Exhibit D

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BIOTIC REPORT & CONSERVATION PLAN

FOR

THE VIRNIG RESIDENCE, "SPY & SEA"

1154 SILVER TRAIL, PEBBLE BEACH,

MONTEREY COUNTY, CALIFORNIA 93953

PLN#160144

Prepared by,

Jeffrey B. Froke, Ph.D.
Pebble Beach CA

— 09 November 2017 / Final —

CALIFAUNA

Wildlife Sciences for California

BIOTIC REPORT & HABITAT RENOVATION PLAN FOR THE VIRNIG RESIDENCE
1154 SILVER TRAIL, PEBBLE BEACH, CALIFORNIA 93953
MONTEREY COUNTY / APN 008-012-013

PLN#160144

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DATE: 09 November 2017 / Final

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SUBJECT: Biological and Coastal ESHA resources associated with the developed residential property at 1154 Silver Trail, Pebble Beach, Monterey County, CA

INTRODUCTION

This biotic study focuses on ecological relationships of an historically developed residential site and its contiguous hardscape that altogether are coterminous with the proposed project footprint plus an open area of planted fill-slope and sand dunes, all adjacent to but outside the established and retained project footprint. With respect to the adjacent sand dunes, this report identifies the presence and limits of Coastal ESHA pursuant to definitions and policies of the local Del Monte Forest Area Land Use Plan (DMFLUP, 2012). Based on springtime surveys, this report describes cover, faunal, and floral resources that exist onsite.

SITE BACKGROUND AND REFERENCES

Parcel Size —	1.26 ac (~ 54,885 ft^2)
Assessor's Parcel No. —	008-012-013
Physical Address —	1154 Silver Trail, Pebble Beach CA
Map Coordinates —	36.588127° lat / -121.961796° lon
Elevation Range —	25 ft (~84-59 ft, asl)
Geographic Landmark:	Cypress Point (1.00 mi WSW)
Historical Context:	Ro. El Pescadero (Mexican, ca 1836)

Map References

Architectural:	Eric Miller Architects, Restoration Area and Easement Boundaries A-1.2g (09 NO 2017)
Topographic (USGS):	*Monterey CA* (USGS no. o36121e8; v. 1997; 7.5-min; 1:24,000); adjacent 7.5-Minute Quadrangles: *Mt. Carmel, Seaside, Marina, Soberanes Point*

Geological References

Clark, J.C., Dibblee, T.W., Jr., Greene, H.G., and Bowen, O.E., Jr. ,1974. Preliminary geologic map of the Monterey and Seaside 7.5-minute quadrangles, Monterey County, California, with emphasis on active faults. U.S. Geological Survey, Miscellaneous Field Studies Map MF-577

Clark, Joseph C., Duprè, William R., and Rosenberg, Lewis I., 1997. Geologic Map of the *Monterey* and *Seaside* 7.5-minute Quadrangles, Monterey County, California: A Digital Database: U.S. Geological Survey Open-File Report 97-30.

Wagner, D.L., Greene, H.G., Saucedo, G.J., and Pridmore, C.L., 2002. Geologic map of the Monterey 30' x 60' quadrangle and adjacent areas, California (.California Geological Survey, Regional Geologic Map No. 1.

Local formations: (gdp, Kgd) granodiorite-porphyritic; (Tus) sandstone; (Qd) dune sand; and, (Qod) old dune sand.

Soil Reference — Cook, T.A. Soil survey of Monterey County, California. USDA Soil Conservation Service.

Local soils: Df - Dune Land; fragmented NcC-Narlon Loamy Fine Sand; and, TaC-Tangair Fine Sand

FIGURES AND TABLES

Figures:
1. Regional and local geographic context of study site in Pebble Beach.
2. Aerial image covering site in it neighborhood context, with dunes.
3. Photo-series illustrating current site conditions.
4. Neighborhood conservation easements (ESHA-dunes).

A-1 (Appendix A), Restoration Area and Easement Boundaries

Tables:
1. Observed onsite floral resources.
2. Locally reported special plant species.
3. Observed onsite and local faunal resources.

STUDY APPROACH

- Work on this report started with a pro forma review of California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB), including application of its records (processed and unprocessed; last viewed 19 March 2017) to the subject and surrounding four (4) USGS 7.5-minute (1:24,000) topographic quadrangles (*Monterey* + *Marina, Mt. Carmel, Soberanes Point,* and *Seaside*).

- Additional authorities and datasets were referenced for local information on confirmed and potentially present plant taxa. In particular, CALFLORA's data portal, "what grows here?," was searched for historical and contemporary records at the local scale of Fanshell Beach and adjacent dune tracts toward Spanish Bay and Asilomar.

- In addition to CNDDB files and the original files from which the database is derived, the majority of available wildlife records, formal and informal, stem from a continuous series of my unpublished sightings dated 1997 to 2017 — a period during which I have resided just 600 yards from the subject property.

- Field observations were made on 02 April, 05, 09-10 May 2016 and 19, 25-26 March, 02 April, and 05 September 2017, totaling nine (9) visits over 17 months. Access and seasonal conditions were totally suitable for detecting potentially flowering vegetation and breeding wildlife during all and especially springtime visits.

PROJECT SETTING

Geographic Context — *Spy & Sea* is set amidst an mid-century Pebble Beach subdivision that occupies an interface area that consists of (1) an old sand dune, and (2) sporadic and nonconforming non-dune geologic and edaphic conditions located west of the high-dune tree line between Seal Rock Creek and Spyglass Hill Road.[1] As part of the previously developed *Fanshell Beach residential enclave*, the site adjoins several residential properties as well as *Casita de Lemos* (a.k.a., the *Gingerbread House*, N) and Spyglass Hill Golf Course (S).

Geophysically, the property is located 1.00 mi ENE of Cypress Point, a headland that is the westernmost landfall in the southern half of California: By the same reckoning, Pebble Beach is the most westerly and seaward residential community in southern California. The Cypress Fault is situated between Cypress Point and the subject property, 0.80 mi from the latter; Fanshell Fault is half that distance (0.42 mi) WSW of the property. The discontinuities associated with the two faults are significant with respect to the ecology and evolution of the Pebble Beach landscape and the project vicinity: Cypress Fault is the approximate demarcation of the native Cypress Tree (*Hesperocyparis macrocarpa*), and Fanshell Fault marks the western limit of sand dunes on the Monterey Peninsula and southern California altogether.

Dunes, whether native, disturbed, or ruderal, are discontinuously distributed across the local (Pebble Beach) expression of the ancient Asilomar dunes complex, and significant granitic outcroppings and derivative soils from coastal rock formations present above

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[1] The previous version of this report oversimplified the underlayment of the site as an old dune structure that had in part been graded for the original development of the site. Subsequent map study and field work focused on the ground and edaphic character of the site and so established a pattern of interfacing dune and non-dune formations.

Fanshell Beach, thence north towards Spanish Bay. The discontinuity is the result of faulting across the nearby three faults (Cypress, Fanshell, and one unnamed). Furthermore, the often rocky non-dune (upper) portion of the site and adjacent residences presents displaced and graded fill material that resulted from excavation and construction of the adjacent golf course and residential lots. Here, construction of Spyglass Hill GC by Pebble Beach Company (1966) closely preceded the company's subdivision and site development of the Fanshell Beach residential enclave, including the subject property, which was permitted for construction in 1969-70.

In sum, the interface that exists between dune vegetation (downslope of the project site) and non-dune vegetation of the project site is explained by a composite of underlying geological structure, historic fill, and responsive edaphic conditions. The present-day dunes, however fragmented, are formulated of dune and old dune sands. In contrast, the non-dune sites present granite boulders and swatches of loamy, clayey and gravelly soils, as well as evidence of the widespread grading, compaction and debris fill, e.g., broken concrete and displaced cobble. Sequential aerial photography (Google Earth, 1998-2016) demonstrates a persistent boundary between the dune and non-dune areas surrounding the existing residence that underscores the extant edaphic pattern of the site.

Usefully, a “quick-and-dirty” field indicator of local non-dune conditions, particularly at the boundary with dunes, is the typically vast and extensive presence of burrow tailings left by Botta’s Pocket-gophers (*Thomomys bottae*), a locally abundant and strictly fossorial mammal that requires moist and friable soils for all of its life history: Emphatically, dune sands lack those salient qualities for pocket-gophers and as such are not inhabited by the animals.

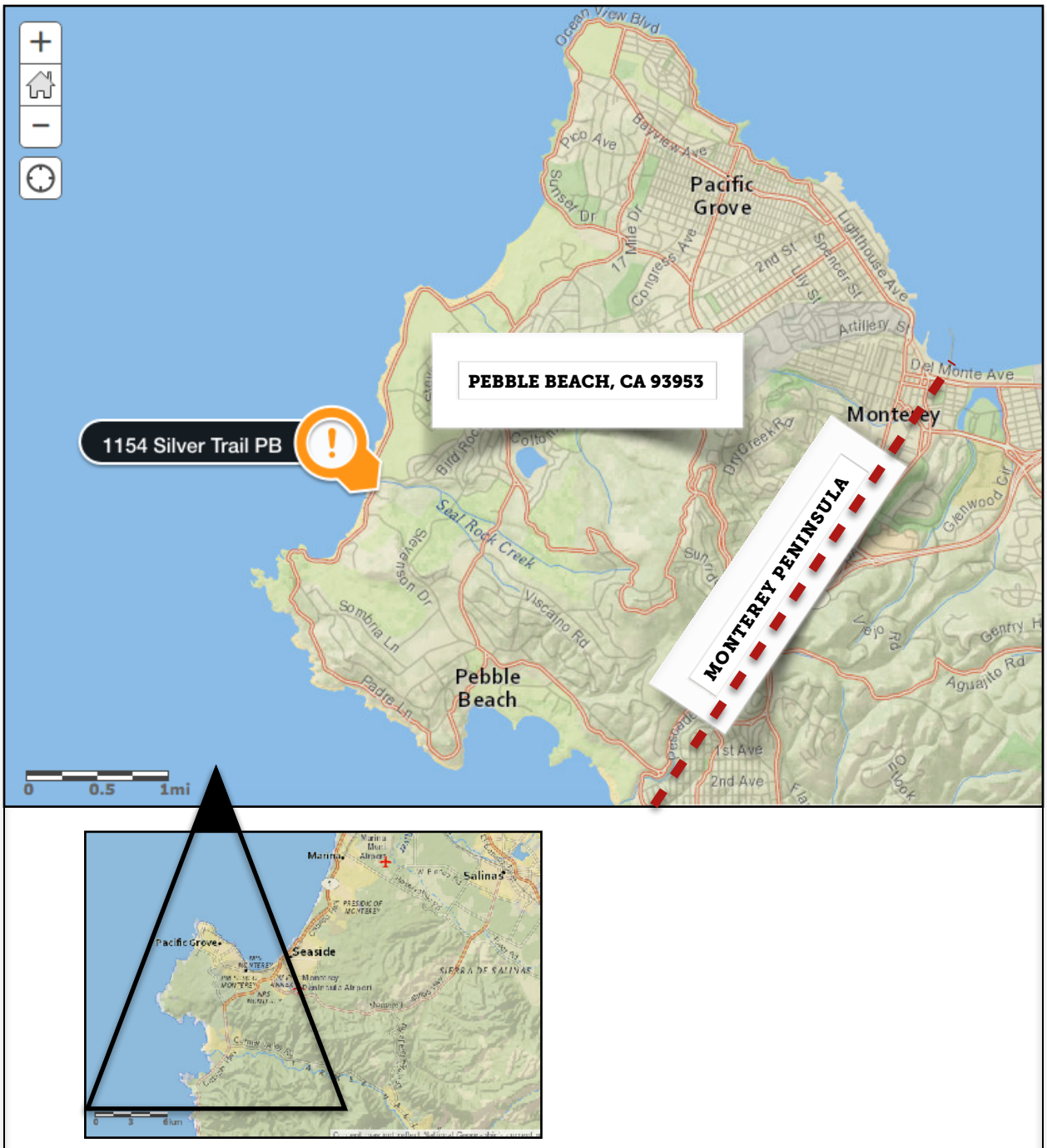

FIGURE 1. Regional and local geographic context of the Pebble Beach study site on the Monterey Peninsula in Monterey County, CA (93953).

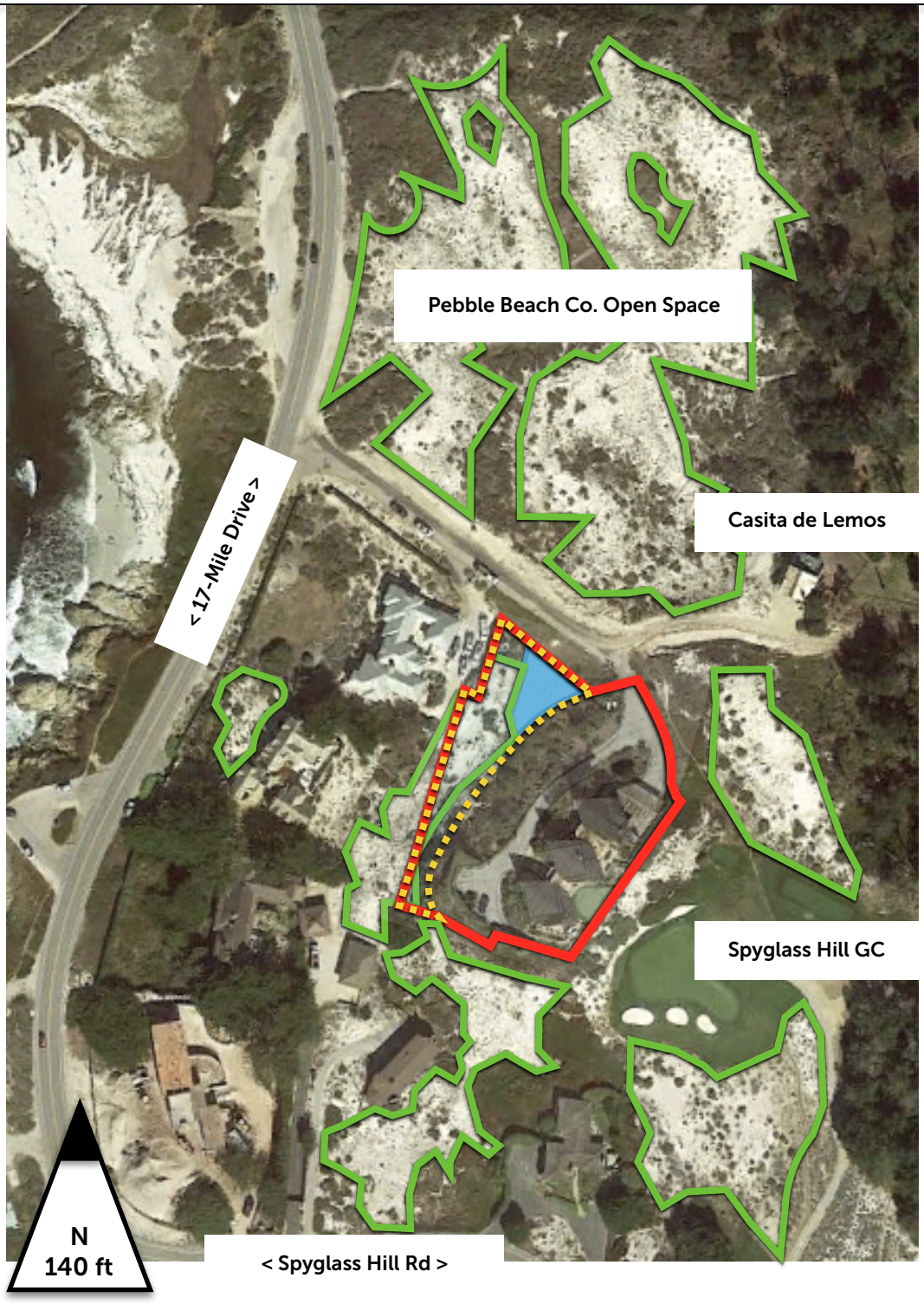

FIGURE 2. Neighborhood Context: The subject property (red polygon) in its neighborhood context in Pebble Beach, CA. Also shown are the proposed easement boundary (yellow-dashed) and dune habitat renovation area (blue polygon); also, multi-owner local dune complex (green polygons) minus wholly disturbed sites.

