

Appendix A: Photo Summary



1

Approximate
Location of Proposed
Maintenance Building



2

Approximate
Location of Proposed
Maintenance Building



Approximate
Location of Proposed
Maintenance Building

3



4

Approximate
Location of Proposed
Maintenance Building



5

Approximate
Location of Proposed
Maintenance Building



Approximate
Location of Proposed
Maintenance Building



Appendix B: CNDDB Special-Status Animal
and Plant Species Table

Appendix A: Special-Status Animal Species Evaluated for Potential to Occur on the Project Site.

Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Potential for Occurrence ³
INVERTEBRATES				
Crotch bumblebee <i>Bombus crotchii</i>	SCE	Coastal California east to the Sierra-Cascade crest and south into Mexico; mainly in the Central Valley.	Food plant genera include <i>Antirrhinum</i> , <i>Phacelia</i> , <i>Clarkia</i> , <i>Dendromecon</i> , <i>Eschscholzia</i> , and <i>Eriogonum</i> .	Not Expected. According to Bumblebee Watch, a Crotch bumblebee was observed at Moffett Field in 2023, about 5 miles southeast of the site. Nectar sources are limited in the project area due to development.
Western bumblebee <i>Bombus occidentalis</i>	SCE	Once common and widespread, this species has declined precipitously from central California to southern British Columbia. They are now largely confined to high-elevation sites and areas east of the Cascade Crest.	Western bumble bees use a wide variety of natural, agricultural, urban, and rural habitat types. Require suitable nesting sites, overwintering sites for the queens, and nectar and pollen resources throughout the spring, summer, and fall.	Absent. There are two CNDDB records of western bumblebee within 5 miles of the project site from 1960 and 1919. This species has been extirpated from the project region.
Monarch- California overwintering population <i>Danaus plexippus</i> <i>plexippus</i> pop. 1	FC	Winter roost sites extend along the coast from northern Mendocino to Baja California, Mexico.	Roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress), with nectar and water sources nearby.	Not Expected. There are no wind-protected tree groves in the project area and no milkweed was observed during the May 2024 site visit; nectar sources are limited due to development.
Bay checkerspot butterfly <i>Euphydryas editha bayensis</i>	FT	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay.	<i>Plantago erecta</i> is the primary host plant, <i>Castilleja densiflorus</i> and <i>C. purpurascens</i> are secondary host plants.	Absent. Bay checkerspot butterfly is included has been extirpated from the project area.
Myrtle's silverspot butterfly <i>Speyeria zerene myrtleae</i>	FE	Restricted to the foggy, coastal dunes/hills of the Point Reyes peninsula; extirpated from coastal San Mateo County.	Larval foodplant thought to be <i>Viola adunca</i> .	Absent. The project area is outside the range of this species and the larval food plant is absent from the site.
FISH				
Green sturgeon Southern DPS <i>Acipenser medirostris</i>	FT	Green sturgeon range from the Bering Sea, Alaska, to Ensenada, Mexico. The Southern DPS inhabits coastal watersheds south of the Eel River. The only known spawning population for the Southern DPS is in the Sacramento River.	Green sturgeon spend a large portion of their lives in coastal marine waters as adults and subadults. Spawning most likely occurs in fast, deep water (> 10 feet or 3 meters deep) over substrates ranging from clean sand to bedrock, with preferences for cobble.	Absent. There is no aquatic or marine habitat in the project area.
Steelhead - central California coast DPS <i>Oncorhynchus mykiss irideus</i>	FT	This DPS includes all populations of steelhead from the Russian River south to Aptos Creek. Steelhead in drainages of San Francisco, San Pablo, and Suisun Bays are also part of this DPS.	Steelhead are the anadromous form of rainbow trout. Adult steelhead migrate from the ocean into streams in the late fall, winter, or early spring seeking out deep pools within fast moving water to rest prior to spawning. Steelhead spawn in shallow-water gravel beds.	Absent. There is no aquatic or marine habitat in the project area.

Appendix B: Special-Status Animal Species with Potential to Occur on the Project Site.

Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Potential for Occurrence ³
Longfin smelt <i>Spirinchus thaleichthys</i>	FC, ST, CSSC	Found in California's bays, estuaries, and nearshore coastal environments from the San Francisco Bay north to Lake Earl near the Oregon border. The San Francisco Bay estuary and the Sacramento-San Joaquin Delta support the largest longfin smelt population in California.	Found in aquatic and estuary habitats. This species is euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 parts per thousand but can be found in completely freshwater to almost pure seawater.	Absent. There is no aquatic or marine habitat in the project area.
AMPHIBIANS				
California tiger salamander <i>Ambystoma californiense</i>	FT, ST	Found in the Coast Range and Sierra Nevada foothills of California. In the Coast Range, it occurs from southern San Mateo County south to central San Luis Obispo County, and also in the vicinity of northwestern Santa Barbara County. In the Sierra Nevada foothills, it occurs from northern Yolo County to northwestern Kern County and northern Tulare County.	Found in cismontane woodland, meadows and seeps, riparian woodland, valley and foothill grassland, vernal pools, and wetland habitats. Need California ground squirrel or gopher burrows for underground refuges, and vernal pools or other seasonal water sources that do not support predatory fish or frog populations for breeding.	Absent. There is no aquatic habitat in the project area and no ground squirrel burrows were observed on the site.
Santa Cruz black salamander <i>Aneides niger</i>	CSSC	Found in mixed deciduous and coniferous woodlands and coastal grasslands in San Mateo, Santa Cruz, and Santa Clara counties.	Adults found under rocks, talus, and damp woody debris.	Absent. There is no suitable habitat or nearby occurrences of Santa Cruz black salamander in the project area.
California giant salamander <i>Dicamptodon ensatus</i>	CSSC	Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County, and east to Napa County.	Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	Absent. There are no coastal forests or streams in or near the project site.
foothill yellow-legged frog- Central Coast DPS <i>Rana boylei</i> pop. 4	FPT, SE	San Francisco Peninsula and Diablo Range south of San Francisco Bay Estuary, and south through the Santa Cruz and Gabilan Mountains east of the Salinas River in the southern inner Coast Ranges.	Partly shaded shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying and at least 15 weeks to attain metamorphosis.	Absent. There are no streams on or near the project site.

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Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Potential for Occurrence ³
California red-legged frog <i>Rana draytonii</i>	FT, CSSC	Found from Riverside County to Mendocino County along the Coast Range, from Calaveras County to Butte County in the Sierra Nevada, and in Baja California.	Found in aquatic, artificial flowing waters, artificial standing waters, freshwater marsh, marsh and swamp, riparian forest, riparian scrub, riparian woodland, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin standing waters, south coast flowing waters, south coast standing waters, and wetland habitats. Likely within lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	Absent. There is no aquatic habitat in the project area and no ground squirrel burrows were observed on the site.
red-bellied newt <i>Taricha rivularis</i>	CSSC	Coastal drainages from Humboldt County south to Sonoma County, inland to Lake County. Isolated population of uncertain origin in Santa Clara County.	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.	Absent. There are no coastal drainages in the project area and the site is not within 1 km of suitable habitat.
REPTILES				
Northwestern pond turtle <i>Actinemys marmorata</i>	CSSC	Found from Baja California, Mexico north through Klickitat County, Washington. In California, found west of the Sierra-Cascade crest. Absent from desert regions, except the Mojave Desert along the Mojave River and its tributaries.	Requires permanent or nearly permanent bodies of water including ponds, marshes, rivers, streams, and irrigation ditches below 6,000 feet in elevation. Requires basking sites, such as submerged rocks, logs, open mud banks, or floating vegetation mats. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 kilometers from water for egg-laying.	Absent. There is no aquatic habitat in or near the project site.
Green sea turtle <i>Chelonia mydas</i>	FT	Juvenile and adult green turtles are present in many of the bays, lagoons, and coastal inlets along the coast of Southern California.	Mainly stay near the coastline and around islands and live in bays and protected shores, especially in areas with seagrass beds. Rarely are they observed in the open ocean.	Absent. There is no aquatic or marine habitat in the project area.

