.) 0, 5, 10

BORING 3

Elevation ~138' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)	Sample	USCS	Description
107.7	18.2	1.25	Continuous	CL	Dark yellowish brown Sandy CLAY with Gravel, damp, soft (SURFICIAL DEPOSIYS)
110.4	15.7	0.75		CL/SC	Dark yellowish brown Sandy CLAY/Clayey SAND, damp, soft to firm/loose (SURFICIAL DEPOSITS)
114.7	13.2				
122.8	6.0			GP	Dark yellowish brown Sandy GRAVEL, damp, medium dense (BEDROCK ?)
123.3	6.3				seepage at 14'
127.1	8.6			ROCK	Yellowish brown and dark yellowish brown SANDSTONE, very weathered, closely fractured, soft (BEDROCK)
					Terminated at 16'

Depth (ft.) 0, 5, 10, 15, 20

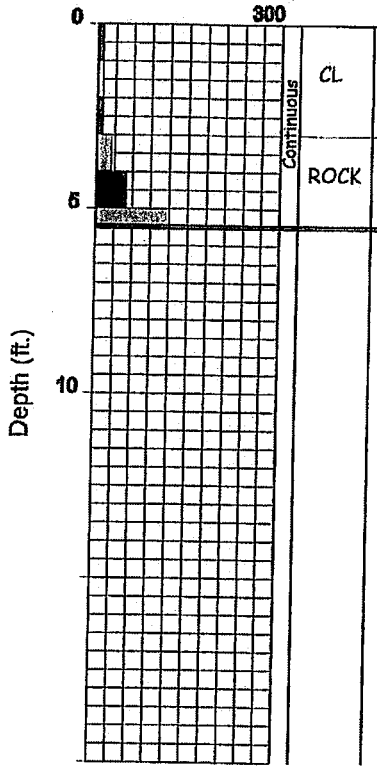
Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	LOGS OF BORINGS 1750 Cordilleras Road Redwood City, California	Plate 4

BORING 4

Equipment Portable Percussion Rig

Elevation ~145' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)
111.1	15.9	1.5
128.9	6.5	



Dark yellowish brown Sandy CLAY, damp, soft (FILL?)

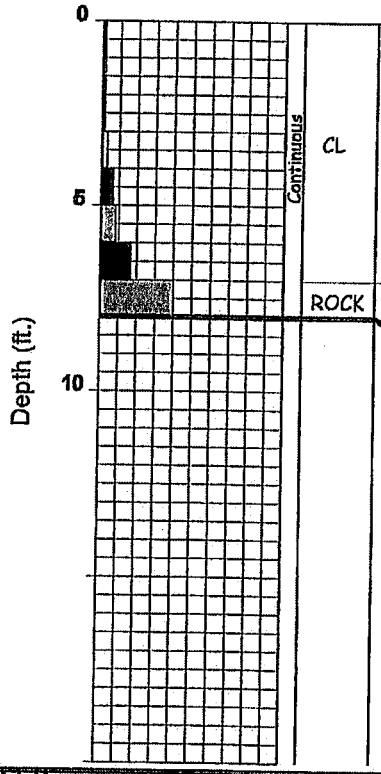
Yellowish brown and dark yellowish brown SANDSTONE, very weathered, closely fractured, soft to moderately hard (BEDROCK)

Terminated at 5 ½'

BORING 5

Elevation ~161' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)
114.3	15.5	0.5
107.8	18.7	3.0
118.6	14.3	



Dark yellowish brown Sandy CLAY, damp, soft (SURFICIAL DEPOSITS)
becomes very damp to wet at 2'-3'

color changes to dark yellowish brown and grey at 4', becomes clayier

Yellowish brown and dark yellowish brown SANDSTONE, very weathered, closely fractured, soft (BEDROCK)

Terminated at 8'

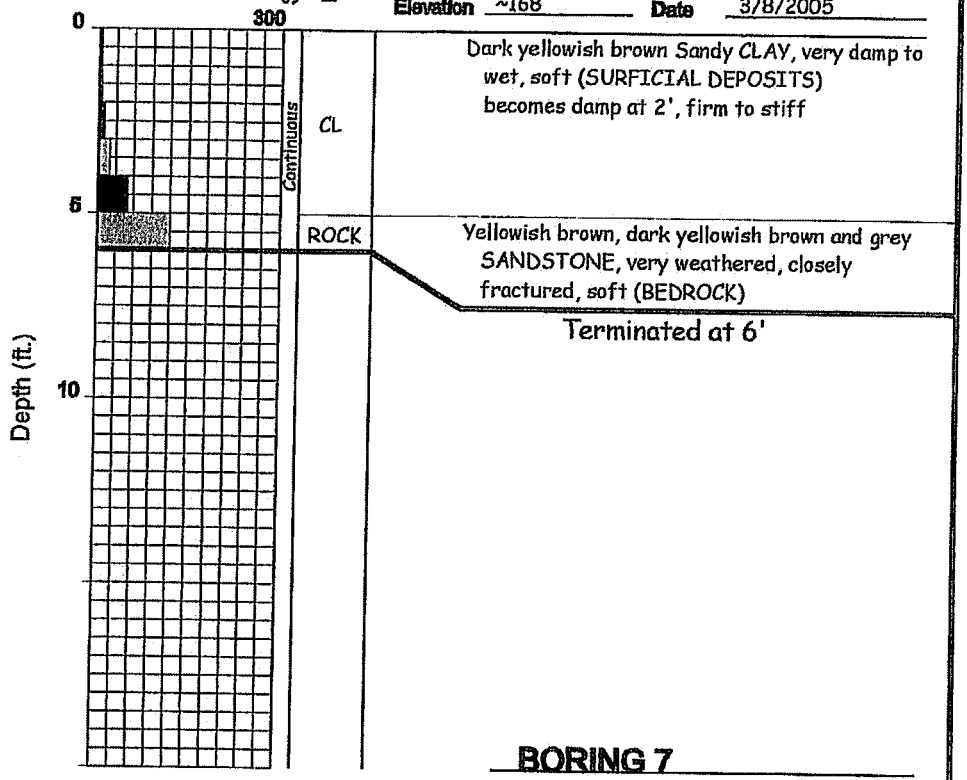
Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	LOGS OF BORINGS 1750 Cordilleras Road Redwood City, California	Plate 5

BORING 6

Equipment Portable Percussion Rig

Elevation ~168' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)
106.3	18.5	0.25
111.9	16.7	
117.9	12.8	



Dark yellowish brown Sandy CLAY, very damp to wet, soft (SURFICIAL DEPOSITS) becomes damp at 2', firm to stiff

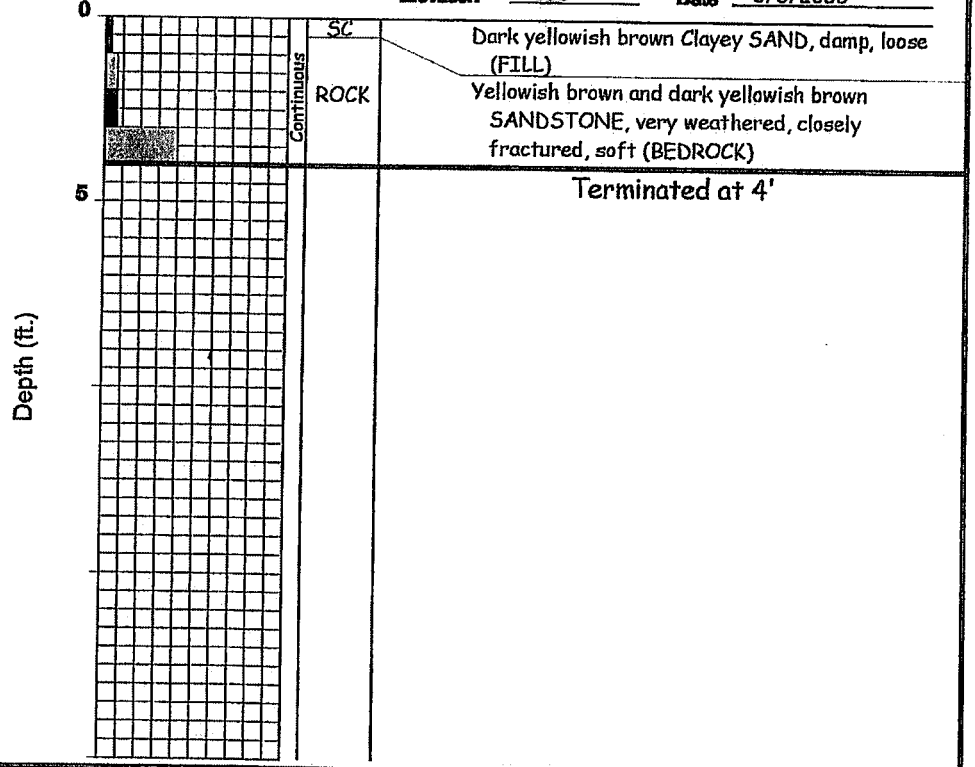
Yellowish brown, dark yellowish brown and grey SANDSTONE, very weathered, closely fractured, soft (BEDROCK)