BIOLOGICAL FINDINGS

Vegetative Cover / Communities

The majority of the property is covered with *bordered ornamental plantings* around the residence and *escaped and ruderal plantings* on the graded pad and slope between the driveway and downslope dunes (Figures 3, 4). In both settings, Iceplant, Pride-of-Madeira, and Myoporum are predominant (see *Plant Taxa*, below). Significantly, there is a 3/4-inch irrigation line with impact sprinklers that was installed by the previous owner along the lower edge of the non-dune slope to irrigate the uphill planted area[2], but that was deactivated (by the current owner) about nine (9) years ago.

Sand dune, comprised mostly of native cover, represents the single sensitive plant community (per CNDDB) present on the Virnig property. Again, this contiguous dune area, which also qualifies as Coastal ESHA, is located outside of the project area, exclusively.

Floral Resources

Table 1 identifies all plant species observed on the Virnig property in 2016 and 2017, including species found inside and outside of the specific project area. The preponderance of native species grows in the dunes environment, and most are obligate dunes taxa. Nonnative species, a limited number of which grow in the dunes, dominate the already developed and landscaped portions of project area. Not surprisingly, Iceplant is ubiquitous throughout the property, on both sides of the dune/non-dune boundary. With exception of several Monterey Pines, the origin of which is uncertain, no special-status plant taxa are present on the property in non-dune cover; of special plants altogether, only Seaside Paintbrush occupies the property and its entire stand is within the offsite dune cover.

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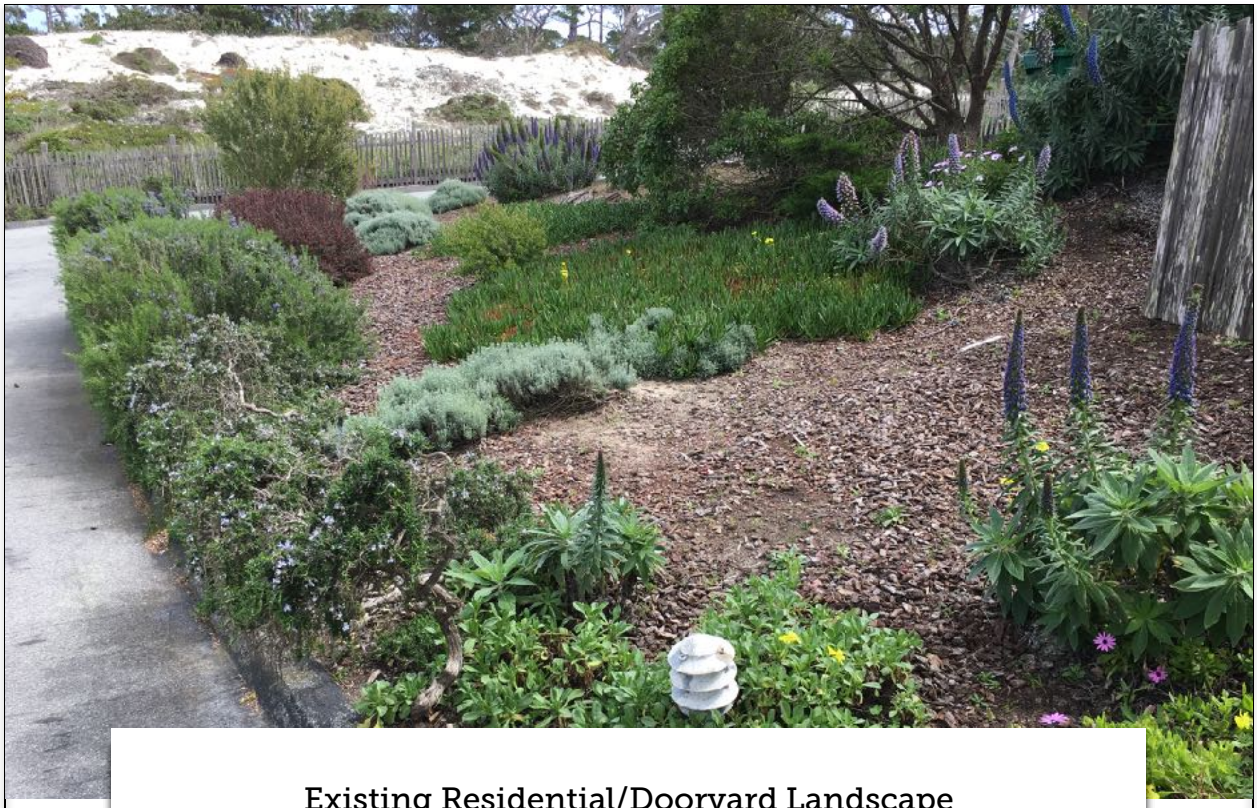
[2] As a sign of the times and attesting to the then locally commonplace effort to maintain an irrigated nonnative landscape, the previous owner (1970 to circa 2008) employed a full-time gardener to manage the horticultural (now ruderal and escaped) plantings across the property.

FIGURE 3. Existing site conditions illustrated by recent ground photos (March–April 2017).

FIGURE 3. *Continued*.



Existing Residential/Dooryard Landscape

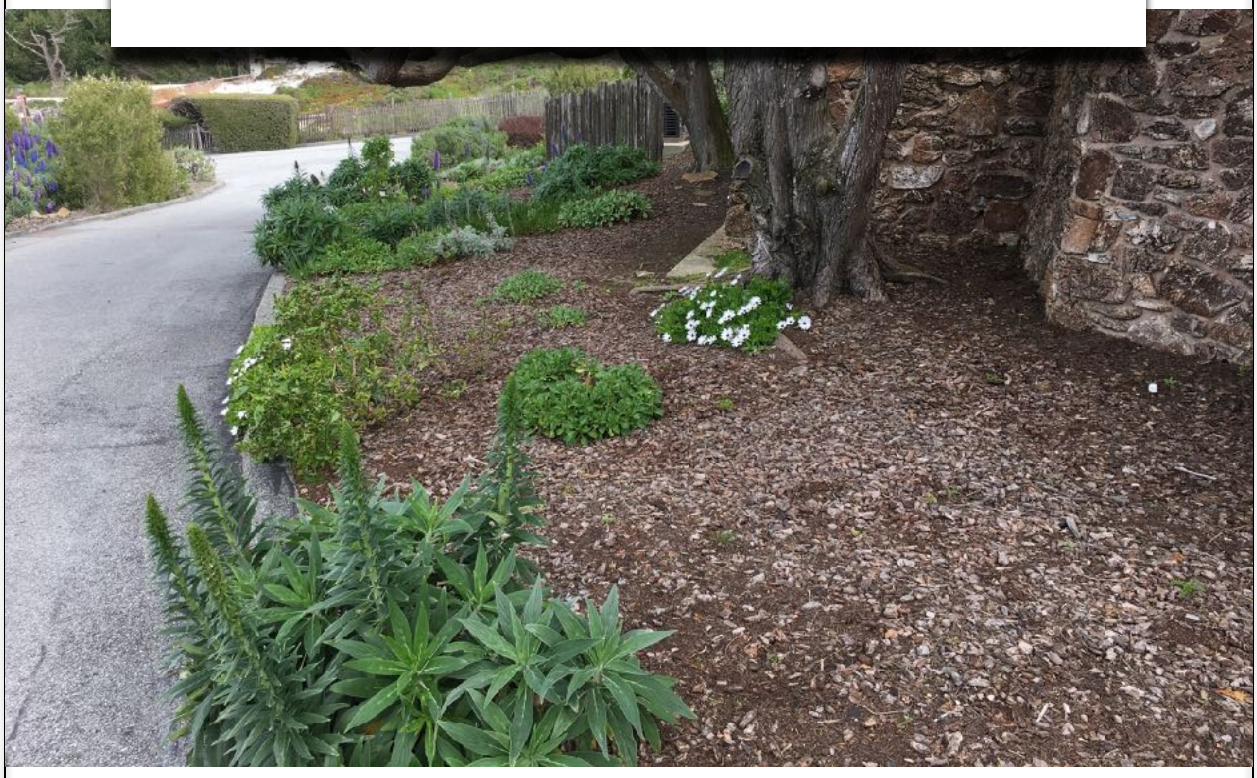


FIGURE 3. *Continued*.

TABLE 1 — Observed flora associated with the Virnig Property in Pebble Beach, CA

BINOMIAL	ENGLISH NAME	ONSITE/ OFFSITE †	STATUS
Abronia umbellata	Beach Sand Verbena	Off/Dunes	Native
Artemisia pycnocephala	Beach Sagewort	Off/Dunes	Native
Camissoniopsis cheiranthifolia	Beach Evening-primrose	Off/Dunes	Native
Castilleja latifolia	Seaside Paintbrush	Off/Dunes	CRPR 4.3 ®
Delairea odorata	Cape Ivy	On/Off	Invasive - Nonnative
Ceanothus thyrsiflorus	Blueblossom	Onsite	Native
Echium candicans	Pride of Madeira	Off/Dunes	Invasive - Nonnative
Ericameria ericoides	Mock Heather	Off/Dunes	Native
Eriophyllum staechadifolium	Lizardtail	Off/Dunes	Native
Eschscholzia californica	California Poppy	On/Off	Native
Frangula californica	Coffeeberry	Onsite	Native
Hespercoyparis macrocarpa	Monterey Cypress	Onsite	Nonnative
Heteromeles arbutifolia	Toyon	Onsite	Native
Myoporum laetum	Myoporum	On/Off	Invasive - Nonnative
Nuttallanthus canadensis	Canada Toadflax	Off/Dunes	Invasive - Nonnative
Pinus radiata	Monterey Pine	Onsite	CRPR 1B.1
Ribes divaricatum var. pubiflorum	Spreading Gooseberry	Onsite	Native
Oxalis pes-caprae	Bermuda Sorrel	On/Off	Invasive - Nonnative
Poa douglasii	Maritime Bluegrass	Off/Dunes	Native
Callistemon spp.	Bottlebrush	Onsite	Nonnative
Baccharis pilularis	Coyotebrush		Native
Leptospermum scoparium	Manuka	Onsite	Nonnative
Eriophyllum staechadifolium	Seaside Golden Yarrow	Off/Dunes	Native
Gilia tenuiflora ssp. arenaria	Golden Yellowthroat	Off/Dunes	Native

BINOMIAL	ENGLISH NAME	ONSITE/ OFFSITE †	STATUS
(†) Onsite: Inside project development footprint; Offsite: Outside of project footprint — undisturbed dunes or potentially renovated area.			
® California Rare Plant Rankings:			
CRPR 4.3: Plants of Limited Distribution - A Watch List — Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)			
CRPR 1B.1: Plants Rare, Threatened, or Endangered in California and Elsewhere —0.1-Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)			

Table 2 presents a list of special-status plant species that have been recorded for the Pebble Beach portion of the Asilomar Dunes Complex and adjacent cover areas from the late 1800s to present. Of these, today, several are special-status pursuant to CNDDB: However, with exception of one species — Seaside Paintbrush — none are present on the subject property; again the species is outside of the project area.

Both CNDDB and CALFLORA identified special plant species that have been recorded in the Pebble Beach vicinity of the study site, these by and large during the 1920s-1960s. In a general sense, the presence of dunes suggests the potential for several of the plants to occur locally today, but as the area was extensively fragmented and diminished in the course of sand-mining and golf and residential development during the same historic period (1920s through 1970s), the former dunes are now limited to a series of disjunct sites, presaging the local disappearance of many of the noteworthy taxa. Nevertheless, placement of the project and proposed improvements exclusively outside of the native and ruderal dunes habitat obviates an adverse effect of the project on special plants, whether confirmed or potentially present.

TABLE 2 — Special plant taxa documented across the Pebble Beach dunes and adjacent mixed sandy environments (1920s - present).

BINOMIAL	English Name	Status
Trifolium polyodon	Pacific Grove Clover	CRPR 1B.1®
Trifolium trichocalyx	Monterey Clover	CRPR 1B.1; FE†, SE††
Abronia maritima	Sticky Sand Verbena	CRPR 4.2 ®®
Castilleja latifolia	Seaside Paintbrush	CRPR 4.3 ®®®
Erysimum menziesii	Menzies Wallflower	CRPR 1B.1
Lomatium parvifolium	Small-leaved Lomatium	CRPR 4.2
Astragalus tener var. *titi*	Coastal Dunes Milkvetch	CRPR 1B.1; FE, SE
Layia carnosa	Beach Layia	CRPR 1B.1; FE, SE
Potentilla hickmanii	Hickman's Cinquefoil	CRPR 1B.1; FE, SE

Status: ® = CRPR 1B.1 - rare, threatened, or endangered in CA and elsewhere;
®® = CRPR 4.2 - limited distribution;
®®® = CRPR 4.3 - limited distribution;
† = FE - USA Listed as Endangered;
†† = SE - CA Listed as Endangered.

Faunal Resources

Table 3 presents a list of all animal species observed on the subject property and its neighborhood environs during site visits in 2016 and 2017, i.e., local species found both inside and outside the project footprint. One special animal, the Northern California Legless Lizard, specifically the black subspecies, *Anniella pulchra pulchra*, which is a CDFW Species of Special Concern, is known from local dune cover and it is reasonable if not confirmed that the reptile inhabits dunes on the Virnig property and possibly its neighboring dunes. That said, a search for the animal and the site disturbance a proper search would entail are not justified in view of the total avoidance of loose sandy dune habitat by the proposed project improvements. Habitat for the legless lizard does not exist inside or within 30 ft of the project footprint.