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Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Potential for Occurrence ³
San Francisco garter snake <i>Thamnophis sirtalis tetralaenia</i>	FE, SE, CFP	Found primarily within San Francisco county and San Mateo county, with a small portion of the range extending into northern Santa Cruz county (Big Basin Redwoods State Park).	Found in artificial standing waters, marsh and swamp, Sacramento/San Joaquin standing waters, and wetland habitats. Likely found in the vicinity of freshwater marshes, ponds and slow-moving streams in San Mateo County and extreme northern Santa Cruz County. Avoids brackish marsh areas because their preferred prey (CRLF) cannot survive in saline water. Prefers dense cover and water depths of at least one foot. Upland areas near water are also very important.	Absent. There is no aquatic habitat in or near the project site.
BIRDS				
Tricolored blackbird <i>Agelaius tricolor</i>	CSSC (nesting colony)	Permanent resident in Central Valley from Butte to Kern Counties; breeds at scattered coastal locations from Marin to San Diego Counties and at scattered locations in Lake, Sonoma, and Solano Counties; rare nester in Siskiyou, Modoc, and Lassen Counties.	Nests in dense colonies in emergent marsh vegetation, such as tules and cattails, or upland sites with blackberries, nettles, thistles, and grain fields; habitat must be large enough to support 50 pairs; probably requires water at or near the nesting colony.	Absent. There is no marsh or marsh vegetation in or near the project site.
Short-eared owl <i>Asio flammeus</i>	CSSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	Absent. There are no swamp lands or tule patches in or near the project site.
Long-eared owl <i>Asio otus</i>	CSSC	Riparian bottomlands grown to tall willows and cottonwoods; also, belts of live oak paralleling stream courses.	Require adjacent open land, productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	Absent. There is no riparian habitat in or near the project site.
Burrowing owl <i>Athene cunicularia</i>	CSSC	Found year-round throughout much of California, except the coastal counties north of Marin and mountainous areas. Breeding has not been observed in Sonoma County since 1987 and breeding colonies are considered extirpated from this county.	Found in coastal prairie, coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran Desert scrub, and valley and foothill grassland habitats. Likely in open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Absent. There is no open habitat or suitable burrows in or near the project site.
Marbled murrelet <i>Brachyramphus marmoratus</i>	FT, SE	Feeds near-shore; nests inland along coast from Eureka to Oregon border and from Half Moon Bay to Santa Cruz.	Nests in old-growth redwood-dominated forests, up to six miles inland, often in Douglas-fir.	Absent. There is no old growth forest in or near the project site.

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Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Potential for Occurrence ³
Western snowy plover <i>Charadrius nivosus nivosus</i>	FT	Pacific population of western snowy plover occurs along the entire coastline.	Found in standing waters, sand shore, and wetland habitats. Likely within open sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	Absent. There is no suitable breeding or foraging habitat for this species in or near the project site.
Northern harrier <i>Circus hudsonius</i>	CSSC	Throughout lowland California; has been recorded in fall at high elevations.	Grasslands, meadows, marshes, and seasonal and agricultural wetlands.	Absent. There is no suitable breeding or foraging habitat for this species in or near the project site.
Western yellow-billed cuckoo <i>Coccyzus americanus occidentalis</i>	FT, SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems.	Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	Absent. There is no riparian habitat in or near the project site.
Yellow rail <i>Coturnicops noveboracensis</i>	CSSC	Summer resident in eastern Sierra Nevada in Mono County.	Inhabits freshwater marsh and meadows and seeps.	Absent. There is no marsh, meadows, or seeps in or near the project site.
White-tailed kite <i>Elanus leucurus</i>	CFP	Found year-round in nearly all areas of California up to the western Sierra Nevada foothills and southeast deserts. Common in the Central Valley of California and along the entire length of the coast, possibly breeding in more arid regions east of the Sierra Nevada and Transverse Range (Inyo and eastern Kern Counties). Documented breeding in Imperial County, western Riverside County, and eastern San Diego County. In the Sacramento Valley, populations have predominantly increased in irrigated agricultural areas where the California vole (<i>Microtus californicus</i>) often occurs.	Found in cismontane woodland, marsh and swamp, riparian woodland, valley and foothill grassland, and wetland habitats. Likely in rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	May be Present. A white-tailed kite was observed at Esther Clark Nature Preserve in July 2023 according to eBird (Cornell Lab of Ornithology, 2024); the Preserve is about 0.5 mile east of the project site. This species has been known to nest in urban areas and the larger trees at the site such as the Deodar cedars could provide nesting habitat. However, human disturbance in the project area makes nesting at the site somewhat less likely, and foraging habitat is limited in the project area due to development.
Saltmarsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	CSSC	Found year-round in the vicinity of San Francisco Bay, from Tomales Bay in Marin County and Napa Sloughs in southern Sonoma County on the north, east to Carquinez Straight, and south to vicinity of San Jose in Santa Clara County. Historic locations of confirmed breeding include Lake Merced in San Francisco County, and Coyote Creek, Alviso, and Milpitas in Santa Clara County	Found in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	Absent. There is no marsh or marsh vegetation in or near the project site.

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Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Potential for Occurrence ³
Bald eagle <i>Haliaeetus leucocephalis</i>	SE, CFP	Year-round resident in northern California, winters throughout the rest of the state.	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests are within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	Absent. There is no suitable breeding or foraging habitat for this species in or near the project site.
California black rail <i>Laterallus jamaicensis coturniculus</i>	ST, CFP	The majority found in the tidal salt marshes of the northern San Francisco Bay region, primarily in San Pablo and Suisun Bays. Smaller populations occur in San Francisco Bay, the Outer Coast of Marin County, freshwater marshes in the foothills of the Sierra Nevada, and in the Colorado River Area.	Found in brackish marsh, freshwater marsh, marsh and swamp, salt marsh, and wetland habitats. Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Absent. There is no marsh or marsh vegetation in or near the project site.
Alameda song sparrow <i>Melospiza melodia pusillula</i>	CSSC	Resident of salt marshes bordering south arm of San Francisco Bay.	Found in salt marsh habitats. Inhabits pickleweed (<i>Salicornia</i> sp.) marshes; nests low in gumplant (<i>Grindelia</i> sp.) bushes (high enough to escape high tides) and in pickleweed.	Absent. There is no marsh or marsh vegetation in or near the project site.
California ridgway's rail <i>Rallus obsoletus obsoletus</i>	FE, SE, CFP	Found almost exclusively in the marshes of the San Francisco estuary in San Mateo, Santa Clara, Alameda, Contra Costa, Solano, Napa, Sonoma, and Marin counties.	Found in brackish marsh, marsh and swamp, salt marsh, and wetland habitats. Likely in 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.	Absent. There is no marsh or wetland habitat in or near the project site.
Bank swallow <i>Riparia riparia</i>	ST	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert.	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	Absent. There is no riparian or suitable breeding habitat for this species in or near the project site.
Black skimmer <i>Rynchops niger</i>	CSSC	Breeds along the coast in Central California, occurs year round in coastal Southern California.	Nests on gravel bars, low islets, and sandy beaches, in unvegetated sites. Nesting colonies usually less than 200 pairs.	Absent. There is no coastal or suitable breeding habitat for this species in or near the project site.
California least tern <i>Sternula antillarum browni</i>	FE, SE, CFP	Nests along the coast from San Francisco Bay south to Northern Baja California.	Found foraging in alkali playa, coastal, lake, and wetland habitats. Colonial breeder on bare or sparsely vegetated, flat substrates: sand beaches, alkali flats, landfills, or paved areas.	Absent. There is no suitable breeding or foraging habitat for this species in or near the project site.

Appendix B: Special-Status Animal Species with Potential to Occur on the Project Site.