Terminated at 6'

BORING 7

Elevation ~166' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)
119.6	14.0	
128.5	11.9	



Dark yellowish brown Clayey SAND, damp, loose (FILL)

Yellowish brown and dark yellowish brown SANDSTONE, very weathered, closely fractured, soft (BEDROCK)

Terminated at 4'

Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	LOGS OF BORINGS 1750 Cordilleras Road Redwood City, California	Plate 6

BORING 8

Equipment Portable Percussion Rig

Elevation ~164' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)	Depth (ft.)	USCS	Description
110.6	15.4	0.5	0	CL	Yellowish brown and dark yellowish Sandy CLAY, damp, soft (FILL)
				CL	Dark yellowish brown Sandy CLAY, damp, soft to firm (SURFICIAL DEPOSITS))
123.3	12.0		5	ROCK	Yellowish brown SANDSTONE, very weathered, closely fractured, soft (BEDROCK)
					Terminated at 5'

Penetration Rate (sec./ft.) 0 300 — Sample: Continuous — Depth (ft.) 0, 5, 10

BORING 9

Elevation ~154' Date 3/8/2005

Dry Density (pcf)	Moisture Content (%)	Pocket Pen (tsf)	Depth (ft.)	USCS	Description
108.6	17.1	1.25	0	CL	Yellowish brown and dark yellowish brown Sandy CLAY with Gravel, damp, soft to firm (FILL)
110.4	17.7			CL/SC	Dark yellowish brown Sandy CLAY/Clayey SAND, damp to very damp, soft to firm/loose to medium dense (COLLUVIUM)
			5	CL	Yellowish brown Sandy CLAY, damp, firm to stiff (COLLUVIUM)
122.3	11.6			ROCK	Yellowish brown SANDSTONE, very weathered, closely fractured, soft (BEDROCK)
			10		Terminated at 7 ½ '

Sample: Continuous — Depth (ft.) 0, 5, 10

Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	LOGS OF BORINGS 1750 Cordilleras Road Redwood City, California	Plate 7

Primary Divisions			GROUP SYMBOL	Secondary Divisions
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Orangic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

Definition of Terms

U.S. Standard Series Sieve / Clear Square Sieve Openings

200	40	10	4	3/4"	3"	12"

SILTS AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

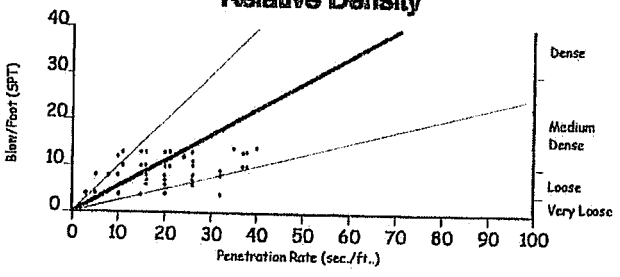
Grain Sizes

Unified Soil Classification System (ASTM D-2487)

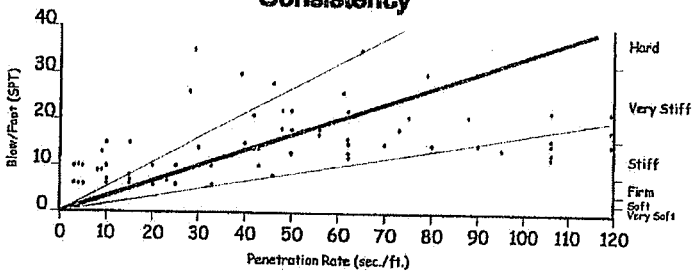
SAND AND GRAVELS	PENETRATION RATE*
VERY LOOSE	0 - 7
LOOSE	7 - 18
MEDIUM DENSE	18 - 53
DENSE	53 - 88
VERY DENSE	OVER 88

SILTS AND CLAYS	STRENGTH**	PENETRATION RATE*
VERY SOFT	0 - 1/4	0 - 6
SOFT	1/4 - 1/2	6 - 11
FIRM	1/2 - 1	11 - 23
STIFF	1 - 2	23 - 47
VERY STIFF	2 - 4	47 - 94
HARD	OVER 4	OVER 94

Relative Density



Consistency



* Seconds per foot, based on a portable percussion rig advancing a 1 1/2-inch diameter split-spoon sampler with a force of 35 ft. lb. at a rate of 1270 blows per minute.

** Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

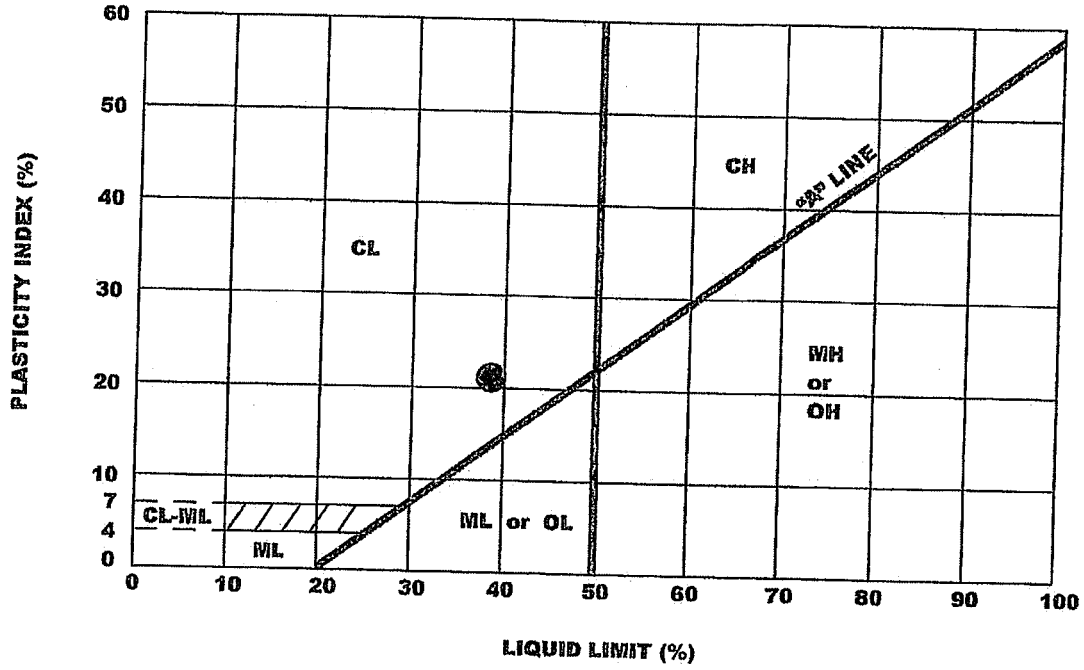
Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	KEY TO BORINGS 1750 Cordilleras Road Redwood City, California	Plate 8

ROCK HARDNESS CRITERIA

Very Hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimen requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately Hard	Can be scratched with knife or pick. Gouges or grooves to 1/4 inch deep can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 inch deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1 inch maximum size by hand blows of the point of geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of pick point. Small thin pieces can be broken by finger pressure.
Very Soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1 inch or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

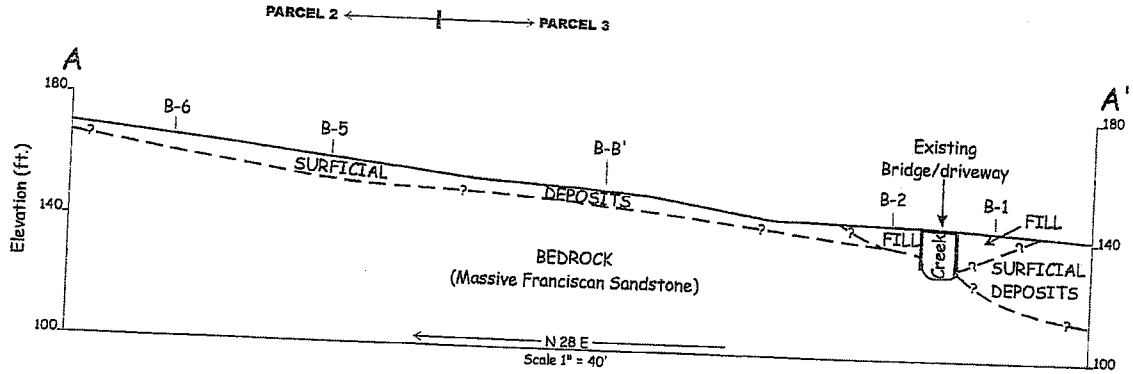
Subsurface Manual for Design and Construction of Foundations of Buildings, 1976
Published by American Society of Civil Engineers.