None of the animal taxa detected on site (Table 3) is listed by either the federal or state governments, nor is any classified as a Special Animal by CDFW.

TABLE 3 — Observed fauna associated with the Virnig property in Pebble Beach, CA: onsite species are known to inhabit the existing developed area including the project area; offsite species occur in the adjacent dune area.

BINOMIAL	ENGLISH NAME	ONSITE/ OFFSITE
Haemorhous mexicanus	House Finch	On
Zonotrichia leucophrys	White-crowned Sparrow	On/Off
Zonotrichia atricapilla	Golden-crowned Sparrow	On
Corvus brachyrhynchos	American Crow	On/Off
Aphelocoma California	Western Scrub Jay	On
Streptopelia decaocto	Eurasian Collared Dove	On
Melozone crissalis	California Towhee	On
Callipepla californica	California Quail	On/Off
Junco hyemalis	Dark-eyed Junco	On
Calypte anna	Anna's Hummingbird	On
Sayornis nigricans	Black Phoebe	On/Off
Thomomys bottae	Botta's Pocket Gopher	On
Canis latrans	Coyote	On/Off
Odocoileus hemionus columbianus	Black-Tailed Deer	On/Off
Sylvilagus bachmanii	Brush Rabbit	On/Off
Lynx rufus	Bobcat	Off
Sceloporus occidentalis bocourtii	Coast Range Fence Lizard	On
Pseudacris sierra	Sierran Treefrog	On

DISCUSSION OF ONSITE SAND DUNES AS COASTAL ESHA

As previously explained, the Virnig property incorporates a contiguous area of sand dune that is covered by native dune vegetation, as well as a discrete section of the dune that is covered exclusively by a continuous mat of Iceplant. Figure 3 zeroes-in on the total on-property dune formation and cover stands. Neither the existing residence nor the proposed remodeled version of the residence are contiguous with or otherwise directly affect the on-property sand dunes. The dunes are separated from the residence by a paved driveway and a substantial fill-slope that is covered with planted and invasive/escaped nonnative vegetation.

Appendix A of this document presents a conservation plan for supporting and increasing dune cover on the subject property; as well a plan for replanting the fill-slope with locally appropriate native plants.

Excerpted here from the DMFLUP (2012) are the regulatory policies that apply to protection of local Pebble Beach sand dunes as ESHA resources, generally (nos. 8, 11-15) and specifically (nos. 17-19). Below, these policies and their implications are reviewed with respect to the dunes/ESHA associated with the Virnig property. Applicable policies are underscored in Appendix A, as well.

DMFLUP (Amended 2012) — ESHA Key Policy:

The environmentally sensitive habitat areas of the Del Monte Forest are unique, limited, and fragile resources that are sensitive and important biologically, and that enrich Del Monte Forest enjoyment for residents and visitors alike. Accordingly, these areas shall be protected, maintained, and, where possible, enhanced and restored in accordance with the policies of this LUP. Except where specifically and explicitly authorized by the LUP, all categories of land use and development, both public and private, shall be subordinate to the protection of these areas.

ESHA Policies:

8. Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values. Within environmentally sensitive habitat areas, new land uses shall be limited to those that are dependent on the resources therein. Land uses and development adjacent to environmentally

sensitive habitat areas shall be compatible with long-term maintenance of the habitat area, and such land use and development shall be sited and designed to prevent impacts that would significantly degrade the habitat areas.

11. Contiguous areas of land in open space uses shall be maintained wherever possible to protect environmentally sensitive habitat areas and associated wildlife values. To this end, development of parcels immediately adjacent to environmentally sensitive habitat areas shall be planned to keep development intensity immediately adjacent to the sensitive habitats as low as possible, consistent with other planning criteria (e.g., drainage design, roadway design, and public safety).

12. Where development of any type, including subdivision of land for development purposes, is proposed in or near documented or expected locations of environmentally sensitive habitat areas, biological reports, including field surveys and impact analysis, by qualified individuals shall be required to precisely determine such habitat area locations and to recommend siting, design, and related mitigating measures to ensure protection of any sensitive species or habitat areas present.

13. Environmentally sensitive habitat areas shall be protected through deed restrictions or permanent open space conservation and scenic easements granted to the Del Monte Forest Foundation. Where developments are proposed within or near areas containing environmentally sensitive habitat, such restrictions or easements shall be established through the development review process. Where development has already occurred within or near areas containing environmentally sensitive habitat, property owners are encouraged to voluntarily grant conservation and scenic easements to the Del Monte Forest Foundation. Except in the case of voluntary easements, each instrument for effecting such restriction or easement shall be subject to approval by the County and the Coastal Commission as to form and content; shall provide for enforcement, if need be, by the County or other appropriate enforcement agency; and shall name the County as beneficiary in the event the Foundation ceases or is unable to adequately manage these easements for the intended purpose of natural habitat preservation. Permanent open space conservation and scenic easements shall be dedicated to the Del Monte Forest Foundation for all areas of the Forest designated Open Space Forest and Open Space Shoreline.

14. Near environmentally sensitive habitat areas, native vegetation removal and land disturbance (grading, excavation, paving, etc.) shall be restricted to the minimum amount necessary to accommodate reasonable development. Development shall be sited and designed to prevent impacts that would significantly degrade those nearby areas, and shall be compatible with the continuance of those habitat areas.

15. The use of non-invasive Del Monte Forest-appropriate native plant species shall be required in landscape materials used in projects and invasive plant species shall be prohibited, especially in developments adjoining environmentally sensitive habitat areas. Non-native and/or invasive plant species should be removed, and such removal is encouraged.

Policies Specific to Dunes ESHA —

17. The remnant native sand dune habitat along the shore in the Spanish Bay planning area, on Signal Hill near the former Spyglass Quarry, and adjacent to 17-Mile Drive in the Spyglass Cypress planning area, shall be preserved through open space conservation and scenic easements conveyed to the Del Monte Forest Foundation, as provided by Policy 13 above, as part of the approval of any development in adjacent areas.

18. Uses of remnant native sand dune habitat shall be limited to low-intensity scientific, educational, and/or recreational activities dependent on the resource. Particular attention shall be given to protection of rare and endangered plants from trampling. Such uses must be consistent with restoration and enhancement of the habitat.

19. To prevent further degradation and to allow for restoration of degraded dune and bluff habitats, parking along 17-Mile Drive shall be restricted to designated turnouts through the use of barriers (structural and vegetational) and enforcement signs that are sited and designed to avoid impacting scenic views. — Not applicable to the Virnig property, and not further discussed in this document.

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Compliance with ESHA Policies:

P.8 — No new development or construction is proposed within (or adjacent to) existing ESHA. As described in the conservation plan (Appendix A), new activity on grounds adjoining ESHA will be limited to (1) restoration of the existing dune area by revegetating a single portion now covered with Iceplant, and (2) revegetation of an old fill-slope between the dunes and existing driveway, that with native plants, exclusively. No elements of the project will displace or otherwise diminish existing on-property or neighboring dune formations or dune cover.

P.11 — The project involves no development on adjoining parcels, nor will it affect contiguous open space areas, whether ESHA.

P.12 — The present biological report confirms full compliance with terms of this policy.

P.13 — The present report recommends and describes general provisions of a conservation easement over the entire ESHA portion of the Virnig property, to be offered to Del Monte Forest Conservancy. Figure A-1 (Appendix A) specifies the recommended boundaries for the DMFC easement.

P. 14 — As referenced above (P.8), all project development has been be sited and designed to prevent affecting nearby ESHA dunes. Specifically, the fill-slope is programmed to serve as a setback or buffer between project improvements and ESHA; therefore the fill-slope will be revegetated with natives and protected from continuing degradation, which is a problem at present. In effect, all uses within the dunes and intervening fill-slope will be compatible with the objective of improving habitat values, therein.

In sum, project construction (residence and hardscape) will be strictly limited to the existing residential and hardscape footprint and extended uses onto the ruderal fill-slope and dunes area will be limited to native planting and dunes restoration, respectively. The outline configuration of either open area, that of the dunes and fill-slope, will not be modified.

P.15 — Landscaping on ground adjoining the sand dunes will utilize species that are native to coastal Pebble Beach and adjoining Del Monte Forest; nonnatives, whether invasive, will not be used to landscape and revegetate the fill-slope above the dunes. The existing extensive stands of invasive nonnative plants on the fill-slope will be removed as part of the site revegetation.

In addition to replanting the fill-slope with natives and restoring the iceplant-covered dune area, landscaping of the residential planting beds — those on the uphill side of the driveway and completely separated from the dunes area — will (a) focus on local natives, and (b) exclude invasive nonnatives. Proscribed plants for the container beds include, at minimum, all taxa presented by the *California Invasive Plant Inventory Database* of the nonprofit California Invasive Plant Council (*http://cal-ipc.org/paf/*).

P.17 — The remnant native sand dune habitat on the Virnig property, including the area to be restored, will be preserved through an conservation easement conveyed to the Del Monte Forest Foundation as provided by Policy 13 above and as part of the approval for the proposed development in adjacent areas. Additionally, a substantial portion of the non-ESHA fill-slope, which is to be revegetated with native plant material to then serve as a buffer for the ESHA dune habitat, will be offered to DMFC as part of the conditioned easement.

P.18 — All uses of the remnant native sand dune habitat on the Virnig property shall be be consistent with restoration and enhancement of the habitat.

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Review of ESHA-Dunes Management in Context of Residential Properties Surrounding the Subject Property

There are several residential properties in the Fanshell residential enclave that are either undergoing substantial renovation or reconstruction and that consequently are affecting onsite and/or adjacent ESHA-dune habitat (See Figure 5). While the resource values of each segment of the neighborhood ESHA-dunes are ostensibly constant, the permit conditions addressing each property separately or in the aggregate, and the rationale for dunes protection or restoration, appear to be inconstant or at least unevenly applied vis à vis respective permitting processes. Furthermore, as owned by Pebble Beach Co., the largest and most ecologically integral portion of the entire remnant dune formation — that facing the Virnig property (N side of the Dunes Road) and adjoining DMFC's Casita de Lemos to the west is not presently protected by an easement or comparable long-term assurance.

Three of the active properties (Straine, Smith/Wang, and Dobbins) were reviewed in the course of determining the appropriate approach to ESHA management on the Virnig property, including drafting the boundaries for the recommended ESHA - conservation easement that is to be dedicated to DMFC. Without a working denominator among the active sites, the approach with the Virnig property has been to squarely meet the expectations of the DMFLUP regarding ESHA protection, and then some.

Straine (APN 008-120-005) — This is a total demolition and new construction project for which the onsite dune formation was thoroughly deconstructed, removed and reportedly will be reconstructed from scratch using stock-piled sand, pursuant to a restoration plan supervised by Mike Zander (Zander Associates). Whether the end-product is intended to or otherwise will qualify as ESHA has yet to be determined. The areal coverage and boundaries of the eventual easement, whether as valid ESHA, are not known.

Smith/Wang (APN 008-120-007) — Recent renovation and remodeling work on this property, which consists of intact dune cover, apparently did not exceed the pre-project footprint. Hence, neither a dune conservation plan or conservation easement dedication over at least the ESHA portion of the site was not required and is not a factor.

Dobbins (APN 008-261-002) — The recent near-complete demolition and remodel of this property, which consists of a substantial renovated dune formation and at least partial easement overlay, like Smith/Wang (above) did not exceed the existing pre-project footprint as was thus exempt from additional ESHA concessions, whether as enhanced habitat plan or easement.

In review, the Virnig project, which will neither exceed the historical and existing development footprint nor encroach onto existing dunes habitat, will incorporate a conservation plan and dedicated easement over the full extent of onsite dunes, existing and restored. Furthermore, if DMFC would accept the easement with the additional coverage over the non-dune fill-slope adjoining the dune, that will be provided by the applicant, as well. Whether such an easement — one that is more than qualifying dune ESHA — is with precedent in the Fanshell enclave neighborhood is not determined but would nevertheless benefit the long-term integrity of the local dune and non-dune landscape.

SUMMARY AND EVALUATION - Biotic Resources

The subject site was professionally surveyed in 2016 and again with expanded emphasis in 2017 to determine the present and potentially present flora and fauna. The added

findings distinguish species found present in both the specific project area (existing and proposed expanded use footprint) and adjacent habitat area outside of the footprint (essentially the native and ruderal dune area).

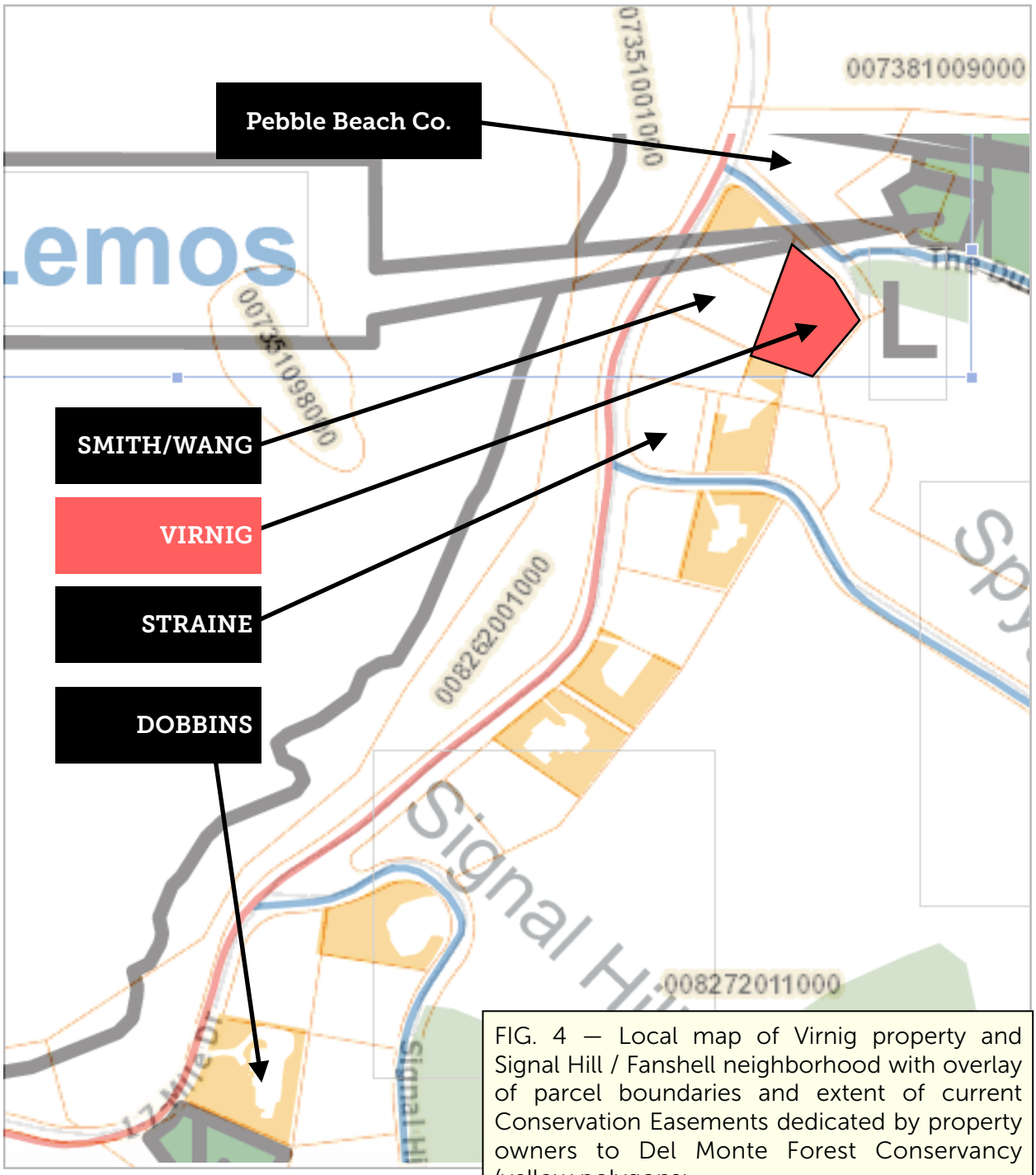

FIG. 4 — Local map of Virnig property and Signal Hill / Fanshell neighborhood with overlay of parcel boundaries and extent of current Conservation Easements dedicated by property owners to Del Monte Forest Conservancy (yellow polygons;

With the exception of the Monterey Pine, no listed or special plant or animal species was located or is expected inside the project area, which is presently developed as the residence and appurtenant hardscape and planted landscape. That said, the special-status of the pines cannot be validated and it is more likely they were planted following grading and construction of the existing house and driveway, circa 1970. Monterey Pine Forest is not present on property.