MAMMALS				
Pallid bat <i>Antrozous pallidus</i>	CSSC	Common throughout low elevations of California. No found in the high Sierra from Shasta to Kern counties and the northwestern corner of the State from Del Norte and western Siskiyou counties to northern Mendocino County.	Found in chaparral, coastal scrub, desert wash, Great Basin grassland, Great Basin scrub, Mojavean Desert scrub, riparian woodland, Sonoran Desert scrub, upper montane coniferous forest, and valley and foothill grassland habitats. Prefers deserts, grasslands, shrublands, woodlands and forests. 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.	Not Expected. There are two CNDDDB records of pallid bat within 5 miles of the project site, in Mountain View and at Stanford University from 1987 and 1951. However, the site is in a developed area with limited roosting habitats and this species is very sensitive to disturbance.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	CSSC	Found throughout California, but details of its distribution are not well known. Found in all but subalpine and alpine habitats.	Found in broadleaved upland forest, chaparral, chenopod scrub, Great Basin grassland, Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, meadow and seep, Mojavean Desert scrub, riparian forest, riparian woodland, Sonoran Desert scrub, Sonoran thorn woodland, upper montane coniferous forest, and valley and foothill grassland habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	Not Expected. There are four CNDDDB records of Townsend's big-eared bat within 5 miles of the project site, most recently in 2017. However, the site is in a developed area with limited roosting habitats and this species is extremely sensitive to disturbance.
San Francisco dusky-footed woodrat <i>Neotoma fuscipes annectens</i>	CSSC	This California endemic is found throughout the San Francisco Bay area in grasslands, scrub and wooded areas.	Forest habitats of moderate canopy and moderate to dense understory. May prefer chaparral and redwood habitats. Constructs nests of shredded leaves, grass and other material. May be limited by availability of nest-building materials.	Not Expected. There is one CNDDDB record of San Francisco dusky-footed woodrat within 5 miles of the project site from 1992. Nest building materials are very limited at the project site and no woodrat houses were observed during the May 2024 site visit.
Salt-marsh harvest mouse <i>Reithrodontomys raviventris</i>	FE, SE, CFP	Occurs only in the saline emergent wetlands of the San Francisco Bay and its tributaries.	Found in marsh and swamp and wetland habitats. Pickleweed is primary habitat but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.	Absent. There are no saline emergent wetlands in the project area.
Salt-marsh wandering shrew <i>Sorex vagrans halicoetes</i>	CSSC	Found in the salt marshes of the south arm of San Francisco Bay.	Found in marsh and swamp and wetland habitats; medium high marsh 6-8 feet above sea level where abundant driftwood is scattered among pickleweed.	Absent. There are no salt marshes in the project area.

Appendix B: Special-Status Animal Species with Potential to Occur on the Project Site.

American badger <i>Taxidea taxus</i>	CSSC	Occurs throughout California, the western United States, and Canada.	American badger is rare in western San Francisco Bay area. It occurs in grasslands and open stages of forest and scrub habitats with friable soils and good prey base of burrowing rodents. Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Absent. There is no open habitat in the project area, and suitable burrows were not observed at the site during the May 2024 site visit.
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STATUS KEY:

Federal

FE: Federally-listed Endangered

FT: Federally-listed Threatened

FC: Candidate for Federal listing

State

SE: State-listed Endangered

ST: State-listed Threatened

SCE: State-listed Candidate Endangered

CSSC: California Species of Special Concern

CFP: California Fully Protected

SOURCES:

1. United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPAC) Species List (September 30, 2024).
2. California Natural Diversity Database (CNDDB) Rarefind 5 search of Mountain View USGS Quad and eight surrounding quads; BIOS five mile radius search (September 30, 2024).
3. Bumblebee Watch. 2024. Accessed October 1, 2024 at: <https://www.bumblebeewatch.org/>
4. Cornell Lab of Ornithology. 2024. eBird. Accessed September 30, 2024 at: <https://ebird.org/home>.

CNDDB SPECIES WITHIN 9 QUAD SEARCH THAT DON'T MEET THE DEFINITION OF SPECIAL-STATUS SPECIES:

- California linderiella, *Linderiella occidentalis*
- Obscure bumblebee, *Bombus caliginosus*
- Ricksecker's water scavenger beetle, *Hydrochara rickseckeri*
- San Francisco forktail damselfly, *Ischnura gemina*
- Unsilvered fritillary, *Speyeria adiastra adiastra*
- Edgewood blind harvestman, *Calicina minor*
- Edgewood Park micro-blind harvestman, *Microcina edgewoodensis*
- Western ridged mussel, *Gonidea angulate*
- Pacific walker, *Pomatiopsis californica*
- Cooper's hawk, *Accipiter cooperii*
- Great blue heron, *Ardea Herodias*
- Snowy egret, *Egretta thula*
- American peregrine falcon, *Falco peregrinus anatum*

Appendix B: Special-Status Animal Species with Potential to Occur on the Project Site.

- Double-crested cormorant, *Nannopterum auritum*
- Black-crowned night heron, *Nycticorax nycticorax*
- Santa Cruz kangaroo rat, *Dipodomys venustus venustus*
- Hoary bat, *Lasiurus cinereus*
- Yuma myotis, *Myotis yumanensis*

Appendix A: Special Status Plant Species Evaluated for Potential to Occur on the Project Site

Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Life Form; Blooming Period ²	Potential Occurrence in the Project Area ³
Franciscan onion <i>Allium peninsulare</i> -var. <i>franciscanum</i>	CRPR 1B.2	Coastal mid California, from Monterey to Mendocino Counties.	Cismontane woodland, valley and foothill grasslands. Often on dry hillsides and in serpentine bunchgrass grasslands; 52-300 m.	Perennial bulbiferous herb; May to June	Not Expected. There is one CNDDDB record of Franciscan onion within 5 miles of the project site along Page Mill Road from 1949. However, there is no serpentine or bunchgrass habitat for this species in or near the site.
Bent-flowered fiddleneck <i>Amsinckia lunaris</i>	CRPR 1B.2	Endemic to the San Francisco Bay Area and neighboring counties to the north.	Cismontane woodland, valley and foothill grassland, coastal bluff scrub; 3-795 m.	Annual herb, March to June	Not Expected. There are no nearby CNDDDB occurrences of bent-flowered fiddleneck. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants.
Alkali milk-vetch <i>Astragalus tener</i> var. <i>tener</i>	CRPR 1B.2	Endemic to the San Francisco Bay Area and surrounding counties.	Playas, valley and foothill grassland (adobe clay) or vernal pools on alkaline soils; 1-60 m.	Annual herb, March to June	Absent. There is one CNDDDB record of alkali milk-vetch within 5 miles of the project site north of the Mountain View shoreline from 1905, but it is possibly extirpated. There is no suitable habitat for this species at or near the site.
Congdon's tarplant <i>Centromadia parryi</i> ssp. <i>congdonii</i>	CRPR 1B.1	Throughout western California from San Luis Obispo to Solano County.	Valley and foothill grasslands with alkaline or clay soils; 0-230 m.	Annual herb; May to November	Absent. There are two CNDDDB records of Congdon's tarplant within 5 miles of the project site, at the Mountain View shoreline from 2019. There is no suitable habitat for this species at or near the site.
Point Reyes bird's beak <i>Chloropyron maritimum</i> ssp. <i>palustre</i>	CRPR 1B.2	Extant occurrences in Humboldt, Marin, San Francisco and Sonoma Counties.	Marshes and swamps (coastal salt); 0-10 m.	Annual herb (hemiparasitic); June to October	Absent. There is one CNDDDB record of Point Reyes bird's beak within 5 miles of the project site at Alviso and the Palo Alto Baylands from 1915, but both it is possibly extirpated. There is no suitable habitat for this species in or near the site.

Appendix A: Special Status Plant Species Evaluated for Potential to Occur on the Project Site

Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Life Form; Blooming Period ²	Potential Occurrence in the Project Area ³
Santa Clara red ribbons <i>Clarkia concinna</i> ssp. <i>automixa</i>	CRPR 4.3	Endemic to Alameda, San Mateo, Santa Clara, and Santa Cruz counties.	Chaparral and cismontane woodland; 90-1500 m.	Annual herb; March to June	Not Expected. There is one CNDDDB record of Santa Clara red ribbons within 5 miles of the project site from 1961. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants.
San Francisco collinsia <i>Collinsia multicolor</i>	CRPR 1B.2	Mid-coastal California from Monterey to Marin county including Santa Clara county.	Moist shady woodland, closed-cone coniferous forests and coastal scrub. Occasionally found in serpentine; 30-250 m.	Annual herb; March to May	Not Expected. There is one CNDDDB record of San Francisco collinsia within 5 miles of the project site at Stanford University from 1903. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants. The site is also fairly dry.
Western leatherwood <i>Dirca occidentalis</i>	CRPR 1B.2	San Francisco Bay area including Santa Clara to Marin county and east to Alameda county.	Cool, moist slopes in foothill woodland and riparian forests. Mesic environments in broadleaved upland forests, chaparral and coniferous woodlands and mixed evergreen and oak woodlands; 25-425 m.	Perennial deciduous shrub; January to April.	Not Expected. There are 11 CNDDDB records of western leatherwood within 5 miles of the project site, most recently from 2021. Oak woodland is present on the site but it is not mesic.
California bottlebrush grass <i>Elymus californicus</i>	CRPR 4.3	Endemic to Marin, San Diego, San Mateo, Santa Cruz, and Sonoma counties.	Broadleafed upland forest, cismontane woodland, North Coast coniferous forest, and riparian woodland; 15-470 m.	Perennial herb; May-August	Not Expected. There are no nearby CNDDDB occurrences of California bottlebrush grass. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants.