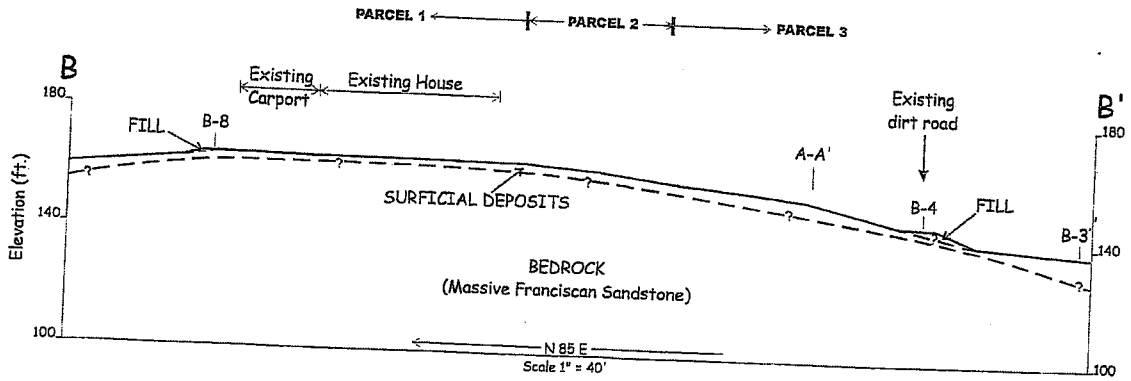
Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	ROCK HARDNESS CRITERIA 1750 Cordilleras Road Redwood City, California	Plate 9



KEY SYMBOL	BORING NO.	SAMPLE DEPTH (feet)	NATURAL WATER CONTENT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	PASSING NO. 200 SIEVE (%)	LIQUIDITY INDEX	USCS
●	B-5	5'	19	39	21	69	0.05	CL

Earth Investigations Consultants	Job No. 1104.06.00 Date 4/5/05	PLASTICITY CHART 1750 Cordilleras Road Redwood City, California	Plate 10





Earth Investigations Consultants	Job No. 1104.06.00 Approved Date 4/5/05	GENERALIZED CROSS SECTIONS A-A' & B-B' 1750 Cordilleras Road Redwood City, California	Plate 11

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT E

LEA & BRAZE ENGINEERING, INC.
CIVIL ENGINEERS | LAND SURVEYORS

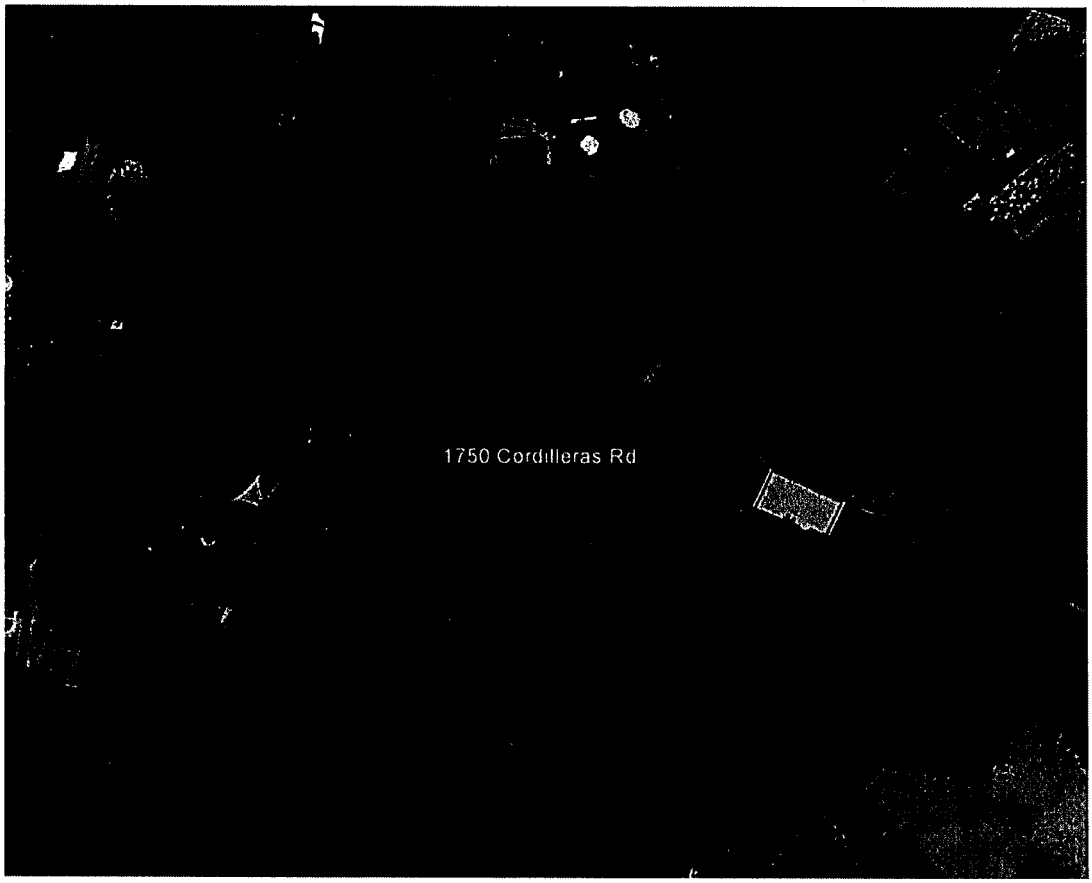
Main Office:
2495 Industrial Pkwy. West
Hayward, CA 94545
Ph: 510.887.4086
Fx: 510.887.3019

Sacramento Region:
3017 Douglas Blvd., Ste. 300
Roseville, CA 95661
Ph: 916.966.1338
Fx: 916.797.7363

Job: 2040879 CI
Dated: January 18, 2017

HYDROLOGY STUDY

1750 Cordilleras Road,
Redwood City, California
(Un-Incorporated San Mateo County)
APN: 057-062-110



This package includes:

- Information Sheet
- Site Hydrology Calculations
- Site Hydrology Exhibits

References:

- Topographic Survey by Lea & Braze Engineering, Inc.
- Grading and Drainage Plan by Lea & Braze Engineering, Inc.
- San Mateo County Rainfall Runoff Data Unit Frequency & Duration Curves

Project Information:

Project Location: 1750 Cordilleras Road
Redwood City, California
APN: 057-062-110

Project Information:

Gross Lot Size:	83,118 sqft.	(1.908 acre)
Existing Site Developed Area:	12,588 sqft.	(0.289 acre)
Proposed Site Developed Area:	16,436 sqft.	(0.377 acre)
Net Change of Developed Area:	+3,884 sqft.	(+0.088 acre)

Hydrology Information: (Per San Mateo County Rainfall Runoff Data Map)

Storm Interval:	100 Year Return, 60 Minute Duration
Rainfall Intensity (I):	100 year = 1.21 in/hr
Intensity Factor (F):	0.80
Runoff Coefficient (C):	0.95 for Impervious areas, 0.35 for Landscape areas

Project Introduction:

The approximately 1.91 acre, roughly rectangular-shaped, site is located on the northwest side of Cordilleras Road in a fully developed residential area of Redwood City in un-incorporated San Mateo County. The site is bounded by Cordilleras Road to the southeast and developed residential lots on the remaining sides.

The overall natural ground surface is a hillside, sloping generally to the southeast across the lot at approximately 10% until it reached the top of bank where the slope becomes considerably steeper down to Cordilleras Creek flow line. Maximum vertical relief across the property is approximately 20 feet from the west property line to the east. During the original development, a slightly raised building pad was created for the residence. Drainage for the property can be generally characterized as uncontrolled sheet flow downhill toward Cordilleras Creek. No existing drainage improvements were noted within the site.

The site is currently occupied by a single-story residence located in the west portion of the lot. An asphaltic concrete driveway provides access from Cordilleras Road at the southeast side of the lot, ending at the west portion of the residence. A concrete patio is located in behind the residence, as well as various concrete walkways. In addition there are a few small sheds located throughout the property. The remainder of the site is landscaped with lawn grass, small to large shrubs, and small to large trees.

Lea & Braze understands at this time the proposed construction will consist of removing, replacing, and expanding the lower portion of the driveway and adding adequate drainage for the increase of impervious surface.

The existing site developed area is approximately 12,558 square feet, with the total proposed developed area being 16,436 square feet, resulting in a net increase in developed area of approximately 3,848 square feet.

Project Hydrology Summary:

Proposed Drainage Improvements: Construction will include new grading to adhere to county standards as well as a new trench drain to collect sheet flow runoff from the driveway. This trench drain will discharge into a below grade retention and infiltration system with any un-infiltrated runoff being metered to a new outfall in the existing concrete channel at the east corner of the site.

Hydrology Calculation Method:

The rational method was used for calculations based on the San Mateo County Drainage Criteria for a 100 year storm event. Intensity was taken from the San Mateo County Rainfall Runoff Data Map. The C-value for impervious areas is taken as 0.95. The C-value for landscaped area is taken as 0.35. The duration is taken to be 60 minutes. The calculations provided the following results:

	Pre-Construction Condition	Post-Construction Condition	Net Change
100 Year Event:	Q = 0.814 cfs.	Q = 0.866 cfs.	+0.052 cfs.

The calculations indicate that post-construction runoff will be increase by approximately 6% by the increase in impervious surface. To mitigate the increase, a below grade stormwater infiltration system is proposed.