Several of the confirmed bird species may nest on the site in-season, and as such would qualify for protection (while actively nesting) by virtue of the federal Migratory Bird Treaty Act of 1918 (MBTA) and California Fish and Game Code (sec. 3503 and 3505.5). In sum, virtually all nesting native birds (and their nests, eggs, and nestlings) are protected from all forms and sources of destruction and disturbance (see mitigation measures, below).

RECOMMENDATIONS

1. Conservation Easement — The County and Del Monte Forest Conservancy will be offered a scenic or conservation easement over the entire sand dune area on the Virnig property which totals approximately 13,168 ft^2. In parts, the existing native dunes area measures 8,788 ft^2 and the dunes area that would be restored measures 4,380 ft^2. Whether as mitigation (the project neither adjoins nor otherwise would directly affect the dune - ESHA resource), the easement will contribute to the spatial continuity of dune protection across the span of the Fanshell enclave that involve fee and/or easement dedications of private parcels to the Conservancy. See Figure A-1 (Appendix A, below).

   In addition to the two dune areas (native and ruderal), the easement also would include the ruderal fill-slope that will be revegetated in connection with this project. That area amounts to 13,178 ft^2 and would bring the total area of the recommended conservation and scenic easement to 26,346 ft^2, which is equivalent to 48 percent of the entire Virnig property.

2. Dune Renovation — Again, whether as mitigation, the proposed project present an excellent opportunity for the property owner/applicant to renovate and

enhance the on-property former dune cover that can be integrated with the on-property and neighboring dune environment. The specific boundaries and a prescription for renovating the existing iceplant-cover site is incorporated with Appendix A (see Figure A-1). The location of the proposed 4,380-ft^2 renovation area, which is encompassed by the proposed easement, is indicated by Figure A-1 (Appendix A).

Note: With respect to items 1 and 2, above, the following attachment is taken from the Zoning Administrator's Findings for a neighboring development project (Straine, PLN130187 / 2014-2015); the item is useful to underscore consistency of the Virnig project with what the County recently and locally has affirmed to be worthwhile restoration and conservation elements. In sum, all applicable or comparable parts of the Straine condition are met by the Virnig project.

RMA-Planning **PDSP002: RESTORATION PLAN**

The Restoration Plan, submitted as part of the project biological assessment ("Biological Resource Assessment" (LIB140091) by Zander Associates, San Rafael, CA, dated February 20, 2014), shall be implemented. As part of the implementation, the Owner/Applicant shall hire a qualified coastal biologist to monitor all restoration activities, including three-years of monitoring after restoration work is complete, and ensure the restoration plan is completely implemented. To ensure protection of the restoration in perpituity, a Conservation and Scenic Easement shall be conveyed to the Del Monte Forest Foundation over the defined restoration area. The easement shall be developed in consultation with a certified professional and the Del Monte Forest Foundation. These instruments shall be subject to approval by the County as to form and content, shall provide for enforcement, if need be, by the County or other appropriate agency, and name the County as beneficiary in event the Foundation is unable to adequately manage these easements for the intended purpose of scenic and visual resource protection. An easement deed shall be submitted to the Director of the RMA - Planning Department for review and approval. (RMA - Planning)

a) Prior to issuance of grading and building permits, the Owner/Applicant shall submit evidence that a qualifed coastal biologist has been contracted to moniotor all restoration activities.

b) Prior to issuance of grading and building permits, the Owner/Applicant shall submit the conservation and scenic easement deed and corresponding map, showing the exact location of the easement on the property along with the metes and bound description developed in consultation with a certified professional, to the Del Monte Forest Foundation for review and approval. After the deed is approved by the Del Monte Forest Foundation, the deed shall be submitted to the RMA- Planning Department for review and approval. Once approved, the deed and map showing the approved conservation and scenic easement shall be recorded. Submit a copy of the recorded deed and map to the RMA – Planning Department.

c) After three years of restoration monitoring, the qualified coastal arborist shall submit a monitoring report documenting that the resotartion has been complete successfully, or if addional monitoring is required.

Note: The ZA findings for Dobbins, which amounted to a substantial remodeling of an existing residence, did not call for a restoration plan and none was conditioned.

3. Native Plant Landscape — The project provides an opportunity to reduce noxious and invasive plants and replace the removal cover with an all native palette of woody and herbaceous species. In particular, the revision palette for the fill-slope can be made to jibe with materials slated for the dune renovation work, discussed above. Following is a list of *locally native* plant species that are appropriate to plant across the fill-slope. That area, which measures 13,178 ft^2, also is indicated by Figure A-1 and would be covered by the recommended conservation easement.

- **Foundation native palette recommended for the non-dune fill-slope that is immediately W of the existing driveway and E of the existing dune cover.**

BINOMIAL	ENGLISH NAME
Shrubs —	
Frangula californica	California Coffeeberry
Morella californica	Pacific Wax-Myrtle
Heteromeles arbutifolia	Toyon
Gaultheria shallon	Salal
Mimulus aurantiacus	Sticky Monkeyflower
Perennial Herbs & Grasses —	
Erigeron glaucus	Seaside Daisy
Agrostis pallens	Seaside Bentgrass
Leymus mollis	American Dunegrass
Achillea millefolium	Yarrow
Fragaria chiloensis	Beach Strawberry

4. Dooryard and Planter Beds — In addition to replanting the non-dune/non-ESHA fill-slope with an exclusively native palette, this report also recommends that future replacement planting of the dooryard beds around the house focus on a palette of natives and/or noninvasive horticultural species, exclusively. For starters, the listed plants from the preceding Native Plant Landscape Palette would be appropriate. Appendix A includes a fuller list of appropriate species for this purpose. Also, as was reviewed with ESHA Policy 15, above, any species presented in the *California Invasive Plant Inventory Database* would be inappropriate for adding to the dooryard and planting bed environment, or to anywhere else on the property.

5. Nesting Birdlife — While the likelihood of a conflict between project construction and bird nesting is minimal in the mostly built setting, the risk has to be assessed and managed for the project to remain lawful. The standard for avoidance is the same as for any and all construction projects in, e.g., Monterey County: If the project would start between mid-February through August (the average bird nesting season in Pebble Beach), ground clearing and vegetation removal as well as structural demolition (overhanging eaves) should be preceded with a qualified nesting bird survey conducted by an expert wildlife biologist or ornithologist, and that survey should be carried out no more than 21 days before the start-up work. Then, if nesting is confirmed, the biologist should present the owner's contractor a plan to avoid affecting the nesting birds. For example, to delay the start up work and/or identify avoidance zones or setbacks to distance the risky work from the nest resources.

6. Project BMP — A Best Management Practice for the residence remodeling project will ensure separation of the fill-slope and dunes (combined conservation areas) from of all work elements including, e.g., those associated with materials storage, equipment operation and parking, and construction. The BMP to enforce the separation should include a strong-line of construction fencing (safety-barrier fencing; orange @ minimum 48-inches) that is staked (@ minimum 60 inches) along the outboard (W) edge of the existing asphalt driveway curb. The following insert illustrates appropriate application of correct fence material.

CONCLUSION

Biotic Resources

Based on the project description provided for review in March 2017, and by implementing the six (6) preceding recommendations, the project will not adversely affect special-status habitat or protected plant and animal resources, nor will it violate state and federal wildlife protection regulations or statutes.

Coastal ESHA / Dunes

At nearly 13,168 ft^2 (0.30 ac), the total area of extant sand dunes, natural and ruderal, which constitute ESHA, will be protected from the development activities. All planned residential and hardscape remodeling are within the historic and existing development footprint of the property, clear of ESHA sand dunes. Furthermore, the proposed restoration of a specified area of the onsite dune formation that is covered with Iceplant will improve the ecological integrity of the entire property and neighborhood. So too will the proposed revegetation of a contiguous non-dune / non-ESHA slope with exclusively local native plant species.

In sum, the proposed project will neither diminish nor otherwise adversely affect existing onsite and neighboring ESHA. Instead, by implementing the dune restoration (ESHA), slope revegetation (non-ESHA buffer), and dedication of a conservation easement over the whole of the undeveloped site (ESHA and non-ESHA buffer), the effect on protected coastal resources will be beneficial, without necessity of compensatory measures.

Opinion — As proposed and here described, the Virnig project is qualified to be Exempt per CEQA: The project — a limited remodel and addition — adheres to the historic and current developed footprint and in so doing it neither encroaches upon nor otherwise will adversely affect ESHA or other special status biological resources. — JBF

APPENDIX A: Dune Habitat and Slope Renovation Plan

Objective:

This habitat renovation plan will return native components to a formerly demolished and now ruderal dune landscape adjacent to a proposed residential remodeling project in Pebble Beach. Because the project, including all landscape elements, will not affect existing sand dune habitat, the proposed dune renovation would represent a *value-added versus compensatory* outcome of the project. Offsite sand dune habitat that is located on the same property will be enlarged and enhanced by the work described below, and it will be ensured in perpetuity by a proposed conservation and scenic easement benefiting Del Monte Forest Conservancy and the County of Monterey.

Target Areas:

- Location — See Figure A-1 (Restoration Area and Easement Boundaries)

- Two Work Areas — Revegetation and restoration will target two parts of the Virnig property: (1) ESHA dune that is covered with a near monotypic stand of Iceplant, and (2) a non-ESHA fill-slope the is extensively covered with a locally familiar ruderal mixture of planted native and nonnative vegetation.

- Areal Coverage — The two work areas amount to 17,558 ft^2, or 32 percent of the entire property.

- Objective for Dunes Renovation — The dunes renovation area is contiguous with an existing stand of largely natural sand dune on the *Spy and Sea* property as well as a larger complex on the opposite side of The Dunes Road that is owned by Pebble Beach Company. Combined with the intact on-property dunes, the selected work site connects to a string of natural and ruderal dunes that stretch southward through the Fanshell Beach residential enclave to Fanshell Creek on Cypress Point GC. All of this dune renovation area is included in the recommended conservation easement.

- Objective for Slope Revegetation — The fill-slope will continue to serve as a physical buffer between the ESHA dunes and the residence including its driveway that is immediately uphill of the ESHA dunes. The value of the buffer to the dunes habitat will be enhanced by replanting the fill-slope with exclusively native species, subject to species selection and installation measures outlined in the biological report (Recommendations) and reiterated later in this plan. Even after its renovation with an all native palette, the fill-slope, which is not a dune environment, will not qualify as ESHA; as stated, it will serve as a valuable buffer or setback favoring the dunes.

- Existing Cover of Fill-slope — Originally a formal planted landscape replete with overhead irrigation and the services of a full-time gardener, existing vegetation across the fill-slope consists of a ruderal stand of, e.g., Pride-of-Madeira, Myoporum, Leptospermum, and Iceplant, also scattered Coyotebrush and California Lilac. Also there is leftover stumpage of several Monterey Pines that likely were planted soon after the original homesite was developed fifty-plus years ago. The ground-base is intact and contains a variety of naturally occurring rocky ledges and small boulders that comprise a bulwark for the constructed slope.

Project Management — Dune Restoration

- Site Preparation — The existing stand of Iceplant will be removed using standard restoration procedures that are proven successful locally: Step 1 involves an Hx-kill with glyphosate; Step 2 will allow post-treatment desiccation; Step 3 follows by

raking out planting pockets to bare sand/soil cover amidst the desiccated plant material. Hx application and labor would be contracted to a locally experienced and licensed firm; likely and best, *Thompson Wildland Management* of Monterey CA.[3] Existing soils are dune sand and should not be modified or amended to serve restoration needs.

- Species Selection — The following species are selected for effective renovation of the local sand dunes habitat, in particular for jibing with existing cover in the protected stand. Below, the prescribed schedule for propagules (count) and/or seed (lbs) is shown per 1,000 ft^2 (full count = rate *x* 4.38).

Species and rate (restored dune cover):

- *Poa douglasii*	Maritime Bluegrass	— 5 lbs
- *Artemisia pycnocephala*	Beach Sagewort	— 50 ct
- *Ericameria ericoides*	Mock Heather	— 50 ct
- *Eriophyllum staechadifolium*	Lizardtail	— 50 ct
- *Elymus mollis*	American Dune Grass	— 5 lbs
- *Calystegia soldanella*	Beach Morning Glory	— 5 lbs

- Planting / Seeding Timetable — Optimally, seeding and planting will occur during Nov-Feb and no fewer than 45 days following completion of the iceplant kill.

- Start-up Irrigation — Seeds and propagules will require start-up watering @ daily for 2-3 weeks, then occasionally per need for 2-3 months. Once roots are established, irrigation will not be useful.

- Supervision and Monitoring — A qualified coastal ecologist will be tasked to supervise all stages of the renovation work from site preparation through installation and irrigation, then to visit and inspect the site for welfare and remediation needs per the following minimum schedule: once per month for first 3 months > once per

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[3] **Thompson Wildland Management**, Attn: Rob Thompson, 423 Larkin Street, Monterey, CA 93940 (831) 277-1419; (831) 372-3796; thompsonwrm@gmail.com

quarter for the next three quarters > twice per annum for the next two years, totaling three (3) years of monitoring and assessment.