Appendix A: Special Status Plant Species Evaluated for Potential to Occur on the Project Site

Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Life Form; Blooming Period ²	Potential Occurrence in the Project Area ³
Hoover's button-celery <i>Eryngium aristulatum</i> var. <i>hooveri</i>	CRPR 1B.1	Endemic to Alameda, San Benito, Santa Clara, San Diego and San Luis Obispo Counties.	Vernal pools; 3-45 m.	Annual/perennial herb; Blooms July to August	Absent. There are two CNDDB records of Hoover's button celery within 5 miles of the project site near the Mountain View shoreline and at Stanford University from 1909 and 1907, but both are possibly extirpated. There are no vernal pools in or near the site.
Jepson's coyote thistle <i>Eryngium jepsonii</i>	CRPR 1B.2	Endemic to Alameda, Contra Costa, Napa, San Mateo, Solano, and Yolo counties.	Valley and foothill grassland and vernal pools on clay soils; 3-300 m.	Perennial herb; April to August	Absent. There are two CNDDB records of Jepson's coyote thistle within 5 miles of the project site from 1926 and 2014. There is no suitable habitat for this species in or near the site.
Fragrant fritillary <i>Fritillaria liliacea</i>	CRPR 1B.2	Found throughout northern and central California wherever there is suitable habitat.	Cismontane woodland and coastal scrub and prairie, in valley and foothill grasslands (often serpentine bunchgrass grassland); 3-410 m.	Perennial bulbiferous herb; Blooms February to April	Not Expected. There is one CNDDB record of fragrant fritillary within 5 miles of the project site near Stanford University from 1934. There is some woodland at the site but no serpentine soils.
Legenere <i>Legenere limosa</i>	CRPR 1B.1	Endemic to central and coastal California from Redding to Salinas.	Vernal pools; 1 - 880 m.	Annual herb; April to June	Absent. There is one CNDDB record of legenere within 5 miles of the project site from 1906. There is no suitable habitat for this species in or near the site.
Bristly leptosiphon <i>Leptosiphon aureus</i>	CRPR 4.2	Endemic to central and coastal California from Redwood National and State Parks to Sequoia National Forest.	Chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland; 55 - 1500 m.	Annual herb; April to July	Not Expected. There are no nearby CNDDB occurrences of bristly leptosiphon. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants.

Appendix A: Special Status Plant Species Evaluated for Potential to Occur on the Project Site

Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Life Form; Blooming Period ²	Potential Occurrence in the Project Area ³
Arcuate bushmallow <i>Malacothamnus arcuatus</i> var. <i>arcuatus</i>	CRPR 1B.2	Endemic to San Mateo, Santa Clara, and Santa Cruz counties.	Chaparral and cismontane woodland; 15-355 m.	Perennial deciduous shrub; April to December	Not Expected. There are six CNDDDB records of arcuate bushmallow within 5 miles of the project site, most recently from 2021. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants.
Woodland woollythreads <i>Monolopia gracilens</i>	CRPR 1B.2	Endemic to coastal California from Concord to San Luis Obispo.	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, North Coast coniferous forest (openings), and valley and foothill grassland on serpentine; 100 - 1200 m.	Annual herb; March to July	Absent. There are 12 CNDDDB records of woodland woollythreads within 5 miles of the project site, most recently from 2023. There is no serpentine at the project site and the site is outside of the usual elevation range for this species.
White-flowered rein orchid <i>Piperia candida</i>	CRPR 1B.2	Found in coastal California from the Oregon border to Santa Cruz.	Broadleafed upland forest, lower montane coniferous forest, and North Coast coniferous forest, sometimes on serpentine; 30-1310 m.	Perennial herb, May to September	Absent. There is one CNDDDB record of white-flowered rein orchid within 5 miles of the project site from 1992. There is no suitable habitat for this species in or near the site.
Michael's rein orchid <i>Piperia michaelii</i>	CRPR 4.2	Endemic to central and coastal California from Berryessa Snow Mountain National Monument to Ventura County.	Coastal bluff scrub, closed-cone coniferous forest, chaparral, cismontane woodland, coastal scrub, and Lower montane coniferous forest; 3 - 915 m.	Perennial herb, April to August	Not Expected. There are no nearby CNDDDB occurrences of Michael's rein orchid. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants.
Choris' popcornflower <i>Plagiobothrys chorisianus</i> var. <i>chorisianus</i>	CRPR 1B.2	Endemic to Monterey, San Francisco, San Mateo, Santa Clara, and Santa Cruz counties.	Chaparral, coastal prairie, and coastal scrub in mesic sites; 3 - 160 m.	Annual herb; March to June	Absent. There is one CNDDDB record of Choris' popcornflower within 5 miles of the project site from 1898. There is no suitable habitat for this species in or near the site.
Sanford's arrowhead <i>Sagittaria sanfordii</i>	CRPR 1B.2	Endemic to central and coastal California from the Oregon border to Los Angeles.	Marshes and swamps (shallow freshwater); 0 - 650 m.	Perennial rhizomatous herb (emergent), May to October.	Absent. There is one CNDDDB record of Sanford's arrowhead within 5 miles of the project site from 1974. There is no suitable habitat for this species in or near the site.

Appendix A: Special Status Plant Species Evaluated for Potential to Occur on the Project Site

Species	Status	Geographic Distribution ¹	Habitat Requirements ²	Life Form; Blooming Period ²	Potential Occurrence in the Project Area ³
Chaparral ragwort <i>Senecio aphanactis</i>	CRPR 1B.2	Endemic to central and coastal California from Oakland to the Mexican border.	Chaparral, cismontane woodland, and coastal scrub, sometimes on alkaline soils; 15-800 m.	Annual herb; January to April	Not Expected. There is one CNDDDB record of chaparral ragwort within 5 miles of the project site from 1986.. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants.
Northern slender pondweed <i>Stuckenia filiformis</i> ssp. <i>alpina</i>	CRPR 2B.2	In California, found in and around the Sierra Nevada from Modoc National Forest to near Yosemite National Park; also found in the coast ranges from Santa Rosa to Los Banos.	Marshes and swamps (assorted shallow and freshwater); 300-2,150 m.	Perennial rhizomatous herb (aquatic); May to July	Absent. There is one CNDDDB record of fragrant fritillary within 5 miles of the project site near Stanford University from 1899. There is no suitable habitat for this species in or near the site.
Santa Cruz clover <i>Trifolium buckwestiorum</i>	CRPR 1B.1	Endemic to Mendocino, Monterey, San Mateo, Santa Clara, Santa Cruz, and Sonoma counties.	Broadleafed upland forest, cismontane woodland, and coastal prairie on gravelly soils; 35 - 610 m.	Annual herb; April to October	Not Expected. There is one CNDDDB record of Santa Cruz clover within 5 miles of the project site. There is some suitable woodland habitat on the site, but this species is not expected due to surrounding development, small habitat patch size, and disturbance from invasive plants. There are also no gravelly soils at the site.

Appendix A: Special Status Plant Species Evaluated for Potential to Occur on the Project Site

STATUS KEY:

Federal

FE: Federally-listed Endangered

FT: Federally-listed Threatened

State

SE: State-listed Endangered

ST: State-listed Threatened

California Native Plant Society (CNPS) California Rare Plant Rank (CRPR):

1B: Plants listed as rare, threatened, or endangered in California and elsewhere

2B: Plants listed as rare, threatened, or endangered in California but more common elsewhere

4: Plants of limited distribution, a watch list

CNPS CRPR added a decimal threat rank to the List rank to parallel that used by the CNDDDB. CRPR ranks therefore read like this: 1B.1, 1B.2, etc. Threat code extensions and their meanings are as follows:

- .1 – Seriously endangered in California (over 80% of occurrences threatened / high degree of immediacy of threat)
- .2 – Fairly endangered in California (20-80% occurrences threatened)
- .3 – Not very endangered in California (<20% of occurrences threatened or no current threats known)

SOURCES:

1. United States Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPAC) Species List (September 30, 2024).
2. California Natural Diversity Database (CNDDDB) Rarefind 5 search of Palo Alto USGS Quad and eight surrounding quads; BIOS five mile radius search (September 30, 2024).
3. California Native Plant Society (CNPS) Rare and Endangered Plant Inventory Palo Alto USGS Quad and eight surrounding quads (September 30, 2024).