Infiltration / Retention System Details:

Basis of Design: The goal is to reduce the amount of storm water runoff through the use of an underground, retention and infiltration system to reduce post-construction runoff to below pre-construction rates and provide a system capable of retaining the additional runoff for the proposed impervious surface based on a 100 year storm event with a 60 minute duration.

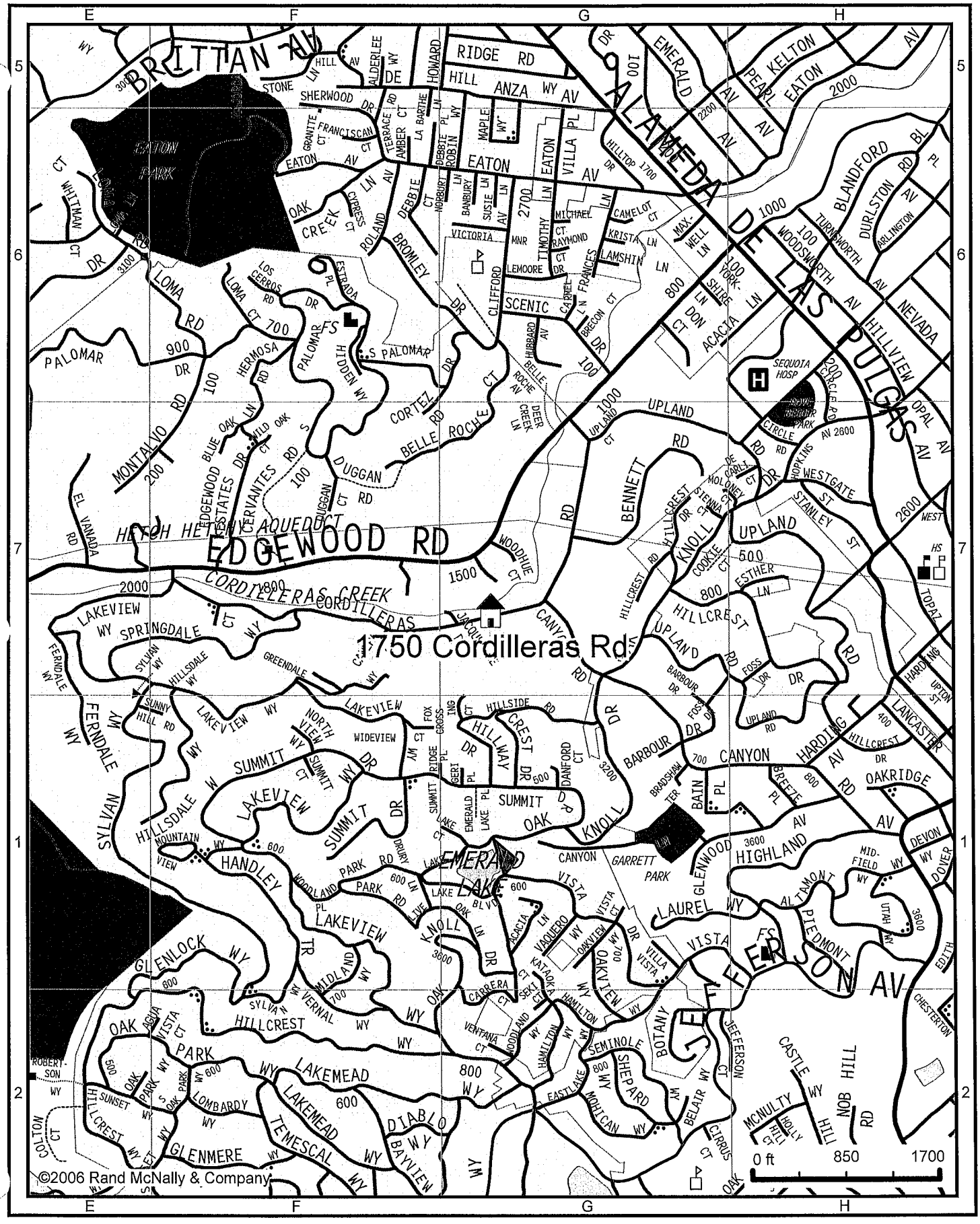
Retention System Design: The required storage capacity of the retention system was calculated by Multiplying the increase in site runoff of 0.051 cubic feet per second by a safety factor of 1.25 and then multiplying by 3,600 seconds for a sixty (60) minute storm duration.

Based on our calculations, retention system will be required to retain a volume of 231 cubic feet of runoff. To promote stormwater infiltration to the fullest extent possible, the infiltration system will consist of one (1) 24" diameter perforated HDPE storage pipe, 40 feet long, placed in a 42 foot long by 4 foot wide by 3 foot deep drain rock filled trench. This system is designed to retain a volume of 242 cubic feet of runoff, providing approximately 104% of the required storage volume.

To prevent vector issues, over-saturation of the surrounding soil and to allow the system to empty completely between concurrent storms, a metering device with a 1 inch diameter orifice with a calculated outflow of 0.038 cubic feet per second, is proposed to discharge to a new outfall in the side of the existing concrete lined swale that flows to Cordilleras Creek at the east corner of the site.

Should the metering orifice become clogged, an overflow riser to the outfall is provided in the manhole structure. Should an event occur that overwhelms the system, runoff will overflow the catch basin and release overland to Cordilleras Creek in the historical manner.

Based on our calculations, Lea & Braze Engineering, Inc. believes that this system is both adequate to perform its intended function and is in conformance with the San Mateo County storm water drainage design requirements.



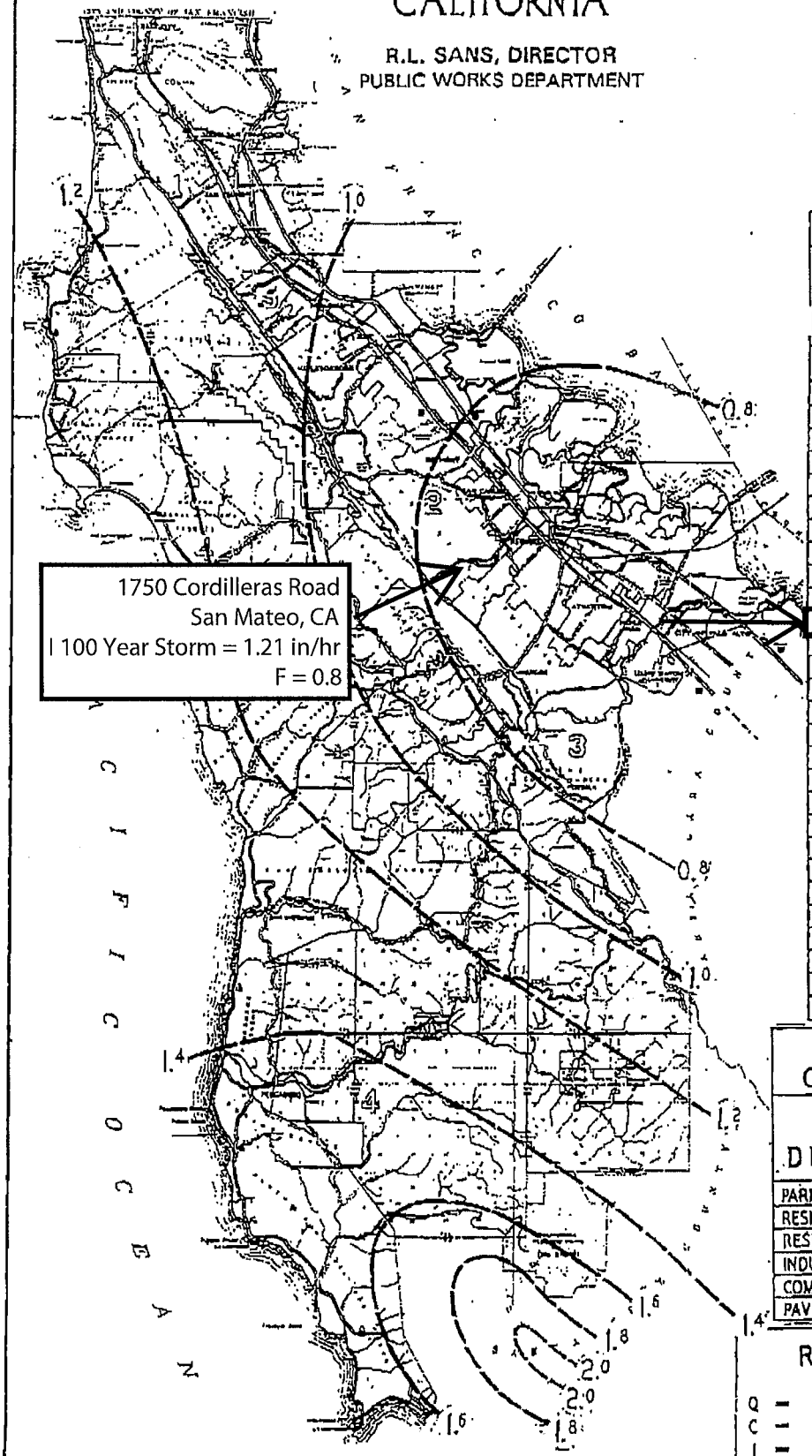
1750 Cordilleras Rd: Unknown City,CA 94062, 769 - G7