- Maintenance — Findings from the prescribed 10 monitoring visits will inform maintenance of the restoration cover. e.g., ongoing removal or invasive nonnative plants, spot irrigation, replacement of failed plants, and other adjustments that are needed to achieve success.

- Success Determination — Based on quantitative and qualitative results collected over a sufficiently organized ground matrix, the restoration project will be considered successful at 3 years when the following targets have been achieved: (1) the area is 95 percent free of Iceplant (and other invasive nonnative plants), and (2), it is covered with woody and herbaceous native dune plants (planted, seeded and naturally recruited) at a density ratio of 15 percent *versus* open sand @ 85 percent.

- Reporting — The supervising ecologist will provide an annual monitoring report to the County RMA for a minimum total of three (3) years, followed by a detailed report with analysis after completion of the third year. The reported information will be incorporated into a single final report that includes all findings from the revegetation of Area 2 (fill-slope).

<u>Project Management - Slope Renovation</u>

- Site Preparation — The existing stand of nonnative woody and herbaceous vegetation would be removed by a combination of Hx-kill (glyphosate) and cutting. Stumpage of larger shrubs and small trees may be removed. Hx application and labor would be contracted to a locally experienced and licensed firm; likely and best, Thompson Wildland Management of Monterey CA.[4]

- Species Selection — The following locally native species have been selected for effective renovation of the fill-slope, in particular to avoid conflict (cross-recruitment) with existing cover in the protected dune area and Area 1; in particular, invasive natives such as Coyotebush will not be planted. Below, the prescribed

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4 **Thompson Wildland Management**, Attn: Rob Thompson, 423 Larkin Street, Monterey, CA 93940 (831) 277-1419; (831) 372-3796; thompsonwrm@gmail.com

schedule for is for an approximate propagule rate @ 1,000 ft^2 (full schedule = following rate *x* 13.18). Propagules will range from starters (e.g., tubed plugs) to potted (@ 1-gallon).

Selected taxa and application rates (revegetated slope):

— *Acmispon glaber*	Deerweed	2
— *Frangula californica*	CA Coffeeberry	2
— *Morella californica*	Pacific Wax-Myrtle	2
— *Heteromeles arbutifolia*	Toyon	2
— *Mimulus aurantiacus*	Sticky Monkeyflower	4
— *Iris douglasiana*	Douglas Iris	4
— *Erigeron glaucus*	Seaside Daisy	2
— *Agrostis pallens*	Seaside Bentgrass	4
— *Achillea millefolium*	Yarrow	4 = 26 per 1,000 ft^2

- Planting / Seeding Timetable — Planting should occur during Nov-Feb, no fewer than 45 days after the herbicide-kill.

- Start-up Irrigation — Propagules will require start-up watering @ daily for 5-6 weeks, then per need for at least 12 months.

- A qualified coastal ecologist will be tasked to supervise all stages of the renovation work from site preparation through installation and irrigation, then to visit and inspect the site for welfare and remediation needs per the following minimum schedule: once per month for first 3 months > once per quarter for the next three quarters > twice per annum for the next two years, totaling three (3) years of monitoring and assessment.

- Maintenance — Findings from the prescribed 10 monitoring visits will inform maintenance of the revegetated slope cover. e.g., ongoing removal or invasive nonnative plants, spot irrigation, replacement of failed plants, and other adjustments that are needed to achieve success.

- Success Determination — Based on quantitative and qualitative results collected over a sufficiently organized ground matrix, the revegetation project will be considered

successful at 3 years when the following targets have been achieved: (1) the area is 95 percent free of invasive nonnative plants, and (2), it is covered with woody and herbaceous native plants (planted, seeded and naturally recruited) at a density ratio of 20 percent *versus* open ground @ 80 percent.

- Reporting — The supervising ecologist will provide an annual monitoring report to the County RMA for a minimum total of three (3) years, followed by a detailed report with analysis after completion of the third year. The reported information will be incorporated into a single final report that includes all findings from the dune restoration project.

Long-Term Assurance: Dedicated Conservation Easement

The property owner/applicant will offer to DMFC (primary designee) and County (secondary designee) a conservation and scenic easement covering the entirety of the combined ESHA dune area and non-ESHA fill-slope as indicated by Figure A-1. All totaled, the easement would cover 0.60 acres, which is the equivalent of 48 percent of the total property. A professional survey of the dedicated area and draft easement terms will be submitted to County RMA Planning and Del Monte Forest Conservancy for their respective reviews and approvals; the formal offer would be submitted in accordance with appropriate project approvals and permitting.

Description of Figure A.1 (attached): Restoration Area and Easement Boundaries:

The location and configuration of the proposed dune area protection area (A = 8,788 ft^2), proposed dune restoration area (B = 4,380 ft^2), and proposed revegetated fill-slope (C = 13,178 ft^2); total conservation area = 26,346 ft^2 (0.60 ac) = 48 pct of the property; the development footprint (residence, all appurtenances, and driveway) = 52 pct of the total 1.26-ac property.

Combined, the 0.60 ac that comprise the three habitat areas (A+B+C) constitute the entire proposed conservation easement that will be offered to Del Monte Forest Conservancy and County of Monterey. Above, the easement boundary is indicated as a solid black border.

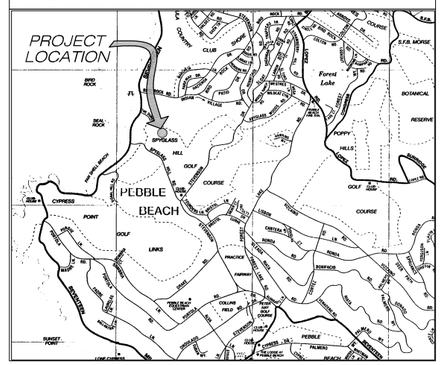
NOTE:
REFER TO BIOTIC REPORT & CONSERVATION PLAN, PREPARED BY JEFFREY B. FROKE, Ph.D., DATED NOVEMBER 9, 2017 FOR COMPLETE INFORMATION ON RESTORATION AREA & EASEMENT BOUNDARIES.

LOT SIZE: —— 1.26 ACRES / 54,885 SQ. FT.

LEGEND:

A = EXISTING NATIVE SAND DUNE TO BE RETAINED	8,788 SQ. FT.
B = FORMER SAND DUNE RUDERAL ICEPLANT COVER TO BE RESTORED	4,380 SQ. FT.
C = EXISTING PLANTED / RUDERAL FILL SLOPE TO BE REVEGETATED WITH A NATIVE PLANTS	13,178 SQ. FT.
EXISTING / RETAINED PRIVACY HEDGE & DOG RUN	2,108 SQ. FT.
EXISTING RESIDENCE & APPURTENANT AREA INCLUDING WALKWAYS, PATIO AND STRUCTURAL PLANTING BEDS.	18,103 SQ. FT.
EXISTING / RETAINED CURBED DRIVEWAY & PARKING AREA	7,243 SQ. FT.
DRIVEWAY EASEMENT	1,085 SQ. FT.
TOTAL:	54,885 SQ. FT.

VICINITY MAP



RESTORATION AREA & EASEMENT BOUNDARIES

SCALE: 1/16"= 1'-0"

REVISION | No.

CONSULTANT:

ARCHITECT
ERIC MILLER ARCHITECTS, INC.
211 HOFFMAN AVENUE MONTEREY, CA 93940
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RESTORATION AREA & EASEMENT BOUNDARIES

JOB NAME: Virnig Residence
1154 Silver Trail
Pebble Beach, CA.
A.P.N. 008-012-013-000

DATE: 11/9/17
SCALE: 1/16"=1'-0"
DRAWN: CAD
JOB NUMBER: 14.17

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SHEET OF

LIB160254

LANDSET ENGINEERS, INC.

520-B Crazy Horse Canyon Rd.
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SOIL ENGINEERING INVESTIGATION
FOR
VIRNIG RESIDENCE ADDITIONS
(APN 008-012-013)
1154 SILVER TRAIL
MONTEREY COUNTY, CALIFORNIA

PROJECT 1574-02

Prepared for

VIRNIG SHARENE HAMROCK TRUST
C/O ERIC MILLER ARCHITECTS
211 HOFFMAN AVENUE
MONTEREY, CA 93940

Prepared by

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JULY 2016

LANDSET ENGINEERS, INC.

July 7, 2016 File No.: 1574-02

Virnig Sharene Hamrock Trust
Virnig Kenneth John II
c/o Eric Miller Architects, Inc.
211 Hoffman Avenue
Monterey, California 93940

Attention: Mr. Luyen Vu

SUBJECT: SOIL ENGINEERING INVESTIGATION
Virnig Residence Additions (APN 008-012-013)
1154 Silver Trail
Pebble Beach Area of Monterey County, California

Dear Mr. Virnig

In accordance with your authorization, Landset Engineers, Inc. has completed a soil-engineering investigation for the proposed additions to your residence located off of Silver Trail in the Pebble Beach area of Monterey County, California. This report presents the results of our field investigation, laboratory testing, along with our preliminary conclusions and recommendations for site development.

It is our opinion that the proposed additions are feasible from a soil engineering standpoint provided that the preliminary recommendations included in this report are incorporated into the project plans, specifications, and implemented during construction. The conclusions and recommendations included herein are based upon applicable standards at the time this report was prepared.

It has been a pleasure to be of service to you on this project. If you have any questions regarding the attached report, please contact the undersigned at (831) 443-6970.

Respectfully submitted,
LandSet Engineers, Inc.

PROFESSIONAL GEOLOGIST
BRIAN E. PAPURELLO
Exp.
No. CEG 2226
CERTIFIED ENGINEERING GEOLOGIST
02/28/18
STATE OF CALIFORNIA

7/7/16

REGISTERED PROFESSIONAL ENGINEER
GUY R. GIRAUDO
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Brian Papurello
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Distribution: Addressee (3 mail & 1 e-mail: luyen@ericmillerarchitects.com)
Virnig Sharene Hamrock Trust (1 mail)

Doc. No.: 1607-104.SER

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July 7, 2016 File No.: 1574-02

INTRODUCTION

This report summarizes the findings, conclusions and recommendations for our soil engineering investigation for the proposed additions to a single family residence located off of Silver Trail in the Pebble Beach area of Monterey County, California (see Vicinity Map, Figure 1).

PURPOSE AND SCOPE OF SERVICES

This soil engineering investigation has been prepared to explore surface and subsurface soil and groundwater conditions at the site, and provide preliminary soil-engineering criteria for design and construction of the project.

The conclusions and recommendations of this report are intended to comply with Chapter 18 of the California Building Code (CBC) 2013 edition as modified by standard soil engineering practice in this area. Our scope of services included:

1. A visual site reconnaissance.
2. Exploration, sampling and classification of the surface and subsurface soils by means of drilling four exploratory borings to depths ranging from 16.5 to 28.75 feet below the ground surface.
3. Laboratory testing of selected soil samples collected from the exploratory borings and to determine their pertinent engineering and index properties.
4. Engineering analysis of the information collected based on the results of the field exploration; laboratory testing program and review of published and unpublished studies in the general area of the site.
5. Preparation of this report summarizing our findings and soil engineering conclusions and recommendations for site preparations, grading and compaction, foundations, utility trenches, slabs-on-grade, retaining walls, general site drainage, and erosion control.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The site (APN 008-012-013) is located at 1157 Silver Trail (AKA The Dunes Road) in the Pebble Beach area of Monterey County, California (Figure 1). The overall property consists of a quasi-rectangular shaped parcel of approximately 1.26-acres. The site is situated on a moderate to steep (15% to 35%) west facing slope. An existing split-level single family residence is located on a graded cut/fill building pad in the southerly portion of the site (Figure 2).

Proposed site development will consist of the construction of approximately 2,609-ft^2 of upper and lower floor additions to an existing split-level residence. Other proposed improvements will consist of 2,337-ft^2 of exterior patios & decks, new vehicle drives and site walls along with associated landscaping and site drainage improvements.

FIELD EXPLORATION

A total of four exploratory borings were drilled on June 21, 2016 at the approximate locations shown on the Boring Location Map, Figure 2. The borings were drilled using a man-portable limited access drill rig equipped with a 4-inch outside diameter solid stem auger. The exploratory borings were drilled to depths ranging from 16.5 to 28.75 feet below the ground surface.

Soils encountered in each exploratory boring were visually classified in the field and a continuous log was recorded. Visual classifications were made in general accordance with the Unified Soil Classification System and ASTM D2487. Logs of the borings can be found in Appendix A (Figures A4 through A7). Appendix A also contains a Key to the Unified Soil Classification System, Key to Log of Borings and Soil Terminology (Figures A1 through A3).

Soil samples were obtained by drilling to the desired depth and then driving a 3-inch OD Modified California Sampler or a 2-inch OD Standard Penetration Test sampler. The samplers were driven into the ground using force generated by a 140-pound hammer dropping freely through a distance of 30-inches. The number of blows required to drive the last 12-inches of an 18-inch sampler were recorded as penetration resistance (blows/foot) on the exploratory boring

logs. The penetration resistance values were used to describe the consistency/density of the subsurface materials.

LABORATORY TESTING

Laboratory tests were performed to determine some of the physical and engineering characteristics on selected soil samples of the various soil materials encountered in the exploratory borings considered pertinent to the design of the project. The tests performed were selected on the basis of the probable design requirements as correlated to the site subsurface profile. A summary of the laboratory test results is presented in Appendix B. A brief generalized description of the tests performed is presented below.

- Moisture Content Determinations: This test was conducted on bulk samples to measure their in-situ moisture contents.
- Grain Size Distribution (Gradation) Analysis: A grain size distribution analysis was performed on a selected soil samples. The grain size distribution is used to determine the classification of the site soils. This information is used for foundation design analysis.

SUBSURFACE CONDITIONS

Subsurface constituents were similar to the depths explored in each of the exploratory borings. The upper 2.5 to 10.0 feet consists of man-made fill material. The fill is composed of medium dense and moist, silty SAND and clayey SAND. Underlying the fill material, the borings encountered native earth material composed of late Holocene age dune deposits. These sediments consist of unconsolidated, relatively fine grained homogeneous deposits of medium dense, dry to slightly moist, wind-blown silty SAND and poorly graded SAND. Cretaceous age granitic bedrock was encountered in exploratory boring B-1 at a depth of 25.0 feet, extending to the point of drill rig refusal to the maximum depth explored of 28.75 feet below the ground surface.

GROUNDWATER

Groundwater was not encountered in any exploratory borings drilled on the site. Local groundwater levels can fluctuate over time depending on but not limited to factors such as seasonal rainfall, site elevation, groundwater withdrawal, and construction activities at

neighboring sites. The influence of these time dependent factors could not be assessed at the time of our investigation.