OTHER CNDDDB AND/OR CNPS SPECIAL-STATUS PLANT SPECIES IN 9 QUAD SEARCH AREA (NOT WITHIN 5 MILES OF THE PROJECT SITE AND NO SUITABLE HABITAT AT THE SITE)

- San Mateo thorn-mint (*Acanthomintha duttonii*), FE, SE, CRPR 1B.1
- California androsace (*Androsace elongata* ssp. *acuta*), CRPR 4.2
- Anderson's manzanita (*Arctostaphylos andersonii*), CRPR 1B.2
- Kings Mountain manzanita (*Arctostaphylos regismontana*), CRPR 1B.2
- Coastal marsh milk-vetch (*Astragalus pycnostachyus* var. *pycnostachyus*), CRPR 1B.2
- Brewer's calandrinia (*Calandrinia breweri*), CRPR 4.2
- Oakland star tulip (*Calochortus umbellatus*), CRPR 4.2
- Pink star tulip (*Calochortus uniflorus*), CRPR 4.2
- Johnny-nip (*Castilleja ambigua* var. *ambigua*), CRPR 4.2
- Mt. Hamilton thistle (*Cirsium fontinale* var. *campylon*), CRPR 1B.2
- Fountain thistle (*Cirsium fontinale* var. *fontinale*), FE, SE, CRPR 1B.1
- Lost thistle (*Cirsium praeteriens*), CRPR 1A
- Brewer's clarkia (*Clarkia breweri*), CRPR 4.2
- Round-headed collinsia (*Collinsia corymbosa*), CRPR 1B.2
- Clustered lady's slipper (*Cypripedium fasciculatum*), CRPR 4.2
- Mountain lady's slipper (*Cypripedium montanum*), CRPR 4.2
- Paniculate tarplant (*Deinandra paniculata*), CRPR 4.2

Appendix A: Special Status Plant Species Evaluated for Potential to Occur on the Project Site

- San Mateo woolly sunflower (*Eriophyllum latilobum*), FE, SE, CRPR 1B.1
- San Francisco wallflower (*Erysimum franciscanum*), CRPR 4.2
- San Joaquin spearscale (*Extriplex joaquinana*), CRPR 1B.2
- Minute pocket moss (*Fissidens pauperculus*), CRPR 1B.2
- Hillsborough chocolate lily (*Fritillaria biflora* var. *ineziana*), CRPR 1B.1
- Short-leaved evax (*Hesperrevax sparsiflora* var. *brevifolia*), CRPR 1B.2
- Marin western flax (*Hesperolinon congestum*), FT, ST, CRPR 1B.1
- Loma Prieta hoita (*Hoita strobilina*), CRPR 1B.1
- Harlequin lotus (*Hosackia gracilis*), CRPR 4.2
- Coast iris (*Iris longipetala*), CRPR 4.2
- Contra Costa goldfields (*Lasthenia conjugens*), FE, CRPR 1B.1
- Serpentine leptosiphon (*Leptosiphon ambiguus*), CRPR 4.2
- Large-flowered leptosiphon (*Leptosiphon grandiflorus*), CRPR 4.2
- Broad-lobed leptosiphon (*Leptosiphon latisectus*), CRPR 4.3
- Crystal Springs lessingia (*Lessingia arachnoidea*), CRPR 1B.2
- Woolly-headed lessingia (*Lessingia hololeuca*), CRPR 3
- Spring lessingia (*Lessingia tenuis*), CRPR 4.2
- Dudley's lousewort (*Pedicularis dudleyi*), CRPR 1B.2
- White-rayed pentachaeta (*Pentachaeta bellidiflora*), FE, SE, CRPR 1B.1
- Gairdner's yampeh (*Perideridia gairdneri* ssp. *gairdneri*), CRPR 4.2
- Hickman's popcornflower (*Plagiobothrys chorisianus* var. *hickmanii*), CRPR 4.2
- Hairless popcornflower (*Plagiobothrys glaber*), CRPR 1A
- Lobb's aquatic buttercup (*Ranunculus lobbii*), CRPR 4.2
- Hoffman's sanicle (*Sanicula hoffmannii*), CRPR 4.3
- San Francisco campion (*Silene verecunda* ssp. *verecunda*), CRPR 1B.2
- Long-styled sand-spurrey (*Spergularia macrotheca* var. *longistyla*), CRPR 1B.2
- California seablite (*Suaeda californica*), FE, CRPR 1B.1
- Two-fork clover (*Trifolium amoenum*), FE, CRPR 1B.1
- Saline clover (*Trifolium hydrophilum*), CRPR 1B.2
- San Francisco owl's clover (*Triphysaria floribunda*), CRPR 1B.2
- Methuselah's beard lichen (*Usnea longissima*), CRPR 4.2

**Appendix C: Geotechnical Design
Recommendations
Memorandum**



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MEMORANDUM

12 May 2023
File No. 206214

TO: Ten Over Studio, Inc.
539 March Street
San Luis Obispo, California 93401
Attn: Ms. Candice Wong

FROM: Haley & Aldrich, Inc.
Dane Tikunoff, P.G., C.E.G. | Engineering Geologist
Catherine Ellis, P.E., G.E. | Geotechnical Engineer

SUBJECT: Design Recommendations
Proposed McCann Operation Center Improvements
26451 Ascension Drive
Los Altos Hills, California

Enclosures: Figure 1 – Locus Map
Figure 2 – Site Geologic Map
Exhibit A - Boring Logs (DRAFT)

This memorandum presents Haley & Aldrich's preliminary design recommendations for the site improvements and McCann Operation Center replacement at 26451 Ascension Drive in Los Altos Hills, California (Site). The design recommendations are based on: 1) the results of our design-level geotechnical exploration and geologic mapping of the site; 2) our review of publicly available literature regarding site development including as-built drawings and development plans and; 3) our engineering analysis of the available data to support our engineering recommendations regarding the design of this project.

Background

The approximately 0.9-acre site is located within a graded area along the eastward facing slopes and undulating terrain of the Los Altos Hills. The project site is currently occupied by an existing 1-story operations and maintenance building (OMB), two (2) reservoir tanks, a pump house, a storage shed, material storage bins, an access road, and a paved parking area. The Site is bound by a residential property on the north side, a sloped conservation easement area on the south and west sides, and Ascension Drive on the east side. Site can be accessed through an asphalt concrete access road on the northeast corner of the property.

We prepared this memorandum based on the 2021 project conceptual design plans included as attachments of the Purissima Water District request for proposal¹ received via email. We understand the project will include replacing the existing OMB with a new OMB and improving some of the site amenities. The new OMB will be a 2-story building with approximately 7,000 square feet (sq ft) gross area, including a shop, part storage, garage bays, and a mud room on the ground floor. Some of the new site amenities will include alteration of the existing conservation easement areas on the west and south of the property. We understand that a new paved driveway area is proposed to access the site from Ascension Drive. The project will also include utility lines, site improvements, new pavements and hardscapes, and landscapes. Based on our experience, we anticipate that structural column loads will be about 3 to 10 kips of dead load plus live load and wall loads will be about 2 to 4 kips per linear foot. Fills will be minimal to support the new development, and cuts will be about 8-10 feet to support the new building location, 5-10 feet for the new driveway, and utility trenches 5 feet or less of cut.

If the project differs significantly from that described above, we should review our recommendations for applicability.

Regional Geologic Setting

The site is located within the Coast Ranges Geomorphic Province of California. Throughout the Cenozoic Era, the western part of California has been affected by tectonic forces associated with lateral or transform plate motion between the North American and Pacific crustal plates, which has produced a complex system of northwest-trending faults - the San Andreas, Hayward, and Calaveras Fault systems being the most prominent within the Bay Area. Uplift, erosion and subsequent re-deposition of sedimentary rocks within this province have been driven primarily by the northwest-southeast directed strike-slip movement of the tectonic plates and the associated northeast oriented compressional stress. The northwest-trending coastal mountain ranges are the result of an orogeny believed to have been occurring since the Pleistocene epoch (approximately 2-3 million years before present).

The site falls within the bounds of the Palo Alto 30 x 60-minute quadrangle mapped by the U.S. Geological Survey². The terrain within the quadrangle has been divided into ten individual stratigraphic assemblages that lie within a series of fault-bounded bedrock structural blocks. The Woodside Assemblage, bound to the west by the San Andreas fault, dominates the general area of the site and includes a sequence of middle and lower Eocene and Miocene rocks. These Miocene rocks overlie a Mesozoic basement consisting of Franciscan Complex, Coast Range Ophiolite, and Great Valley Sequence. Franciscan Complex rocks are exposed in the east and southeast parts of the quadrangle along the northeast side of the San Andreas Fault.