RAINFALL RUNOFF DATA

SAN MATEO COUNTY

CALIFORNIA

R.L. SANS, DIRECTOR
PUBLIC WORKS DEPARTMENT



1750 Cordilleras Road
San Mateo, CA
I 100 Year Storm = 1.21 in/hr
F = 0.8

RAINFALL		
TIME OF CONCENTRATION	INTENSITY INCHES PER HOUR	
HRS. MIN.	10 YR.	100 YR.
0 — 10	2.45	3.60
0 — 15	2.05	3.00
0 — 20	1.73	2.55
0 — 25	1.50	2.22
0 — 30	1.33	1.95
0 — 35	1.20	1.75
0 — 40	1.10	1.61
0 — 45	1.02	1.49
0 — 50	0.95	1.37
0 — 55	0.90	1.28
1 — 00	0.86	1.21
1 — 15	0.75	1.07
1 — 30	0.67	0.95
1 — 45	0.61	0.87
2 — 00	0.56	0.80
2 — 30	0.49	0.70
3 — 00	0.44	0.63
3 — 30	0.40	0.57
4 — 00	0.37	0.53
4 — 30	0.34	0.49
5 — 00	0.32	0.45
6 — 00	0.29	0.41
7 — 00	0.26	0.38
8 — 00	0.24	0.35
9 — 00	0.23	0.33
10 — 00	0.21	0.30
12 — 00	0.19	0.27
24 — 00	0.13	0.18

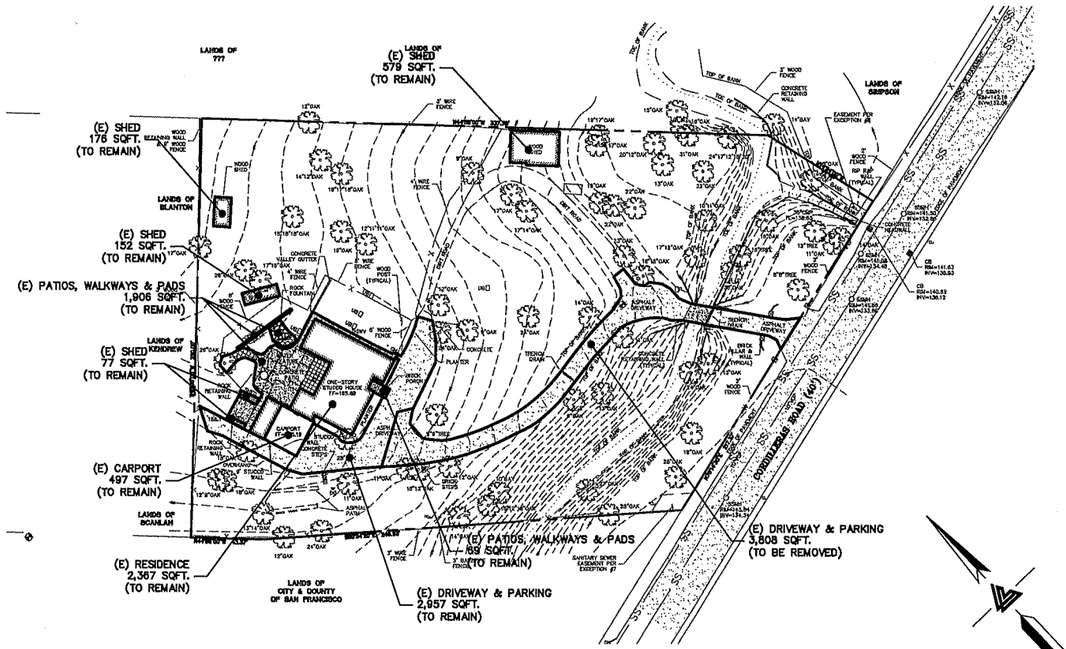
RUNOFF COEFFICIENTS	
TYPE OF DEVELOPMENT	COEF.
PARKS AND CEMETERIES	0.30
RESIDENTIAL - ACRES	0.40
RESIDENTIAL - REGULAR	0.50
INDUSTRIAL	0.65
COMMERCIAL	0.75
PAVED AREAS	0.85

RATIONAL FORMULA

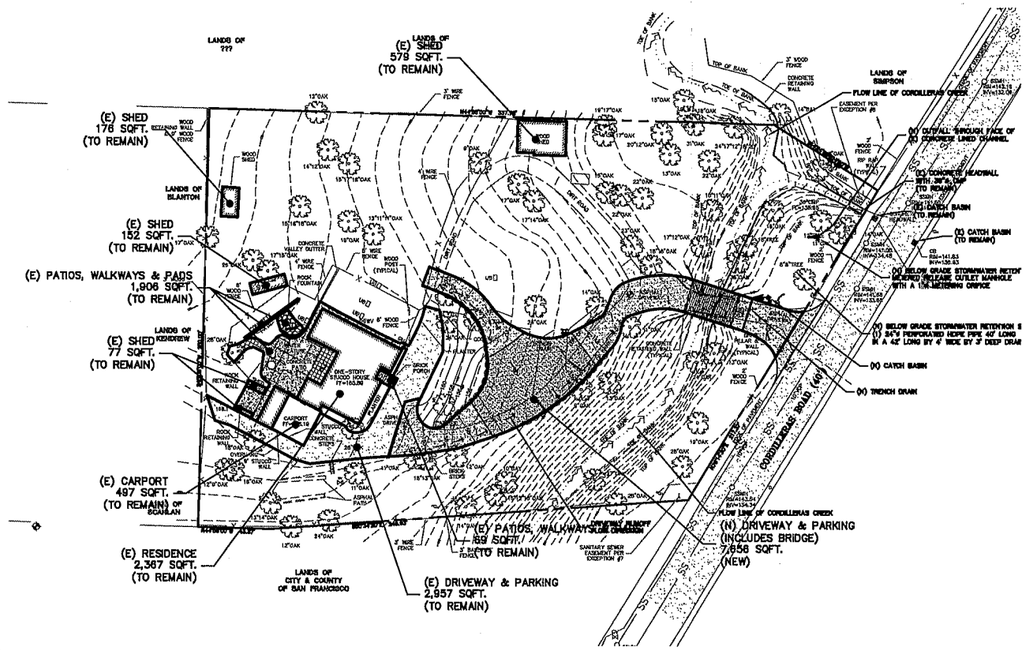
Q — C I A F

Q = RUNOFF - CUBIC FEET PER SECOND
C = RUNOFF COEFFICIENT - PER CENT
I = RAINFALL INTENSITY - INCHES PER HOUR
A = DRAINAGE AREA - ACRES
F = INTENSITY FACTOR (FROM MAP)

Dr. 22-1846



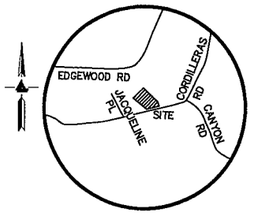
EXISTING



PROPOSED

0 20 40 80

SCALE: 1" = 40'



VICINITY MAP
NO SCALE

DEVELOPMENT INFORMATION

TOTAL SITE AREA	83,118 SQUARE FEET (1.908 ACRES)			
TOTAL DISTURBED AREA	13,400 SQUARE FEET (0.308 ACRES)			
IMPERVIOUS AREAS	EXISTING TOTAL S.F.	REMOVED TOTAL S.F.	NEW TOTAL S.F.	PROPOSED TOTAL S.F.
RESIDENCE & GARAGE	2,367	0	0	2,367
CARPORT	497	0	0	497
SHEDS	984	0	0	984
DRIVEWAY & PARKING	6,755	3,808	7,656	10,613
PATIOS, WALKWAYS & PADS	1,975	0	0	1,975
TOTAL IMPERVIOUS AREA	12,588	3,808	7,656	16,436
NET CHANGE IN DEVELOPED AREA	+3,848 SQFT (NET INCREASE)			

REGISTERED PROFESSIONAL ENGINEER
JEFFREY G. LEA
No. 31878
CIVIL
STATE OF CALIFORNIA

LEA & BRAZE ENGINEERING, INC.
CIVIL ENGINEERS · LAND SURVEYORS
2495 INDUSTRIAL PARKWAY WEST
HAYWARD, CALIFORNIA 94545
(510) 887-4086
FAX (510) 887-3019
WWW.LEABRAZE.COM