SUMMARIZED CONCLUSIONS

The following preliminary conclusions are drawn from the data acquired and evaluated during this investigation for the proposed project. Soil and groundwater conditions can deviate from the conditions encountered at the boring locations. If significant variations in the subsurface conditions are encountered during construction, it may be necessary for Landset Engineers, Inc. to review the recommendations presented herein, and recommend adjustments as necessary.

Site Suitability: In our opinion, the site is suitable from a soil engineering standpoint for the proposed residential building additions provided that the recommendations contained herein are implemented in the design and construction of the project. The following preliminary conclusions and recommendations are presented as guidelines to be used by project planners and designers for the soil engineering aspects of the project design and construction. These conclusions and recommendations have been prepared and are only valid if Landset Engineers, Inc. is retained to review proposed foundation plans before construction, and to observe, test and advise during remedial earthwork construction.

Soil Expansion: Based on visual observations and laboratory testing the near surface site soils are classified as silty SAND, clayey SAND and poorly graded SAND, and are considered to be non-plastic. No special measures are required to mitigate the effect of soil expansion on foundations, and interior or exterior concrete slabs-on-grade.

Grading: Due to the presence of previously placed undocumented fill in the proposed building areas, ***remedial grading is considered necessary*** to improve the site soils for support of the proposed building additions. Therefore, it is recommended that ***the upper 36-inches of the existing ground surface or the upper 36-inches of soil underlying the bottom of proposed foundation elements (whichever is deeper)*** be removed (subexcavated) down to firm soil and replaced as an engineered and compacted fill prior to foundation construction.

Liquefaction Potential: Liquefaction is the transformation of soil from a solid to a liquid state as a consequence of increased pore-water pressures in response to strong ground shaking generated during an earthquake. Review of published liquefaction susceptibility maps (Dupre', 1990) indicates that the site is located within an area of moderate to low susceptibility for liquefaction. Based on our field investigation it is our opinion that the potential for liquefaction to occur on the site is low.

Surface Fault Rupture: The site is not located within an Earthquake Fault Zone as established in accordance with the Alquist-Priolo Earthquake Fault Zoning Act of 1972. The potential for surface rupture to occur on the site is determined to be very low.

Dynamic Compaction & Compressibility: Dynamic compaction occurs when loose, unsaturated soils densify in response to ground shaking during a seismic event. Because no such materials were encountered on the site, it is our opinion that the potential for dynamic compaction is low. Based on the hard to very dense consistencies of the earth materials encountered during our field exploration it is our opinion that the site soils exhibit low compressibility characteristics.

Erosion: The earth materials underlying that site consist of highly-erodible sandy soil over granitic bedrock. Stringent erosion control measures should be implemented during construction and development is essential to ensure stability.

Landsliding and Slope Stability: Topographically the site slopes steeply to the west. Previous investigators have mapped no evidence of slope instability (Dupre', 1990 and Clark, Dupre' & Rosenberg, 1997). No evidence of past or present slope instability was noted to occur in the field as part of this study. The potential for landsliding to affect the project is very low. Foundations should be setback from slopes in accordance with Chapter 18 of the 2013 CBC.

Seismic Design Parameters: For seismic design using the 2013 CBC, we recommend the following design values be used. The parameters were calculated using the U.S. Geological Survey Design Maps computer program and were based on the approximate center of the site located at 36.5879° N. latitude and –121.9620° W. longitude.

2013 CBC Seismic Design Parameters

Design Parameter	***Site Design Value***
Site Class	**D – Stiff Soil**
Spectral Acceleration Short Period	**(S_s) = 1.651**
Spectral Acceleration 1 Second Period	**(S_1) = 0.625g**
Short Period Site Coefficient	**(F_a) = 1.00**
1 Second Period Site Coefficient	**(F_v) = 1.50**
MCE Spectral Response Acceleration Short Period	**(S_{MS}) = 1.651g**
MCE Spectral Response Acceleration 1-Second Period	**(S_{M1}) = 0.938g**
5% Damped Spectral Response Acceleration Short Period	**(S_{DS}) = 1.101g**
5% Damped Spectral Response Acceleration 1-Second Period	**(S_{D1}) = 0.625g**

RECOMMENDATIONS

Site Preparation and Grading

1. The soil engineer should be notified **at least Five (5) working days prior to any site clearing or grading** so that the work in the field can be coordinated with the grading contractor and arrangements for testing and observation services can be made. The recommendations contained in this report are based on Landset Engineers, Inc. performing the required testing and observation services during grading and construction. It is the owner's responsibility to make the necessary arrangements for these required services.

2. Prior to grading, construction areas should be cleared of obstructions, undocumented fill, buried structures & utilities, and other deleterious materials. Site clearing should be observed by a field representative of Landset Engineers, Inc. Voids created by removal of material as described above should be called to the attention of the soil engineer. No fill should be placed unless a representative of this firm has observed the underlying soil.

3. Following site preparation, ***the upper 3.0 feet of native soil or the upper 3.0 feet below the proposed foundation elements (whichever is deeper) should be removed (overexcavated).*** Deeper overexcavation may be required if loose soils are observed at the time of grading. Building areas are defined as the soils within and extending a minimum of 5 feet beyond the foundation perimeters.

4. The soils exposed by overexcavation should be scarified approximately 12 inches; moisture conditioned to optimum moisture content, and recompacted to 90 percent of maximum dry density prior to the placement of Structural Fill. Where referenced in this report, percent relative compaction and optimum moisture content shall be based on ASTM test D1557.

5. Structural Fill should be placed within the subexcavation in thin (6"-8") lifts, moisture conditioned to a level above optimum moisture content, and compacted to a ***minimum of 95 percent*** of maximum dry density. Prior to compaction, the soil should be cleaned of any rock, debris, and irreducible material larger than 3-inches in diameter.

6. Structural Fill is defined herein as a native or import fill material which, when properly compacted, will support foundations, pavements, and other fills without detrimental settlement or expansion. Structural fill is specified as follows:

Structural Fill

- Clean native soil or import soil with a Plasticity Index of less than 12.
- Be free of debris, vegetation, and other deleterious material.
- Have a maximum particle size of 3-inches in diameter.
- Contain no more than 15% by weight of rocks larger than 21/2-inches in diameter.
- Have sufficient binder to allow footing and unshored excavation without caving.
- Prior to delivery to the site, a representative sample of proposed import should be provided to Landset Engineers, Inc. for laboratory evaluation.

7. Structural fill material should be placed in thin lifts, moisture conditioned to a level above optimum moisture content, and compacted to a ***minimum of 95 percent*** of maximum dry density. Prior to compaction, the soil should be cleaned of any rock, debris, and irreducible material larger than 3-inches in diameter.

8. If structural fill is to be placed on slopes steeper than 5:1 (horizontal to vertical), keyways should be established at the toe of the proposed fill slopes. The keyways should have minimum widths of 12-feet and should be sloped approximately 2% back into the hillsides. The keyways and subsequent upslope benches should penetrate into sufficiently stable material as determined by the soil engineer at the time of grading.

9. If structural fill is to be placed on slopes steeper than 10:1, the slopes should be benched. The benches should have a minimum width of 12-feet and should be sloped approximately 2% back into the hillsides. The soil engineer will determine the depth, scarification, and recompaction of the bench bottoms at the time of grading.

10. The soil engineer should also observe keyways and benches to assess the need for subsurface drains (subdrains). Subdrains in other areas may also be recommended depending on the grading plan and site conditions observed at the time of grading.

11. Fill and cut slopes should be constructed at a ***maximum finished slope inclination of 3:1 (horizontal to vertical)***. Fill slopes should be overfilled and trimmed back to competent material. Further compaction of exposed fill slope faces using sheepsfoot rollers or tracked equipment may be recommended by the soil engineer. Proper drainage and revegetation of graded slopes is essential to ensure stability.

12. In areas to be paved, the upper 12-inches of subgrade soils and all aggregate base should be compacted to a minimum of 95 percent of maximum dry density. Aggregate base and subgrade should be firm and unyielding when proofrolled by heavy rubber-tired equipment prior to paving.

Foundations

13. The building additions may be supported by conventional continuous and spread (pad) footings bearing ***entirely on recompacted fill*** as described in paragraphs 3 through 5. Footings should have minimum depths of 12-inches (trenching depth) below the finished soil building pad for one story structures and 18-inches for two-story structures. Footings should be reinforced as directed by the architect/structural engineer.

14. Footings should be designed using a maximum allowable bearing capacity of 1,850 psf dead plus live loads. This value may be increased by one-third for short-term loads such as wind or seismicity.

15. For calculating resistance to lateral loading, a friction coefficient of 0.35 may be assumed to act between the bottom of the foundations and the supporting soil. Where foundations are poured neat against excavated trenches, the engineered fill may be assumed to provide 300 pounds per cubic foot (ultimate value). Lateral support from soil that may later be excavated or used in landscaping near foundations should be neglected.

16. Post construction total and differential settlements from static loading of foundations is expected to be about ¾-inch and 1-inch respectively. Post construction total and differential settlement of foundations is estimated to be about ½-inch from seismic loading.

17. ***Footing excavations must be observed by a representative of this firm prior to placement of formwork or reinforcement***. Concrete should be placed only in foundation excavations that have been kept moist, and contain no loose or soft soil debris.

18. Footings located adjacent to other footings or utility trenches should have their bearing surfaces founded below an imaginary 1:1 (horizontal to vertical) plane projected upward from the bottom edge of the adjacent footings or utility trenches.

Slabs-on-Grade and Exterior Flatwork

19. Slabs-on-grade and exterior flatwork should have minimum thickness of 4 full inches. Preparation of soil subgrades and compaction of fill should be performed as recommended in the section entitled "Site Preparation and Grading". Concrete slabs-on-grade and exterior flatwork should be reinforced with steel as specified by the architect/structural engineer.

20. To minimize floor dampness, such as where moisture sensitive floorings will be present, a section of capillary break material at least 4-inches thick covered with a membrane vapor barrier should be placed between the floor slab and the compacted soil subgrade. The capillary break should consist of a clean, free draining material such as ½ to ¾-inch drain rock with not more than 10 percent of the material passing a No. 4 sieve. The drain rock should be free of sharp edges that might damage the membrane vapor barrier. The membrane vapor barrier should be a minimum 10 mil in thickness, and care should be taken to properly lap and seal the vapor barrier, particularly around utilities. To protect the vapor barrier from damage during concrete placement, it should be covered with a minimum of 2 inches of clean sand. Clean sand is defined as sand (ASTM D 2488) of which less than 3 percent passes the No. 200 sieve. The sand cushion should be lightly moistened immediately prior to concrete placement.

21. Exterior concrete flatwork should be designed to act independently of building foundations. To reduce shrinkage cracks in concrete slabs and flatwork, contraction joints should be installed. Joint spacing should be at the direction of the architect/structural engineer.

Retaining Walls

22. Retaining walls for the site may be designed using the following general design parameters, which assume fully drained wall backfill conditions. The average bulk density of material placed on the backfill sides of walls will be about 120 pounds per cubic foot (pcf).

23. The vertical plane extending down from the ground surface to the bottom of the heel of the vertical wall will be subject to lateral soil pressures (plus surcharge loads). An Active Soil Pressure of 35 pcf (equivalent fluid weight) should be used in design of site walls that are free to move laterally and resultant settlement of backfill is tolerable. An At-Rest Soil Pressure of 50 pcf should be used in design for walls, which are restricted from movement at the top (such as foundation walls). The above pressures are applicable to a horizontal retained surface behind the wall. Walls having a retained surface that slopes upward from the wall should be designed for an additional equivalent fluid pressure of 1 pcf for the active case and 1.5 pcf for the at rest case, for every two degrees of slope inclination.

24. The additional effects of earthquakes on the walls may be simulated by applying a horizontal line force of $10H^2$ pounds per foot length of wall. This force should be applied at a height of 0.6H above the wall heel. The additional effects of vertical live loads on the backfill side of walls may be simulated by applying 50 percent of the live loads as a horizontal surcharge force on the walls. The point of application of the live load surcharge may be estimated by assuming a 45-degree line of action down from the live load to the design plane or wall stem.

25. Retaining walls should be supported on foundations as described in the foundations section of this report. An increase of 1/3 is allowed when considering additional short-term wind or seismic loading. The ultimate coefficient of friction below the base of the wall = 0.35. Passive soil resistance against the portion of the wall base and key is

300psf/ft. for level ground in front of the wall. Lateral support from the soil that may be excavated or used in landscaping near the wall footing should be neglected. Typically this would include the top 12-inches of soil around the wall.

26. The earth pressures are based on fully drained conditions. We recommend that a zone of drainage material at least 12-inches wide should be placed on the backfill side of the walls. Drainage materials should consist of Class 2 permeable material complying with Section 68 of the Caltrans Standard Specifications, latest edition, or ¾-inch permeable drain rock wrapped in Mirafi 140N or equivalent. Manufactured drains such as Miradrain or Enkadrain are acceptable alternatives to the use of permeable or gravel material, provided that they are installed in accordance with the recommendations of the manufacturer. The drains should extend from the base of the walls to within 12-inches of the top of the wall backfill. The upper 12-inches of wall backfill should consist of compacted structural fill. A perforated pipe should be placed (holes down) about 4-inches above the bottom of the wall or below lowest adjacent grades in front of the wall. The perforations should be no larger than ¼-inch diameter, and the perforated pipe should be connected via a solid collector pipe to an approved point appropriate discharge facility.

27. Wall backfill should be moisture conditioned and compacted to a minimum of 90% of maximum dry density. If heavy compaction equipment will be used for compaction of the wall backfill, the wall design should include a compaction surcharge in addition to the soil pressures given above. Landset Engineers, Inc. should be consulted for proper compaction surcharge pressures. To avoid surcharging the walls, backfill within 3-feet of the wall should be compacted by hand operated equipment.

Utility Trenches

28. On-site soils should be properly shored and braced during construction to prevent sloughing and caving of trench sidewalls. The contractor should comply with the Cal/OSHA and local safety requirements and codes dealing with excavations and trenches.

29. A select non-corrosive, granular, material should be used as bedding and shading immediately around underground utility pipes and conduits. Native soils may be used for trench backfill above the select material.

30. Trench backfill in landscaped or unimproved areas should be compacted to a minimum of 85 percent of maximum dry density. Trench backfill beneath asphalt and concrete pavements should be compacted to a minimum of 95 percent of maximum dry density. Trench backfill in other areas should be compacted to a minimum of 90 percent of maximum dry density.

31. The bottoms of utility trenches that are parallel to foundations should not extend below an imaginary plane sloping downward at a 1:1 (horizontal to vertical) angle from the bottom outside edges of foundations.

Site Drainage

32. The site soils are subject to severe erosion and an engineered drainage & erosion control plan is essential to the project. Fluctuations of moisture contents are a major consideration, both before and after construction. A comprehensive drainage & erosion control plan is essential to the long-term sustainability of the project.