¹ Purissima Hills Water District, Santa Clara County, California, 2022, "Request for Proposal, Architectural and Engineering Design Services for the McCann Operation Center Improvements, Project CIP: 14-01, at 26451 Ascension Drive, Los Altos Hills, California", June 2022.

² E.E. Brabb, R.W. Graymer, and D.L. Jones, 1988. "Open-File Report 98-137, Geology of the onshore part of San Mateo County, California: A digital database" USGS

The most detailed published mapping of the area is that by Cotton Shires and Associates compiled for the Town of Los Altos Hills. The Geologic Map of Los Altos Hills indicates that the site overlies sediments of the Plio-Pleistocene age Santa Clara Formation. The map describes the Santa Clara Formation as “semi-consolidated to consolidated...conglomerate interbedded with poorly sorted sandstone, siltstone, and claystone”. The formation locally dips moderately to the east-northeast. The geologic map indicates that while no landslides have been mapped onsite, several small landslides have been mapped upslope of the site. The toe of each landslide extends to the eastern side of Anacapa Drive.

Subsurface Conditions

On 13 March 2023, we concluded a geotechnical and geologic investigation of the site. Our investigation consisted of the following:

- Premark of the boring locations for public utility location,
- Private utility clearance conducted by our underground subcontractor,
- Performance of five geophysical surveys across the site surface consisting of Multi-Channel Analysis of Surface Waves (MASW),
- The drilling of three soil borings around the site, and logging of these borings by a Haley & Aldrich representative, and
- A geologic mapping of the site to determine cuts, fills, and geologic features of importance by a Haley & Aldrich certified engineering geologist.

A summary of the subsurface conditions, including the soil and bedrock contact and quality of the bedrock, and groundwater conditions at the site is described below.

Soil and Bedrock Conditions

Based on the results of our geotechnical exploration and geologic mapping of the site, we conclude that the inboard, southern portion of the site, consists of shallow fill supporting the pavement, water tanks, maintenance building and utility infrastructure. This thin, approximately 12-inch-thick fill overlies Plio-Pleistocene deposits of the Santa Clara Formation. The outboard, northern, portion of the site consists of a thicker section of fill up to about 4 to 6 feet, overlying residual and highly weathered soil derived from the Santa Clara Formation. The undocumented fill that we encountered in our borings consists of stiff to very stiff sandy clay of low plasticity. The residual soil, where encountered in our borings, consists of medium stiff to stiff, moist silty clay of moderate plasticity. Santa Clara Formation material consists of dense to very dense sand with clay and clayey sand, and hard, low plasticity sandy clay.

Groundwater Conditions

Groundwater was not encountered in our exploratory borings during our field investigation of the Site. The subsurface consists of a thin mantle of undocumented fill and residual soil across the site, and a shallow depth to well-consolidated formation material. Given the sloping nature of the native terrain, it

should be anticipated that shallow zones of perched water could be encountered either above the bedrock boundary or at the interface between the soil and bedrock. Groundwater commonly travels between the soil and rock interface and should be anticipated. Groundwater table elevations can vary highly, and can be sensitive to seasonality, geologic and hydrologic conditions, nearby construction activities, and natural and artificially constructed drainage paths.

To reduce the potential for water to collect under the building, we recommend that two drainpipes be placed under the slab-on-grade. Recommendations are provided in the "Surface Drainage" section of our recommendations.

Conclusions

Based on our subsurface exploration program, we conclude that the northern, outboard portion of the project site is generally blanketed by four feet or more of undocumented fill that supports the grade of the site. This fill material consists of stiff, moderately plastic sandy clay. The inboard, southern, portion of the site consists of very shallow fill overlying well-consolidated Santa Clara Formation bedrock. The Site transitions from bedrock to fill within the proposed new building pad. Foundations systems based in differing materials such as soil and bedrock can result in excessive differential settlement.

The proposed new maintenance building is located in the southwestern portion of the site. We assess that the building can be supported on shallow spread footings. To reduce the potential for differential settlement, we recommend that the footings be extended to bedrock which would result in over excavation in the portion with existing fill and thin natural soil. Alternatively, the footing excavations in the bedrock zone may be over excavated and backfilled with engineered fill. However, it is our opinion that extending the foundations through the soil and into the competent Santa Clara formation will result in higher capacities.

We estimate that cuts of 8-10 feet will be needed to support the location of the building. These cuts will need to be laid back in a minimum of a 2:1 (horizontal: vertical) slope to produce a stable excavation. If groundwater is present, at the soil-rock interface, the soil may need to be laid back to reduce the potential of sluffing. New retaining walls will be needed to retain the slope to the south of the building. The new retaining walls should include a subdrain system which directs water away from the building foundation and the base of the wall.

The proposed new driveway will be located in the southeastern corner of the site, east of the smaller of the two water tanks. We assess that the driveway will traverse from Ascension Drive west into the existing native slope, and through a portion of the existing 2:1 cut slope that was created during the initial grading of the site. Cuts from about 5-10 feet through bedrock material may be needed to achieve grade in the driveway area. Fills encountered will be limited to 2 feet or less and will predominantly be encountered on the western end of the driveway, where the existing pavement can be found.

Preliminary Recommendations

SITE SEISMICITY

A seismic hazard analysis was performed using the USGS Unified Hazard Tool (<https://earthquake.usgs.gov/hazards/interactive/>) website. Our deaggregation analysis utilized the USGS Dynamic Conterminous U.S. 2014 (v.4.2) edition. For our analyses, we assumed the Seismic Site Class C, based on the measured shear wave velocity measured at the Site.

Based on the seismicity of faults that may impact the site and the results of the deaggregation analysis, a design earthquake with an M_w of 7.78 was selected for the seismic hazard evaluation. The site-modified peak ground acceleration (PGA_M) for the site, which is based on the Maximum Considered Earthquake (MCE) with a return interval of 2,475 years, or a 2 percent probability of exceedance in 50 years, is 1.125g. This value was computed based on procedures outlined in ASCE 7-16. Recommended code-based seismic parameters for design of the proposed structures in conformance with the 2019 CBC and ASCE 7-16 are presented in Table III.

TABLE III

Seismic Design Parameters

Seismic Parameter	Design Value
Risk Category	III
Site Class (ASCE 7-16 Table 1613.5.2)	C
MCE_R^1 Ground Motion (Period = 0.2 seconds), S_s	2.267 g^2
MCE_R Ground Motion (Period = 1.0 seconds), S_1	0.815 g
Peak Ground Acceleration, PGA	0.937 g
Site Amplification Factor at 0.2 seconds, F_a	1.2
Site Amplification Factor at 1.0 seconds, F_v	1.4
Site Amplification Factor for PGA, F_{PGA}	1.2
Site-Modified Peak Ground Acceleration, PGA_M	1.125 g
Site-Modified Spectral Acceleration Value at 0.2 seconds, S_{MS}	2.72 g
Site-Modified Spectral Acceleration Value at 1.0 seconds, S_{M1}	1.142 g
Design Spectral Acceleration at 0.2 seconds, S_{DS}	1.814 g
Design Spectral Acceleration at 1.0 seconds, S_{D1}	0.761 g

Notes:

- 1) MCE_R = Risk-targeted maximum considered earthquake
- 2) g = acceleration of gravity
- 3) Design values presented above are based on a site located at latitude / longitude = 37.383693 / -122.142565.

SHALLOW FOUNDATIONS

The new buildings and retaining walls may be supported on continuous perimeter and isolated interior spread-type footings supported on bedrock. The new foundations shall bear on consistent material, either bedrock or engineered fill to reduce the potential for excessive differential settlement.

New continuous and isolated footings should be at least 24 inches wide and 30 inches square, respectively. Footings should be a minimum of 24 deep, measured from exterior grade of the bottom of the slab, whichever is deeper. We recommend that the proposed new footings be designed using an allowable dead plus live load bearing capacity of 4,000 pounds per square foot (psf) if founded in the Santa Clara formation. These values contain a factor of safety of at least 3 and may be increased by one-third for total loads, including wind or seismic forces. We estimate that the total and differential foundation movement of new footings under static loading conditions should be less than ½ inch and ¼ inch of differential settlement over a 50-foot horizontal distance.