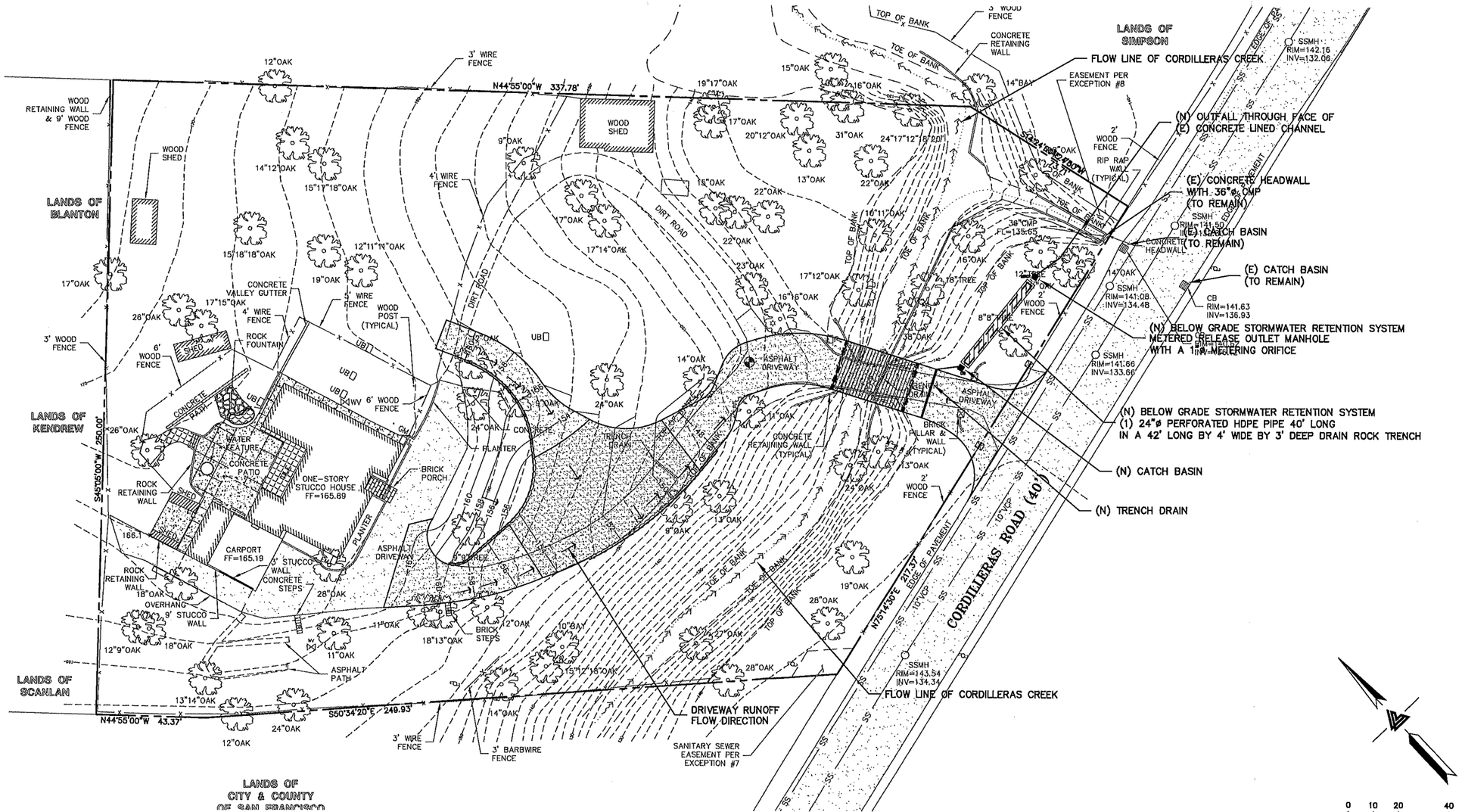
RICCI COURT SUBDIVISION
1750 CORDILLERAS ROAD
REDWOOD CITY, CALIFORNIA
(UN-INCORPORATED)

APN: 057-052-110
SAN MATEO COUNTY

IMPERVIOUS SURFACE EXHIBIT

--	--
--	--
--	--
--	--
1 PLAN CHECK 01-16-17	JH
REVISIONS	BY
JOB NO:	2040879
DATE:	2-5-08
SCALE:	1" = 40'
DESIGN BY:	BH
DRAWN BY:	AC
SHEET NO:	HYD-1

1 OF 2 SHEETS



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REGISTERED PROFESSIONAL ENGINEER
JEFFREY C. LEA
No. 31878
CIVIL
STATE OF CALIFORNIA

RICCI COURT SUBDIVISION
1750 CORDILLERAS ROAD
REDWOOD CITY, CALIFORNIA
(UN-INCORPORATED)
APN: 057-062-110
SAN MATEO COUNTY

PROPOSED DRAINAGE EXHIBIT

1 PLAN CHECK 01-16-17	JH
REVISIONS	BY
JOB NO:	2040879
DATE:	2-5-08
SCALE:	1" = 20'
DESIGN BY:	BH
DRAWN BY:	AC
SHEET NO:	HYD-2

2 OF 2 SHEETS

LEA & BRAZE ENGINEERING, INC.
CIVIL ENGINEERS • LAND SURVEYORS
2495 Industrial Parkway West
Hayward, California 94545
(510) 887-4086
Fax (510) 887-3019
WWW.LEABRAZE.COM

PROJECT	DATE
1750 Cordilleras Road	January 18, 2017
JOB NO.	BY
2040879	R. West

DEVELOPMENT AREA CALCULATIONS

NET SITE AREA:	83,118 sqft.	=	1.908 acre	
EXISTING AREA:				
Impervious:	12,588 sqft.	=	0.289 acre	
Pervious:	70,530 sqft.	=	1.619 acre	
PROPOSED AREA:				
Impervious:	16,436 sqft.	=	0.377 acre	
Pervious:	66,682 sqft.	=	1.531 acre	
NET CHANGE OF IMPERVIOUS AREA:				
	3,848 sqft.	=	0.088 acre	**(Net Increase)**

BREAKDOWN OF IMPERVIOUS AREA

Existing:

Residence & Garage	2,367 sqft.
Carport	497 sqft.
Sheds	984 sqft.
Driveway & Parking	6,765 sqft.
Patios, Walkways & Pads	1,975 sqft.
TOTAL	**12,588 sqft.**

Proposed:

Residence & Garage	2,367 sqft.
Carport	497 sqft.
Sheds	984 sqft.
Driveway & Parking	10,613 sqft.
Patios, Walkways & Pads	1,975 sqft.
TOTAL	**16,436 sqft.**

LEA & BRAZE ENGINEERING, INC.
CIVIL ENGINEERS - LAND SURVEYORS
2495 Industrial Parkway West
Hayward, California 94545
(510) 887-4086
Fax (510) 887-3019
WWW.LEABRAZE.COM

PROJECT	DATE
1750 Cordilleras Road	January 18, 2017
JOB NO.	BY
2040879	R. West

SITE HYDROLOGY CALCULATION SUMMARY

Calculations based on a 100 year event with a 60 minute duration

"C" Values

Impervious Areas = C= 0.95
Pervious Areas = C= 0.35

Rain Fall intensity (I) I = 1.21 in/hr (From San Mateo County Rainfall Map

Intensity Factor (F) F= 0.80 (From San Mateo County Rainfall Map

Run-Off (Q)

Q=CIAF

Pre-Construction:

Impervious = 12,588 sqft = 0.29 acre
Q = 0.266

Pervious = 70,530 sqft = 1.62 acre
Q = 0.549

Total Pre-Construction Run-off = 0.814 cfs

Post-Construction Without Retention:

Impervious = 16,436 sqft = 0.38 acre
Q = 0.347

Pervious = 66,682 sqft = 1.53 acre
Q = 0.519

Total Post-Construction Run-off = 0.866 cfs

Change in Run-off

$\Delta Q = Q_{POST} - Q_{PRE}$

ΔQ = 0.051 c.f.s.

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PROJECT	DATE
1750 Cordilleras Road	January 18, 2017
JOB NO.	BY
2040879	R. West

STORM DRAIN RETENTION SYSTEM SIZING CALCULATIONS

Calculations based on a 100 year event with a 60 minute duration

DESIGN CRITERIA

Retain the increase in runoff from a 100 year storm event with a 1.25 safety factor

Increase in Runoff = ΔQ = **0.051 cfs**

STORAGE VOLUME REQUIRED **1.25 *ΔQ * 3,600** 1hr = 3,600 sec

Post-Construction Runoff Volume for 60 Minute Duration 230.88 cuft

DETENTION SYSTEM SIZING CALCULATIONS

Inside Diameter of Pipe =	24 in
Outside Diameter of Pipe =	28 in
Number of Pipes =	1
Length of Pipes =	40 ft.
Area of Pipe (I.D.) =	3.142 sf.
Area of Pipe (O.D.) =	4.276 sf.
Volume of Pipes (I.D.) =	126 cf.
Volume of Pipes (O.D.) =	171 cf.
Trench Depth =	3 ft.
Trench Width =	4 ft.
Trench Length =	42 ft.
Rock Volume (Trench Volume - Volume of Pipe (O.D.)) =	332.963 cf.
Rock void ratio =	35%
Rock Storage Volume = (Rock Volume * Void Ratio)	116.54 cf.
Total Storage Volume = (Pipe Volume + Rock Storage Volume) =	**242.20 cf. >**
	230.88 cf. O.K.