33. Surface drainage should provide for positive drainage so that runoff is not permitted to pond adjacent to foundations, concrete slabs-on-grade, and pavements. Pervious ground surfaces should be finish graded to direct surface runoff away from site improvements at a minimum 5 percent grade for a minimum distance of 10-feet. If this is not practicable

due to the terrain or other site features, swales with improved surfaces should be provided to divert drainage away from improvements. Surface runoff collected in this swale should be controlled and flow in a non-erosive manner to an approved point of discharge.

34. Roof gutters should be utilized around building eaves. Roof gutters should be connected to downspouts, which in turn should be connected to facilities leading to the site storm drain systems. Runoff from downspouts, planter drains and other improvements should discharge in a non-erosive manner away from site improvements.

35. The migration of water or spread of root systems below foundations, slabs, or pavements may cause differential movement and subsequent damage. Storm water runoff collection facilities should be incorporated in the project design in accordance with the requirements of the governing agencies.

NOTICE TO OWNER & QUALITY CONTROL

The conclusions and recommendations contained in this report are preliminary in nature. We recommend that Landset Engineers, Inc. be retained to review final plans once they are available. ***Any earthwork or foundation construction performed without engineering supervision, direct observation and/or testing by Landset Engineers, Inc., will not be certified as complete and in accordance with the requirements set forth herein.***

Additional recommendations will be provided if necessary based on our review, to interpret this report during construction, and to provide construction testing and observation services. These services are beyond the scope of this soil engineering investigation and are not considered part of the fees as charged by Landset Engineers, Inc., for the report contained herein.

At a minimum the following items must be reviewed, tested, or observed by this firm:

- ***Grading, drainage & erosion control plans***
- ***Building and foundation plans***
- ***Site stripping and clearing***
- ***Subexcavation, fill placement and compaction***
- ***Foundation excavations***
- ***Surface and subsurface drainage improvements***
- ***Compaction of utility trench & retaining wall backfill and pavement areas***

If Landset Engineers, Inc. is not retained to provide construction observation and testing services, it shall not be responsible for the interpretation of the information by others or any consequences arising therefrom.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

The preliminary recommendations contained in this report are based, in part, on certain plans, information, and data that has been provided to us. Any changes in those plans, information, and data will render our recommendations invalid unless we are commissioned to review the changes and to make any necessary modifications and/or additions to our recommendations. The criteria in this report are considered preliminary until such time as they are modified or verified by the soil engineer in the field during construction. No representation, warranty, or guarantee is either expressed or implied. This report is intended for the exclusive use by the client and the client's architect/engineer. Application beyond the stated intent is strictly at the user's risk.

The recommendations of this report are based upon the assumption that the soil conditions do not deviate from those disclosed in the borings. If any variations or undesirable conditions are encountered during construction, Landset Engineers, Inc. should be notified so that supplemental recommendations can be given.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information and recommendations contained herein are called to the attention of the Architects and Engineers for the project and incorporated into the plans, and that the necessary steps are taken to ensure that the Contractor and Subcontractors carry out such recommendations. The conclusions and recommendations contained herein are professional opinions derived in accordance with current and local standards of professional practice.

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether due to natural processes or to the works of man, on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes outside of our control. Therefore, this report should not be relied upon after a period of three years, without being reviewed by Landset Engineers, Inc. from the date of issuance of this report.

This report does not address issues in the domain of the contractor such as, but not limited to, loss of volume due to stripping of the site, shrinkage of fill soils during compaction, excavatability, and construction methods. The scope of our services did not include any determination or evaluation of site geology, soil corrosion potential, environmental assessment of wetlands, radioisotopes, hydrocarbons, hazardous or toxic materials, or other chemical properties in the soil, surface water, groundwater or air, on or below or around the site.

REFERENCES

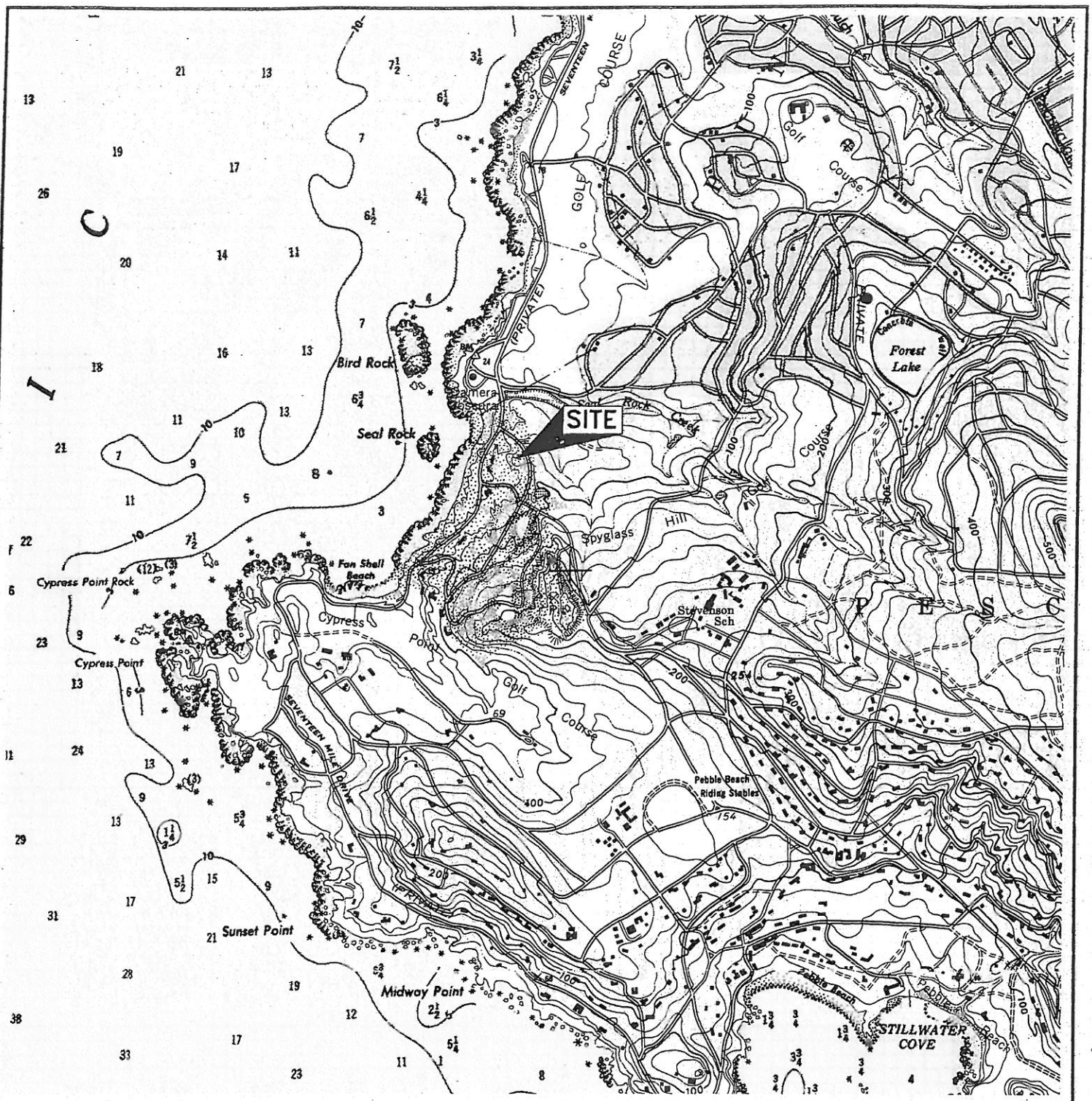
Clark, J.C., Dupre, W.R., Rosenberg, L.I., 1997, Geologic map of the Monterey and Seaside quadrangles, Monterey County, California: U.S. Geological Survey Open File Report 97-30, 26 p. 2 plates scale 1:24,000.

Dupre', W.R., 1990, Maps showing geology and liquefaction susceptibility of Quaternary deposits in the Monterey, Seaside, Spreckels, and Carmel Valley quadrangles, Monterey County, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-2096, 2 map sheets, scale 1:24,000.

Hart, E.W., Bryant, W.A., 1997 (revised 1999), Fault-rupture hazard zones in California: California Division of Mines and Geology Special Publication 42, 38p.

FIGURES

Figure 1, Vicinity Map
Figure 2, Boring Location Map



BASE MAP: Monterey, California
U.S.G.S. 7.5' Topographic
Quadrangle Map

Scale: 1"=2000'

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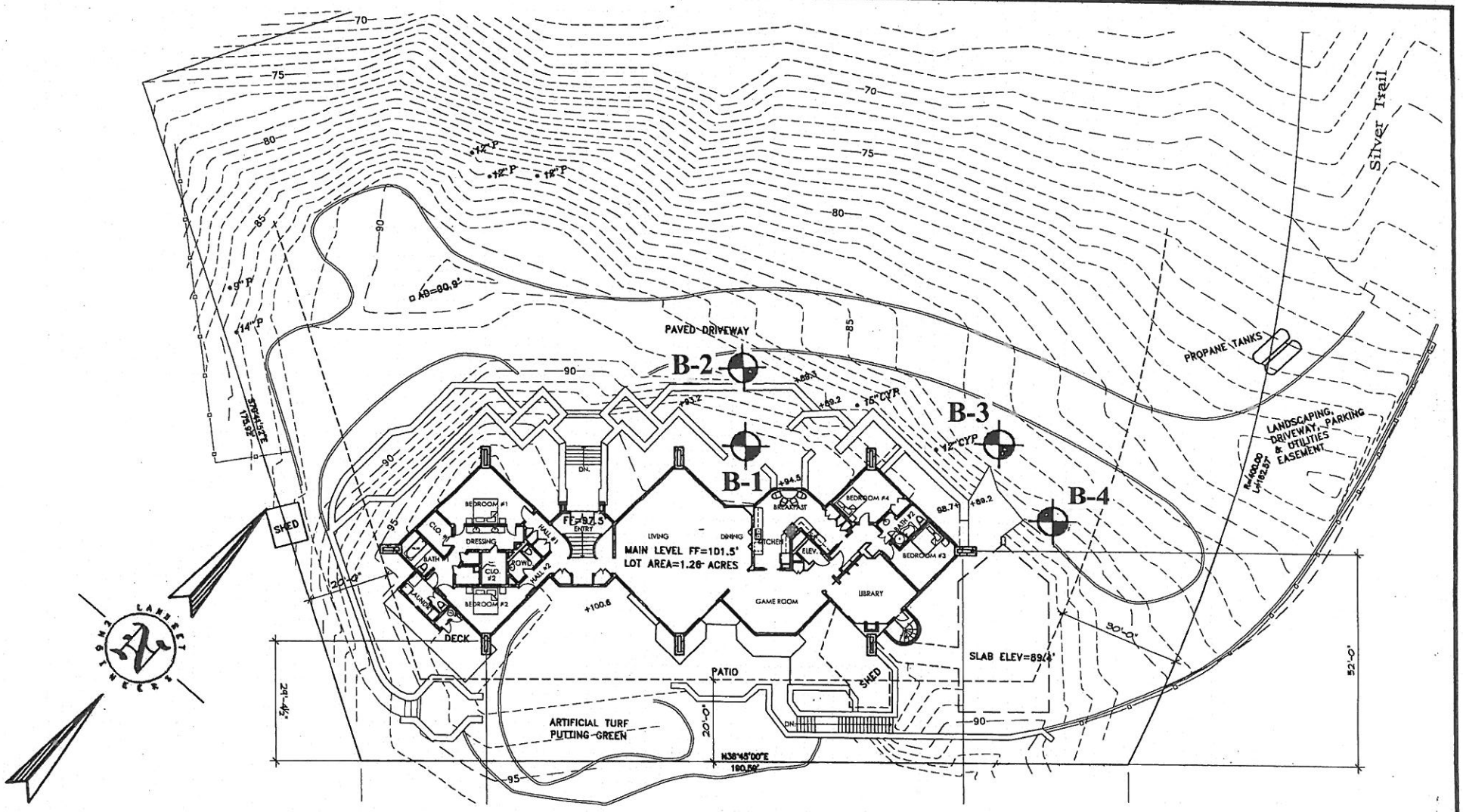
Vicinity Map

Virnig Residence Additions (APN 008-012-013)
1154 Silver Trail
Monterey County, California

FIGURE
1

PROJECT
1574-02



Explanation

B-4 Approximate Boring Location

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Boring Location Map

Virnig Residence Additions (APN 008-012-013)
1154 Silver Trail
Monterey County, California

FIGURE 2

PROJECT 1574-02

APPENDIX A

Unified Soil Classification Systems
Key to Log of Borings
Soil Terminology
Exploratory Boring Logs B-1 through B-4

UNIFIED SOIL CLASSIFICATION SYSTEM

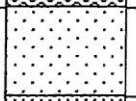
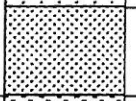
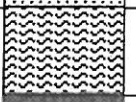
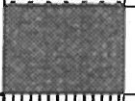
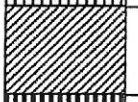
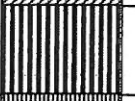
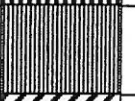
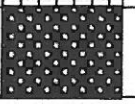
MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS More than 50% of material is larger than No. 200 sieve size.	GRAVEL AND GRAVELLY SOILS More than 50% of coarse fraction retained on No. 4 sieve.	CLEAN GRAVELS		GW	Well-graded gravels, gravel-sand mixtures, little or no fines.
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES		GM	Silty gravel, gravel-sand-silt mixtures.
				GC	Clayey gravels, gravel-sand-clay mixtures.
	SAND AND SANDY SOILS More than 50% of coarse fraction passing No. 4 sieve.	CLEAN SAND (Little or no fines)		SW	Well-graded sands, gravelly sands, little or no fines.
				SP	Poorly-graded sands, gravelly sands, little or no fines.
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sands, sand-silt mixtures.
				SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS More than 50% of material is smaller than No. 200 sieve size.	SILTS AND CLAYS	LIQUID LIMIT 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	Organic silts and organic silty clay of low plasticity.
		LIQUID LIMIT GREATER THAN 50		MH	Inorganic silty, micaceous or diatomaceous fine sand or silty soils.
				CH	Inorganic clays of high plasticity, fat clays.
				OH	Organic clays or medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS				PT	Peat, humus, swamp soils with high organic contents.
VARIOUS SOILS AND MAN MADE MATERIALS					Fill materials.
MAN MADE MATERIALS					Asphalt and concrete.