Lateral loads may be resisted by a combination of passive pressure on the embedded vertical faces of the footings and friction between the bottoms of the footings and the supporting soil. For passive resistance, we recommend using an equivalent fluid weight of 300 pounds per cubic foot (pcf) for footings embedded in on-site soil with engineered fill at the bottom of the footings. The upper foot of soil should be ignored unless it is confined by a concrete slab or pavement. Frictional resistance should be computed using a base friction coefficient of 0.40 if founded in the Santa Clara formation.

FLOOR SLABS

For slabs-on-grade that have a moisture sensitive surfacing, we recommend use of a capillary break section. This is consistent with the existing construction based on the USE 1997 report recommendations. To reduce water moisture transmission through the floor slab, we recommend installing a capillary moisture break and a minimum 15-mil-thick Class C moisture retarder beneath the floor. Typically, finished spaces with slab-on-grade floors, such as offices, will utilize capillary moisture breaks and moisture retarders to reduce the potential for moisture transmission through the floor, which can adversely impact flooring materials and carpeting. If moisture transmission through the slab is acceptable or subject to vehicle loading, the slab-on-grade floor may be placed over a 6-inch-thick layer of Caltrans Class 2 Aggregate Base.

Drain pipes, discussed in "Surface Drainage" below should be added below the slab-on-grade.

RETAINING WALLS

Construction of new retaining walls is planned. For walls that are restrained from movement, we recommend the walls be designed to resist an at-rest lateral earth pressure with an unfactored equivalent fluid weight of 60 pcf. If walls are free to rotate at the top, we recommend designing the

walls to resist an active lateral earth pressure with an unfactored equivalent fluid weight of 40 pcf. These short retaining walls, less than 10 feet in height, do not need to be designed for lateral earth pressure loads from earthquakes.

The above lateral design pressures are based on fully drained walls. Even though the retaining walls will be above the groundwater table, water can still accumulate behind the walls from other sources, such as rainfall, irrigation, and broken water lines. For walls greater than 4 feet in height, prefabricated drainage material (such as Miradrain® or an approved alternate) may be used behind below-grade and retaining walls. Prefabricated drainage material should be installed in accordance with the manufacturer's recommendations. Retaining walls less than 4 feet in height do not need to consider groundwater.

Although not likely, even with the back drain system, localized wet spots may occur in the walls. Within the building, the wall adjacent to the cut slope should be waterproofed.

SURFACE DRAINAGE

Site grading should provide surface drainage away from the proposed structures and concrete slabs-on-grade to reduce the percolation of water into the underlying soils. Surface water should not be allowed to collect adjacent to structures and along edges of concrete slabs or pavements. Grades should be sloped away from the structures as required in the California Building Code (current edition). Surface water should be directed away from exposed soil slopes. Rainwater on the roof of buildings should be conveyed through gutters, downspouts and closed pipes which discharge directly into the site storm water collection system or pavement. If discharging onto the pavement, safety of pedestrian traffic should be considered.

In addition, we recommend that two subdrains be placed under the proposed new building. The drains should parallel the upper slope and located at a distance of about $\frac{1}{2}$ and $\frac{2}{3}$ the building length away from the slope. The subdrains should be composed of a minimum of a 3-inch perforated drainpipe surrounded in either CalTrans Class 2 permeable rock or $\frac{3}{4}$ inch clean drain rock wrapped. Outside of the building pad, the pipes should then be connected to the site storm drain system.

Limitations

This memorandum has been prepared for specific application to the proposed construction as understood at this time. In the event that changes in the nature, design, or location of the project are planned, the conclusions and recommendations contained in this report should not be considered valid, unless the changes are reviewed by Haley & Aldrich and the conclusions of this report modified or verified in writing. This memorandum will be superseded by a design level report.



MAP SOURCE: ESRI
 SITE COORDINATES: 37°23'1"N, 122°8'33"W

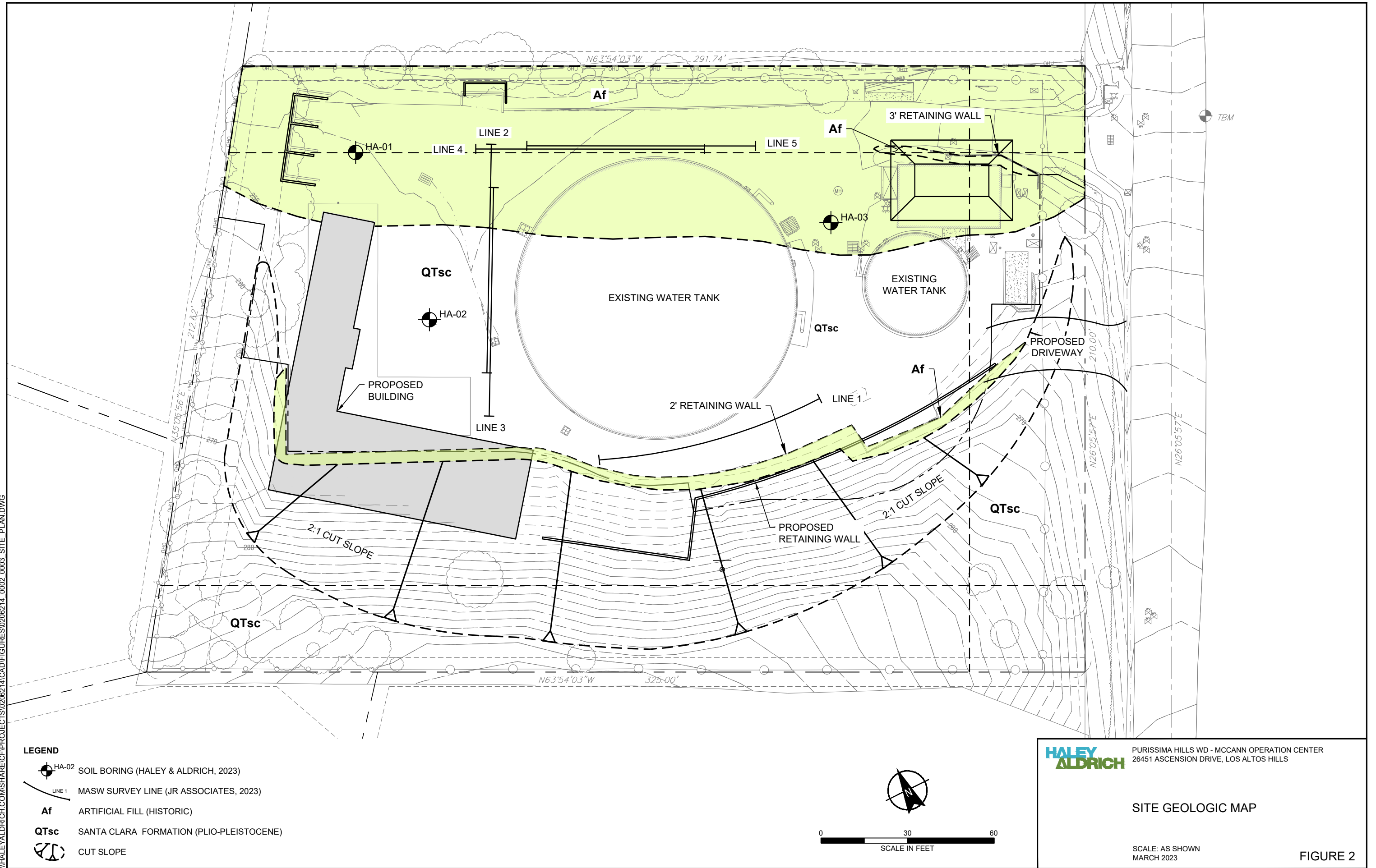
**HALEY
 ALDRICH**

26451 ASCENSION DRIVE
 LOS ALTOS HILLS, CALIFORNIA

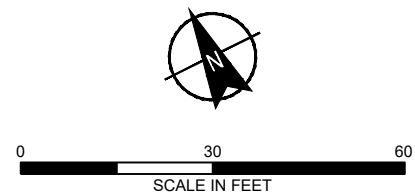
PROJECT LOCUS

APPROXIMATE SCALE: 1 IN = 2000 FT
 MARCH 2023

FIGURE 1



- LEGEND**
- HA-02 SOIL BORING (HALEY & ALDRICH, 2023)
 - LINE 1 MASW SURVEY LINE (JR ASSOCIATES, 2023)
 - Af ARTIFICIAL FILL (HISTORIC)
 - QTsc SANTA CLARA FORMATION (PLIO-PLEISTOCENE)
 - CUT SLOPE