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PROJECT	DATE
1750 Cordilleras Road	January 18, 2017
JOB NO.	BY
2040879	R. West

METERING CALCULATIONS

Calculations based on a 100 year event with a 60 minute duration

DESIGN CRITERIA

Meter runoff from a 100 year storm event

Net Increase in Impervious Area	3,848 sqft	=	0.088 acre

Total Post-Construction Runoff	0.866 cfs
Total Pre-Construction Runoff	0.814 cfs
Maximum Allowable Post-Construction Runoff From New Impervious Areas	0.051 cfs

METERED RELEASE VOLUME

$(Q)_{gal/min}$ = (Orifice Diameter)^2 * (19.63 * Orifice Coefficent * sqrt(h))

Orifice Coefficent = 0.62 (for a circular orifice, thickness < d/4)
h = Headwater - Tailwater (diameter of storage pipe)

Orifice Calculator

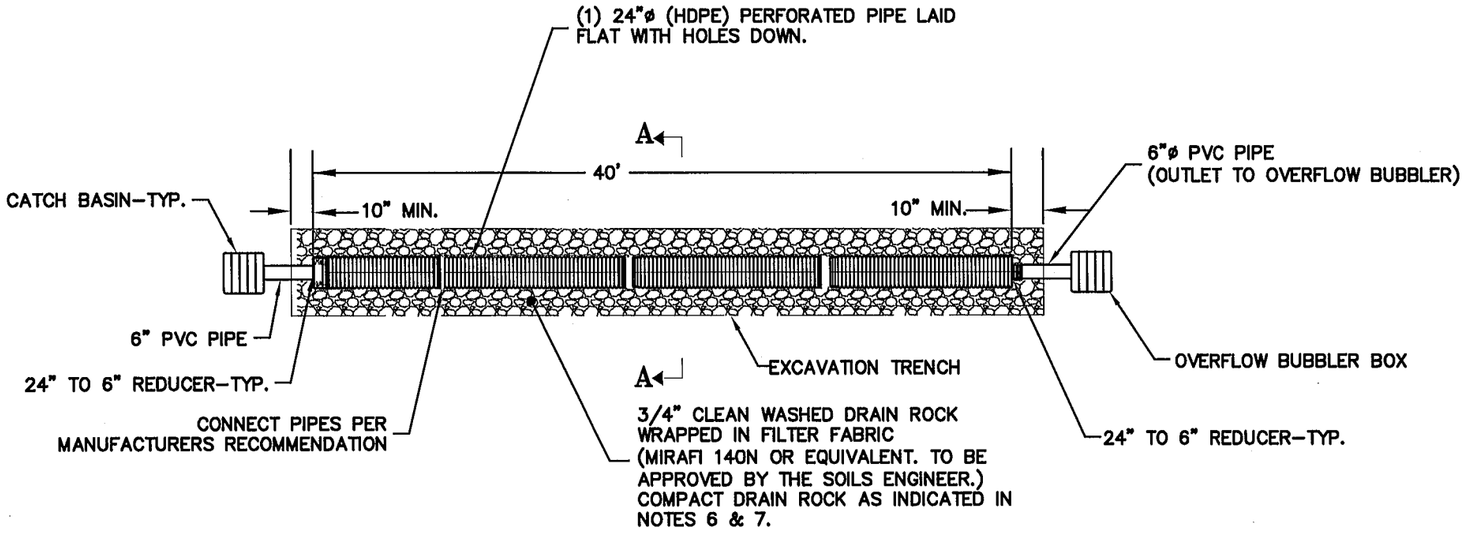
Given Input Data:
Solving for ..... Peak Release Rate Based on Orifice Diameter

Orifice Diameter	**1.000 in**
Coefficient	0.62
Storage Pipe Diameter	2.00 ft

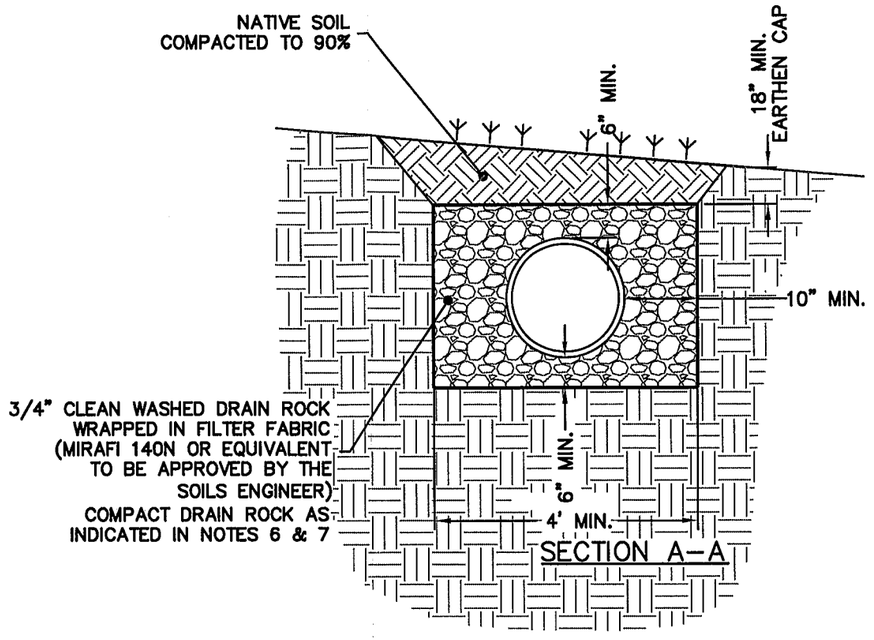
Computed Results:

Flow Rate	17.212 gal/min
	0.038 cf/sec
	2.301 cf/min
	138.05 cf/hr
Volume Metered in 60 minutes	138.05 cf
Flow Rate	0.038 cfs

0.038 > 0.051 Flow Rate O.K.



PLAN VIEW



SECTION A-A

STORAGE PIPE NOMINAL I.D.	NOMINAL O.D.	MIN. SIDE COVER
24" (600 MM)	28" (711 MM)	10" (254 MM)

NOTE:
REFER TO THE PLANS FOR SPECIFIC INLET AND OUTLET LOCATIONS.
REFER TO THE PLANS FOR SPECIFIC ACCESS COVER LOCATIONS.

NOTES:

1. ALL REFERENCES TO CLASS I OR II MATERIAL ARE PER ASTM D2321 "STANDARD PRACTICE FOR UNDERGROUND INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS AND OTHER GRAVITY FLOW APPLICATIONS", LATEST EDITION.

2. ALL RETENTION AND DETENTION SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH ASTM D2321, LATEST EDITION AND THE MANUFACTURER'S PUBLISHED INSTALLATION GUIDELINES.

3. MEASURES SHOULD BE TAKEN TO PREVENT THE MIGRATION OF NATIVE FINES INTO THE BACKFILL MATERIAL, WHEN REQUIRED. SEE ASTM D2321.

4. FILTER FABRIC: A GEOTEXTILE FABRIC MAY BE USED AS SPECIFIED BY THE ENGINEER TO PREVENT THE MIGRATION OF FINES FROM THE NATIVE SOIL INTO THE SELECT BACKFILL MATERIAL.

5. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH SUITABLE MATERIAL AS SPECIFIED BY THE ENGINEER. AS AN ALTERNATIVE AND AT THE DISCRETION OF THE DESIGN ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A GEOTEXTILE MATERIAL.

6. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I OR CLASS II*. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. UNLESS OTHERWISE NOTED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" (100mm) FOR 4"-24" (100mm-600mm); 6" (150mm) FOR 30"-60" (750mm-900mm) COMPACTED TO 90% SPD.