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Figure
A1

KEY TO LOG OF BORINGS

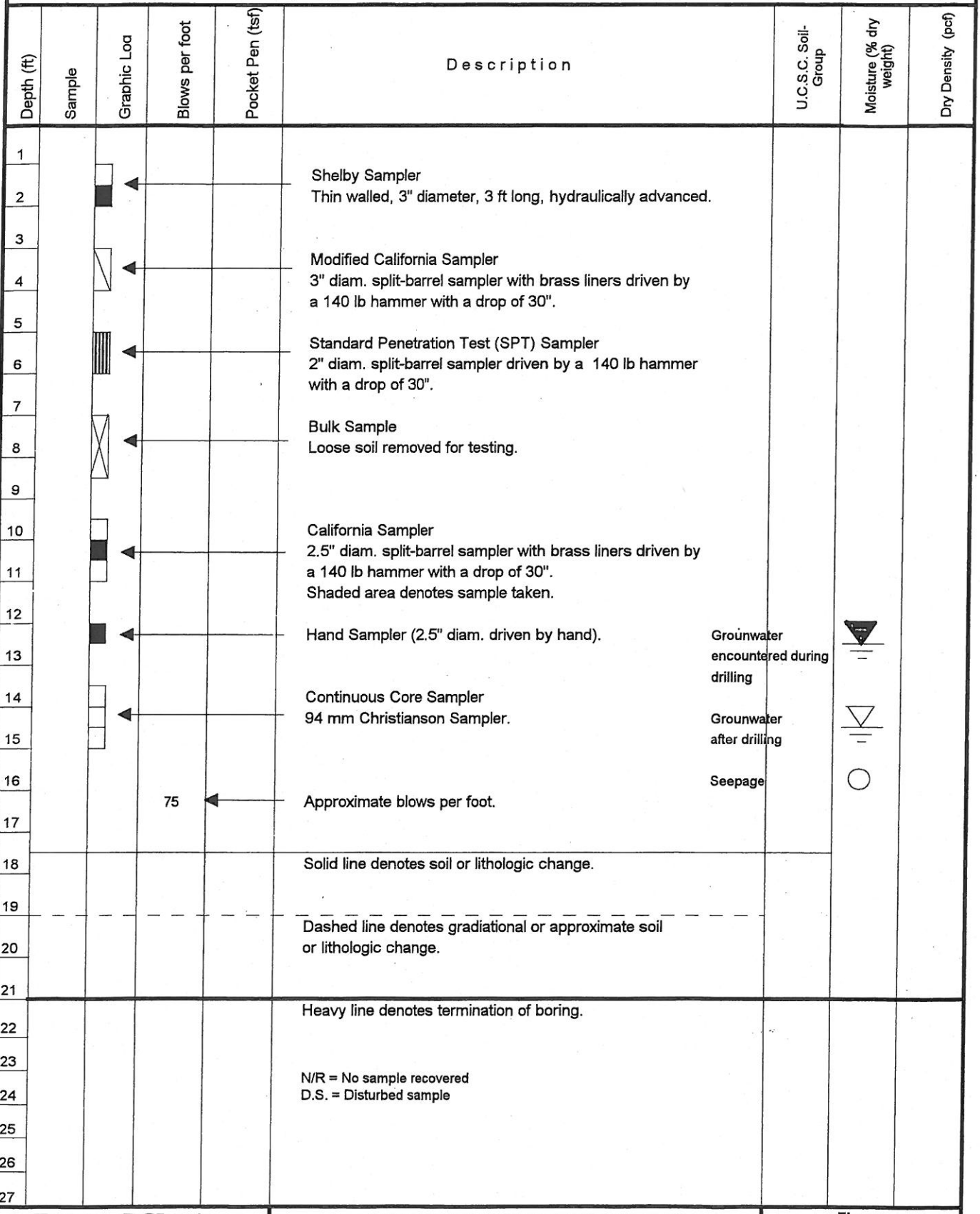

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Figure A2

SOIL TERMINOLOGY

SOIL TYPES (Ref. 1)

Boulders:	Particles of rock that will not pass a 12 inch screen.
Cobbles:	Particles of rock that will pass a 12 inch screen, but not a 3 inch sieve.
Gravel:	Particles of rock that will pass a 3 inch sieve, but not a No.4 sieve.
Sand:	Particles that will pass a No. 4 sieve, but not a No. 200 sieve.
Silt:	Soil that will pass a No. 200 sieve, that is non-plastic or very slightly plastic, and that exhibits little or no strength when dry.
Clay:	Soil that will pass a No. 200 sieve, that can be made to exhibit plasticity (putty-like properties) within a range of water contents, and that exhibits considerable strength when dry.

MOISTURE AND DENSITY

Moisture Condition:	An observational term; dry, slightly moist, moist, very moist, saturated.
Moisture Content:	The weight of water in a sample divided by the weight of dry soil in the soil sample, expressed as a percentage.
Dry Density:	The pounds of dry soil in a cubic foot of soil.

DESCRIPTORS OF CONSISTENCY (Ref. 3)

Liquid Limit:	The water content at which a No. 40 soil is on the boundary between exhibiting liquid and plastic characteristics. The consistency feels like soft butter.
Plastic Limit:	The water content at which a No. 40 soil is on the boundary between exhibiting plastic and semi-solid characteristics. The consistency feels like stiff putty.
Plasticity Index:	The difference between the liquid limit and the plastic limit, i.e. the range in water contents over which the soil is in a plastic state.

MEASURES OF CONSISTENCY OF COHESIVE SOILS (CLAYS) (Ref's. 2 & 3)

Very soft	N=0-1 *	C=0-250 psf	Squeezes between fingers
Soft	N=2-4	C=250-500 psf	Easily molded by finger pressure
Medium Stiff	N=5-8	C=500-1000 psf	Molded by strong finger pressure
Stiff	N=9-15	C=1000-2000 psf	Dented by strong finger pressure
Very Stiff	N=16-30	C=2000-4000 psf	Dented slightly by finger pressure
Hard	N>30	C>4000 psf	Dented slightly by a pencil point

* N = Blows per foot in the Standard Penetration Test. In cohesive soils, with the 3" diameter sampler, 140 pound weight, divide the blow count by 1.2 to get N (Ref. 4).

MEASURES OF RELATIVE DENSITY OF GRANULAR SOILS (GRAVELS, SANDS AND SILTS) (Ref's. 2 & 3)

Very Loose	N=0-4 **	RD=0-30	Easily push a 1/2" reinforcing rod by hand
Loose	N=5-10	RD=30-50	Push a 1/2" reinforcing rod by hand
Medium Dense	N=11-30	RD=50-70	Easily drive a 1/2" reinforcing rod
Dense	N=31-50	RD=70-90	Drive a 1/2" reinforcing rod 1 foot
Very Dense	N>50	RD=90-100	Drive a 1/2" reinforcing rod a few inches

** N = Blows per foot in the Standard Penetration Test. In granular soils, with the 3" diameter sampler, 140 pound weight, divide the blow count by 2 to get N (Ref. 4). RD = Relative Density

Ref. 1: ASTM Designation: D 2487-93, Standard Classification of Soils for Engineering Purposes (Unified Soils Classification System).

Ref. 2: Terzaghi, Karl, and Peck, Ralph B., Soil Mechanics in Engineering Practice, John Wiley & Sons, New York, 2nd Ed., 1967, pp. 30, 341, 347.

Ref. 3: Sowers, George F., Introductory Soil Mechanics and Foundations: Geotechnical Engineering, Macmillan Publishing Company, New York, 4th Ed., 1979, pp. 80,81 and 312.

Ref. 4: Lowe, John III, and Zaccheo, Phillip F., Subsurface Explorations and Sampling Chapter 1 in "Foundation Engineering Handbook," Hsai-Yang Fang, Editor, Van Nostrand Reinhold Company, New York, 2nd Ed., 1991, p. 39.

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Figure A3

EXPLORATORY BORING LOG

No. B-1

PROJECT: Virnig Residence Additions	**DATE DRILLED: 6/21/16**	**FILE No. 1574-02**
DRILLER: California Geotech	**DRILLING METHOD: Big Beaver**	**LOGGED BY: BP**
BORING DIAMETER: 4" HS	**BORING DEPTH: 28.75'**	**GROUNDWATER DEPTH: N/A**

Depth (ft)	Sample	Graphic Log	Blows per foot	Pocket Pen (tsf)	Description	U.C.S.C. Soil Group	Moisture (% dry weight)	Dry Density (pcf)
0								
1					Fill: Brown silty SAND, medium dense, slightly moist, well graded, 15-20% fines, trace gravel			
2								
3	1-1		11				6.5	
4					Color change to light grayish brown; 10-15% fines	SM		
5								
6	1-2		12		Color change to light gray, moist, 25-30% fines, grained, very fine to fine grained		7.7	
7								
8								
9								
10					Native Dune Sand: Light yellowish brown poorly graded SAND, medium dense, slightly moist, very fine to fine grained, 5-10% fines			
11	1-3		11				4.2	
12								
13								
14								
15								
16	1-4		14		Dry		2.0	
17								
18								
19						SP		
20								
21	1-5		20				2.2	
22								
23								
24								
25								
26	1-6		29		Granite: Orange brown, medium dense to dense, severly weathered		7.0	
27								

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Figure A-4

EXPLORATORY BORING LOG — No. B-1 (Cont'd)

PROJECT: Virnig Residence Additions	DATE DRILLED: 6/21/16	FILE No. 1574-02
DRILLER: California Geotech	DRILLING METHOD: Big Beaver	LOGGED BY: BP
BORING DIAMETER: 4" HS	BORING DEPTH: 28.75'	GROUNDWATER DEPTH: N/A

Depth (ft)	Sample	Graphic Log	Blows per foot	Pocket Pen (tsf)	Description	U.C.S.C. Soil Group	Moisture (% dry weight)	Dry Density (pcf)
0								
28					Granite: Orange brown, dense, moderately weathered			
28	1-7				Color change to light orange brown, very dense, slightly weathered			
29			68/8				5.7	
30					**TD @ 28.75'**			
31					**Drill Rig Refusal**			
32					**No Groundwater Encountered**			
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51								
52								
53								
54								

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Figure A-4

EXPLORATORY BORING LOG

No. B-2

PROJECT: Virnig Residence Additions	**DATE DRILLED: 6/21/16**	**FILE No. 1574-02**
DRILLER: California Geotech	**DRILLING METHOD: Big Beaver**	**LOGGED BY: TL**
BORING DIAMETER: 4" HS	**BORING DEPTH: 21.5'**	**GROUNDWATER DEPTH: N/A**

Depth (ft)	Sample	Graphic Log	Blows per foot	Pocket Pen (tsf)	Description	U.C.S.C. Soil Group	Moisture (% dry weight)	Dry Density (pcf)
0								
1					Fill: Light brown silty SAND, with trace gravels, medium dense, slightly moist, very fine to fine grained, 10-15% fines	SM		
2								
3	2-1		18		Native Dune Sand: Light grey, medium dense, slightly moist, poorly graded, 0-5% fines	SP	4.3	
4								
5								
6	2-2		9		Color change to light yellowish brown, slightly moist, loose		3.1	
7								
8								
9								
10								
11	2-3		16		Medium dense		3.6	
12								
13								
14								
15								
16	2-4		18				4.3	
17								
18								
19								
20								
21	2-5		16				4.0	
22					**TD @ 21.5'** **No Groundwater Encountered**			
23								
24								
25								
26								
27								

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Figure A-5

EXPLORATORY BORING LOG

No. B-3

PROJECT: Virnig Residence Additions	**DATE DRILLED: 6/21/16**	**FILE No. 1574-02**
DRILLER: California Geotech	**DRILLING METHOD: Big Beaver**	**LOGGED BY: TL**
BORING DIAMETER: 4" HS	**BORING DEPTH: 21.5'**	**GROUNDWATER DEPTH: N/A**

Depth (ft)	Sample	Graphic Log	Blows per foot	Pocket Pen (tsf)	Description	U.C.S.C. Soil Group	Moisture (% dry weight)	Dry Density (pcf)
0								
1					Fill: Light brown silty SAND with trace gravels, medium dense, moist, poorly graded, 10-15% fines			
2								
3	3-1		12		Slightly moist	SM	3.9	
4								
5								
6	3-2		15		Medium brown, clayey SAND with orange mottles, medium dense, moist, well graded, 25-30% fines		12.0	
7								
8								
9								
10						SC		
11	3-3		14		Color change to light gray, moist, medium dense, poorly graded, 25-30% fines, trace gravels		10.3	
12								
13								
14								
15					Native Dune Sand: Light yellowish brown poorly graded SAND, slightly moist, medium dense, poorly graded, 5-10% fines			
16	3-4		18				4.0	
17								
18						SP		
19								
20								
21	3-5		19				4.7	
22					**TD @ 21.5'**			
23					**No Groundwater Encountered**			
24								
25								
26								
27								

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Figure A-6

EXPLORATORY BORING LOG — No. B-4

PROJECT: Virnig Residence Additions	DATE DRILLED: 6/21/16	FILE No. 1574-02
DRILLER: California Geotech	DRILLING METHOD: Big Beaver	LOGGED BY: TL
BORING DIAMETER: 4" HS	BORING DEPTH: 16.5'	GROUNDWATER DEPTH: N/A

Depth (ft)	Sample	Graphic Log	Blows per foot	Pocket Pen (tsf)	Description	U.C.S.C. Soil Group	Moisture (% dry weight)	Dry Density (pcf)
0								
1					Fill: Brown silty SAND with trace gravels, medium dense, slightly moist, 15-20% fines			
2								
3	4-1		8		Color change to light grayish brown moist, loose	SM	8.0	
4								
5								
6	4-2		16		Native Dune Sand: Light gray silty SAND, medium dense, moist, poorly graded, 15-20% fines		9.0	
7								
8								
9								
10								
11	4-3		6		Color change to light yellowish brown, loose	SM	6.2	
12								
13								
14								
15								
16	4-4		11		Color change to light yellowish brown with medium brown, moist, medium dense		5.0	
17					**TD @ 16.5'** **No Groundwater Encountered**			
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								

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Figure A-7

APPENDIX B

Laboratory Test Results

Table B-1
Summary of Laboratory Test Results

Sample No.	Depth (ft.)	Water Content (%)	% Passing #200
1-1	2.0-3.5	6.5	17
1-2	5.0-6.5	7.7	27
1-3	10.0-11.5	4.2	- -
1-4	15.0-16.5	2.0	- -
1-5	20.0-21.5	2.2	- -
1-6	25.0-26.5	7.0	- -
1-7	27.5-28.75	5.7	- -
2-1	2.0-3.5	4.3	- -
2-2	5.0-6.5	3.1	1
2-3	10.0-11.5	3.6	- -
2-4	15.0-16.5	4.3	- -
2-5	20.0-21.5	4.0	- -
3-1	2.0-3.5	3.9	- -
3-2	5.0-6.5	12.0	22
3-3	10.0-11.5	10.3	28
3-4	15.0-16.5	4.0	- -
3-5	20.0-21.5	4.7	- -
4-1	2.0-3.5	8.0	- -
4-2	5.0-6.5	9.0	- -
4-3	10.0-11.5	6.2	18
4-4	15.0-16.5	5.0	- -