HALEY ALDRICH PURISSIMA HILLS WD - MCCANN OPERATION CENTER
26451 ASCENSION DRIVE, LOS ALTOS HILLS

SITE GEOLOGIC MAP

SCALE: AS SHOWN
MARCH 2023

FIGURE 2

Project Ten Over-Purissima Hill WD, 26451 Ascencion Dr., Los Altos Hills, CA
 Client Ten Over Studios
 Contractor Access Drilling

File No. 0206214
 Sheet No. 1 of 1
 Start 13 March 2023
 Finish 13 March 2023
 Driller -
 H&A Rep. DT

Boring Diameter (in.) 4.0
 Hammer Type --
 Hammer Weight (lb) 70
 Hammer Fall (in.) 30

Drilling Equipment and Procedures
 Rig Make & Model: Minuteman
 Bit Type:
 Drill Mud: None
 Casing: N/A
 Hoist/Hammer: Rope and Cathead --
 PID Make & Model: N/A

Elevation 255.00 ft
 Datum
 Location
 Lat: 37.3839°N
 Long: 122.1427°W

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)	Elevation (ft)
0	BULK	HA-01-01			254.9 0.1 254.5 0.5	CL	1.5-in. AC 4-in. AB Sandy CLAY with gravel: Multicolored yellow-brown to dark reddish brown, slightly moist, stiff, moderate plasticity, fine sand, subangular to subrounded fine gravel -FILL-				255
5	MCS	HA-01-02	18	10 17 28	251.0 4.0	CL	Silty CLAY with sand: Dark reddish brown, very moist, medium stiff, fine sand, moderate plasticity -RESIDUAL SOIL-				250
	MCS	HA-01-03	10	37 50/5"	248.5 6.5	CL	Silty CLAY: Dark brown, slightly moist, very stiff, moderate plasticity, minor fine sand, blocky pedogenic structure PP~2.5 tsf PP~4.0 tsf -RESIDUAL SOIL-				
	SPT	HA-01-04	12	17 31 50/3"			Note: Slow drilling.				
10	SPT	HA-01-05	10	34 44 50/4"	244.5 10.5	CL	Sandy CLAY: Dark brown to dark reddish brown, dry, hard, low plasticity, fine sand, some fines, subrounded gravel of sandstone and chert PP>4.5 tsf -SANTA CLARA FORMATION-				245
	SPT	HA-01-06	7	32 50/3"	240.5 14.5						
15							Notes: - Borehole backfilled with cement grout. - Groundwater not encountered. BOTTOM OF EXPLORATION 14.5 FT				240

Water Level Data

Sampler Type Legend

Summary

Date	Time	Elapsed Time (hr.)	Depth (ft) to:			MCS - Modified California Sampler (2.43-in ID) SPT - Standard Penetration Test ST - Shelby Tube GB - Grab Sample	Overburden (ft)	14.5
			Bottom of Casing	Bottom of Hole	Water		Rock Cored (ft)	-
							Samples	2 MCS, 3 SPT

Boring No. HA-01

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
 Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Project Ten Over-Purissima Hill WD, 26451 Ascencion Dr., Los Altos Hills, CA
Client Ten Over Studios
Contractor Access Drilling

File No. 0206214
Sheet No. 1 of 1
Start 13 March 2023
Finish 13 March 2023
Driller -
H&A Rep. DT

Boring Diameter (in.) 4.0
Hammer Type --
Hammer Weight (lb) 70
Hammer Fall (in.) 30

Drilling Equipment and Procedures
Rig Make & Model: Minuteman
Bit Type:
Drill Mud: None
Casing: N/A
Hoist/Hammer: Rope and Cathead --
PID Make & Model: N/A

Elevation 255.00 ft
Datum

Location
Lat: 37.3837°N
Long: 122.1427°W

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)	Elevation (ft)
0	BULK	HA-02-01			254.9 0.1 254.5 0.5	CL	1-in. AC 4-in. AB Sandy CLAY: Multicolored yellow-brown to reddish brown, moist, stiff, moderate plasticity, fine sand, minor fines, subangular gravel -FILL-				255
					252.5 2.5	CL	Silty CLAY: Dark brown to dark reddish brown, slightly moist, minor fine sand, blocky ped. structure -RESIDUAL SOIL-				
5	MCS	HA-02-02	8	45 50/3"	250.5 4.5	SC	Clayey SAND: Dark orange brown, dry, dense, coarse to fine, subangular to subrounded sand, trace to minor fines, subangular gravel PP>4.5 tsf -SANTA CLARA FORMATION- Note: Slow drilling.				250
10	SPT	HA-02-03	16	28 36 45							
	SPT	HA-02-04	14	31 38 50/4"			Similar to above				245
	SPT	HA-02-05	15	28 41 50/5"			Similar to above				
15					240.5 14.5		BOTTOM OF EXPLORATION 14.5 FT Notes: - Borehole backfilled with cement grout. - Groundwater not encountered.				240

Water Level Data

Sampler Type Legend

Summary

Date	Time	Elapsed Time (hr.)	Depth (ft) to:			MCS - Modified California Sampler (2.43-in ID) SPT - Standard Penetration Test ST - Shelby Tube GB - Grab Sample	Overburden (ft)	14.5
			Bottom of Casing	Bottom of Hole	Water		Rock Cored (ft)	-
							Samples	1 MCS, 3 SPT
							Boring No.	HA-02

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.

Project Ten Over-Purissima Hill WD, 26451 Ascencion Dr., Los Altos Hills, CA
Client Ten Over Studios
Contractor Access Drilling

File No. 0206214
Sheet No. 1 of 1
Start 13 March 2023
Finish 13 March 2023
Driller -
H&A Rep. DT

Boring Diameter (in.) 4.0
Hammer Type --
Hammer Weight (lb) 70
Hammer Fall (in.) 30

Drilling Equipment and Procedures
Rig Make & Model: Minuteman
Bit Type:
Drill Mud: None
Casing: N/A
Hoist/Hammer: Rope and Cathead --
PID Make & Model: N/A

Elevation 255.00 ft
Datum

Location
Lat: 37.3837°N
Long: 122.1422°W

Depth (ft)	Sample Type	Sample No.	Recovery (in.)	Sampler Blows per 6 in.	Stratum Change Elev/Depth (ft)	USCS Symbol	VISUAL-MANUAL IDENTIFICATION AND DESCRIPTION (GROUP NAME, density/consistency, color, max. particle size*, structure, odor, moisture, optional descriptions GEOLOGIC INTERPRETATION)	Dry Density (pcf)	Moisture (%)	Fines (%)	Elevation (ft)
0	BULK	HA-03-01			254.9 0.1 254.5 0.5	CL	1-in. AC 4-in. AB Sandy CLAY: Yellow-brown to dark brown, slightly moist, stiff to very stiff, fine sand, moderate plasticity -FILL-				255
5	SPT MCS	HA-03-02	3	50/5"	251.0 4.0 250.5 4.5	CL SW	Silty CLAY: Dark reddish brown, moist to slightly moist, stiff, low plasticity -RESIDUAL SOIL- SAND with clay: Dark orange brown, dry, hard, very dense, low plasticity, coarse to fine sand, minor fines, subangular gravel PP>4.5 tsf -SANTA CLARA FORMATION-				250
10	SPT	HA-03-03	3	50/5"	246.5 8.5		BOTTOM OF EXPLORATION 8.5 FT Notes: - Borehole backfilled with cement grout. - Groundwater not encountered.				245
15											240

Water Level Data

Sampler Type Legend

Summary

Date	Time	Elapsed Time (hr.)	Depth (ft) to:			MCS - Modified California Sampler (2.43-in ID) SPT - Standard Penetration Test ST - Shelby Tube GB - Grab Sample	Overburden (ft) 8.5		
			Bottom of Casing	Bottom of Hole	Water		Rock Cored (ft) -	Samples 1 MCS, 2 SPT	
								Boring No.	HA-03

Field Tests: Dilatancy: R - Rapid S - Slow N - None Plasticity: N - Nonplastic L - Low M - Medium H - High
Toughness: L - Low M - Medium H - High Dry Strength: N - None L - Low M - Medium H - High V - Very High

*Note: Maximum particle size (mps) is determined by direct observation within the limitations of sampler size.

Note: Soil identification based on visual-manual methods of the USCS as practiced by Haley & Aldrich, Inc.