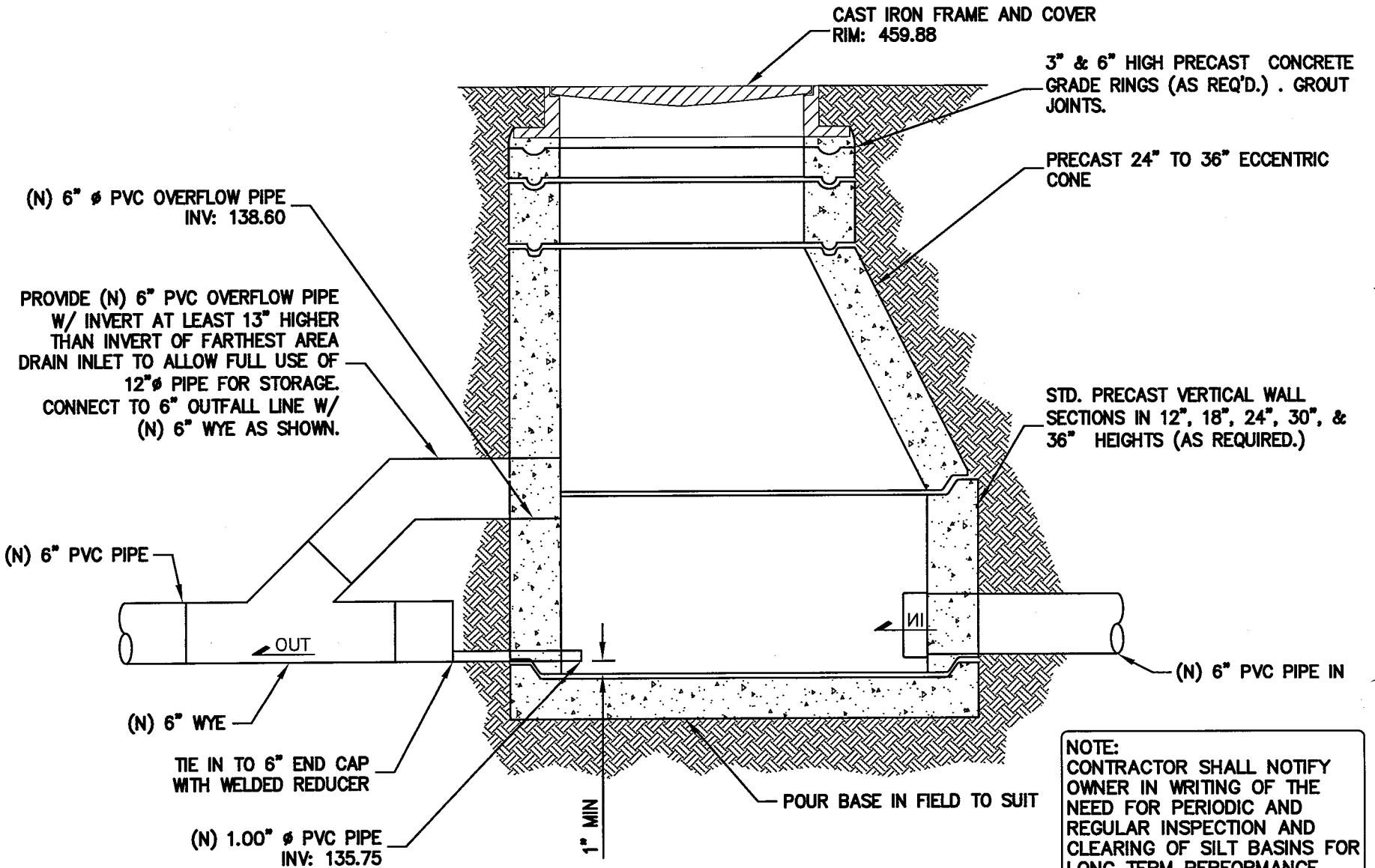
7. INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I OR CLASS II*. THE CONTRACTOR SHALL PROVIDE DOCUMENTATION FOR MATERIAL SPECIFICATION TO ENGINEER. MATERIAL SHALL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

8. MINIMUM COVER: MINIMUM COVER OVER ALL RETNETION/DETENTION SYSTEMS IN NON-TRAFFIC APPLICATIONS (GRASS OR LANDSCAPE AREAS) IS 18" FROM TOP OF PIPE TO GROUND SURFACE, COMPACT AS RECOMMENDED BY THE SOILS ENGINEER. ADDITIONAL COVER MAY BE REQUIRED TO PREVENT FLOATATION. FOR TRAFFIC APPLICATIONS, MINIMUM COVER IS 18" UP TO 36" DIAMETER PIPE AND 24" OF COVER FOR 42" - 60" DIAMETER PIPE, MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TO TOP OF RIGID PAVEMENT.

* CLASS I BACKFILL REQUIRED AROUND 60" DIAMETER FITTINGS.

TYPICAL 24" INFILTRATION PIPE AND TRENCH DETAIL

NTS



METERED RELEASE OUTLET

NTS

COUNTY OF SAN MATEO - PLANNING AND BUILDING DEPARTMENT

ATTACHMENT F

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

February 26, 2019

Kelsey Lang, Planner III
San Mateo County Planning and Building Department

VIA Email to: klang@smcgov.org

RE: 1750 Cordilleras Road (PLN2019-00043) Project Tribal Consultation List; City of Redwood City, San Mateo County, California.

Dear Ms. Lang:

Attached is a list of tribes that have cultural and traditional affiliation to the area of potential effect (APE) for the project referenced above. I suggest you contact all of the tribes listed, and if they cannot supply information regarding the presence of cultural resources, they may recommend others with specific knowledge. The list should provide a starting place to locate areas of potential adverse impact within the APE. By contacting all those on the list, your organization will better able to respond to claims of failure to consult, as consultation may be required under specific state Statutes. If a response from the tribe has not been received within two weeks of notification, the Native American Heritage Commission (NAHC) requests that you follow up with a telephone call or email to ensure that the project information has been received.

The NAHC also recommends that the project proponents conduct a record search of the NAHC's Sacred Lands File (SLF) and also of the appropriate regional archaeological Information Center of the California Historic Resources Information System (CHRIS) to determine if any tribal cultural resources are located within the APE of the project.

The SLF, established under Public Resources Code sections 5094. subd. (a) and 5097.96, includes sites submitted to the NAHC by California Native American tribes. The request form to search the SLF can be found at http://nahc.ca.gov/resources/forms. To request a search of the CHRIS system, please contact http://php.parks.ca.gov/?page_id=1068. Please note, the records maintained by the NAHC and CHRIS are not exhaustive or conclusive. A negative response to a search does not preclude the existence of tribal cultural resources. A tribe may in fact be the only source for information about tribal cultural resources within an APE.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our contact list remains current.

If you have any questions, please contact me at my email address: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, B.S., M.A., Ph.D
Associate Governmental Program Analyst

Attachment

Built Environment Recommendations:

XX The 1961 USGS Half Moon Bay 15' quad depicts a building in the proposed project area. Since the Office of Historic Preservation has determined that any building or structure 45 years or older may be of historical value, if these, or similarly aged buildings, are present then it is recommended that prior to commencement of project activities, a qualified professional familiar with the architecture and history of San Mateo County conduct a formal CEQA evaluation.

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 California Historical Resources Information System (CHRIS) Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

The California Office of Historic Preservation (OHP) contracts with the California Historical Resources Information System's (CHRIS) regional Information Centers (ICs) to maintain information in the CHRIS inventory and make it available to local, state, and federal agencies, cultural resource professionals, Native American tribes, researchers, and the public. Recommendations made by IC coordinators or their staff regarding the interpretation and application of this information are advisory only. Such recommendations do not necessarily represent the evaluation or opinion of the State Historic Preservation Officer in carrying out the OHP's regulatory authority under federal and state law.

For your reference, a list of qualified professionals in California that meet the Secretary of the Interior's Standards can be found at http://www.chrisinfo.org. If archaeological resources are encountered during the project, work in the immediate vicinity of the finds should be halted until a qualified archaeologist has evaluated the situation. If you have any questions please give us a call (707) 588-8455.

Sincerely,

Jillian Guldenbrein

Jillian Guldenbrein
Researcher

NATIVE AMERICAN HERITAGE COMMISSION
Cultural and Environmental Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone: (916) 373-3710
Email: nahc@nahc.ca.gov
Website: http://www.nahc.ca.gov

February 27, 2019

Kelsey Lang, Planner III
San Mateo County Planning and Building Department

VIA Email to: klang@smcgov.org

RE: 1750 Cordilleras Road (PLN2019-00043) Project, Woodside USGS Quadrangle; City of Redwood City, San Mateo County, California.

Dear Ms. Lang:

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 the NAHC. 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: gayle.totton@nahc.ca.gov.

Sincerely,

Gayle Totton

Gayle Totton, B.S., M.A., Ph.D.
Associate Governmental Program Analyst

Attachment

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

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

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

March 5, 2019 NWIC File # 18-1612

Kelsey Lang, Project Planner
San Mateo County Planning and Building Division
455 County Center
Redwood City, CA 94063

re: PLN2019-00043 / APN 057062110, 1750 Cordilleras Rd

Dear Kelsey Lang,

Records at this office were reviewed to determine if this project could adversely affect cultural resources. **Please note that use of the term cultural resources includes both archaeological sites and historical buildings and/or structures. The review for possible historic-era building/structures, however, was limited to references currently in our office and should not be considered comprehensive.**

Project Description: Minor Subdivision of a 83,118 sq/ft parcel (057-062-110) into 3 parcels, 22,223 s/f, 17,815 s/f, & 43,071 s/f gross). Driveway acces & grading work have been applied for under pending (not issued) BLD2017-00214. This is a complete Resubmittal of the 3-lot SUB (PLN2004-00636) which was approved (with associated grading COMPLETED), but where the Tentative Map approval EXPIRED before the Map was recorded. Zoning: RH/DR.

Previous Studies:

XX This office has record of one previous cultural resource study that included the proposed project area, Study # 3044 (Chavez 1977). S*ee recommendation below*.

Archaeological and Native American Resources Recommendations:

XX The proposed project area contains or is adjacent to the archaeological site P-41-000447, a Native American habitation site. It is recommended that a qualified professional assess the status of the resource and provide project specific recommendations.

XX The survey coverage in Study # 3044 (Chavez 1977) does not clearly describe if APN 057-062-110 was included. Furthermore, due to the passage of time since the previous survey (Chavez 1977) and the changes in archaeological theory and method since that time, we recommend a qualified archaeologist conduct further archival and field study for the entire project area to identify cultural resources.

XX We recommend the lead agency contact the local Native American tribe(s) regarding traditional, cultural, and religious heritage values. For a complete listing of tribes in the vicinity of the project, please contact the Native American Heritage Commission at 916/373-3710.