TECHNICAL REPORT
UNIQUE GEOLOGY INVESTIGATION
OCEAN BREEZE RANCH
BONSALL, SAN DIEGO COUNTY, CALIFORNIA
Environmental Log # PDS2016-TM-5615,
PDS2016-MUP-16-012, PDS2016

PREPARED FOR

THE COUNTY OF SAN DIEGO AND OCEAN BREEZE FARMS, LLC 1550 SOUTH COAST HIGHWAY, SUITE 201 LAGUNA BEACH, CALIFORNIA 92651

W.O. 6960-A3-SC NOVEMBER 20, 2018



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November 20, 2018

W.O. 6960-A3-SC

Ocean Breeze Farms, LLC

1550 South Coast Highway, Suite 201 Laguna Beach, California 92651

Attention: Mr. Jim Conrad

Subject: Technical Report, Unique Geology Investigation Report for Ocean Breeze

Ranch, Bonsall, San Diego County, California

Environmental Log # PDS2016-TM-5615, PDS2016-MUP-16-012, PDS2016-MUP-16-013

Dear Mr. Conrad:

In accordance with your request and authorization, this report presents the findings of GeoSoils Inc.'s (GSI's) unique geology investigation for the Ocean Breeze Ranch property in the community of Bonsall, San Diego County, California. This Unique Geology Investigation report has been prepared for the County of San Diego regarding the proposed Ocean Breeze Ranch (OBR) residential project in north San Diego County. Scoping information concerning Mineral Resources was included in the County of San Diego's project issue review letter dated September 11, 2018 requiring evaluation of the potential impacts to the preservation of "Unique Geologic Features."

SCOPE OF SERVICES

The scope of our services has included the following:

- 1. Review of the available geologic literature for the site (see the Appendix), including previous GSI investigations of the project.
- 2. Analysis of data.
- 3. Preparation of this report and accompaniments.

INTRODUCTION

This Unique Geology Investigation has been prepared for the proposed Ocean Breeze Ranch (OBR) residential project in north San Diego County. Figures 1 and 2 show the regional location of the site. This report has been prepared per the County of San Diego's "Guidelines for Determining Significance, Unique Geology," dated July 30, 2007.

PURPOSE

The proposed OBR project is located in land that may have unique geologic features. A geologic feature is unique if it:

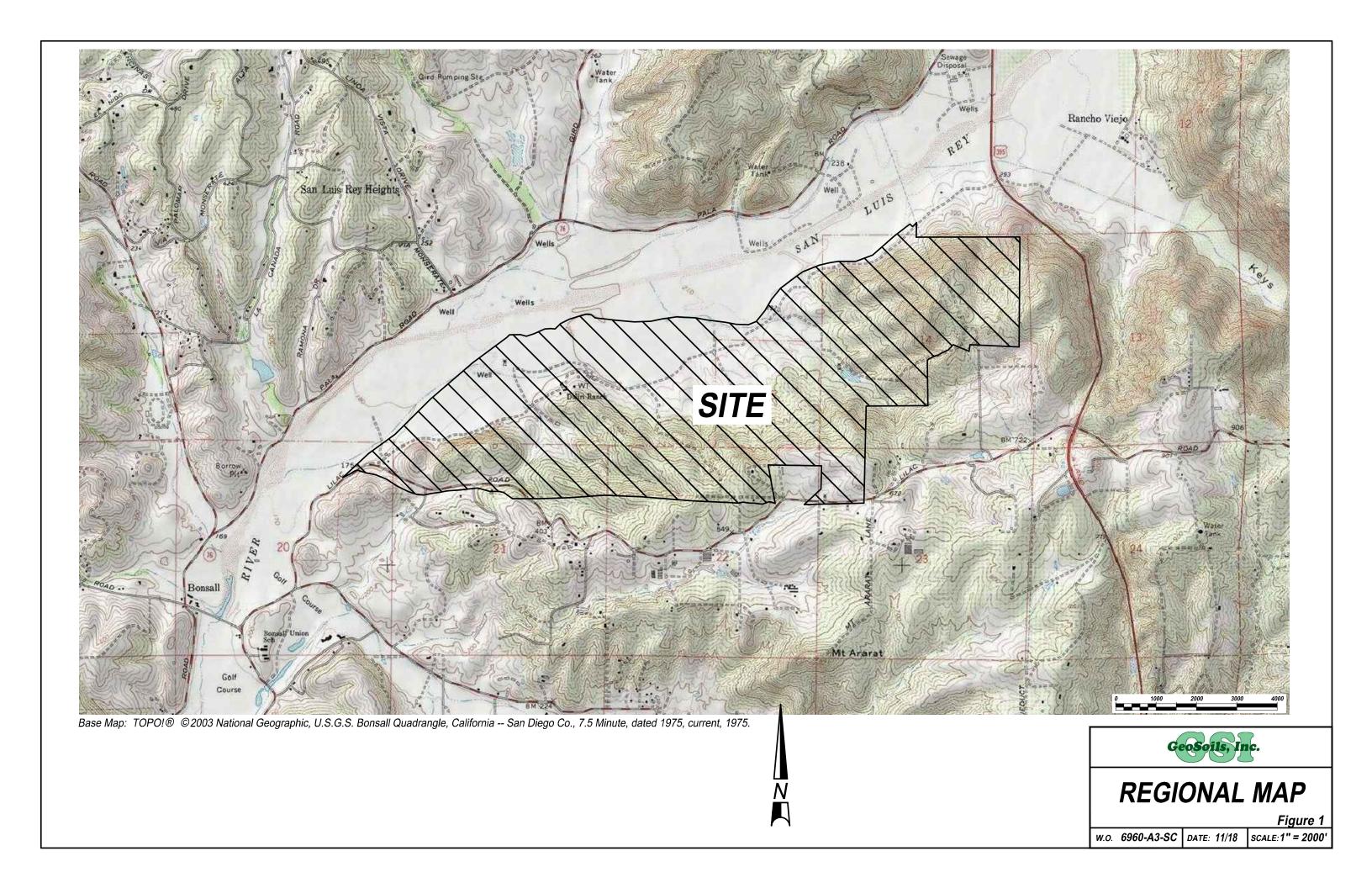
- Is the best example of its kind locally or regionally;
- Embodies the distinctive characteristics of a geologic principle that is exclusive locally or regionally;
- Provides a key piece of geologic information important in geology or geologic history;
- Is a "type locality" of a geologic feature;
- Is a geologic formation that is exclusive locally or regionally;
- Contains a mineral that is not known to occur elsewhere in the County; or
- Is used repeatedly as a teaching tool.

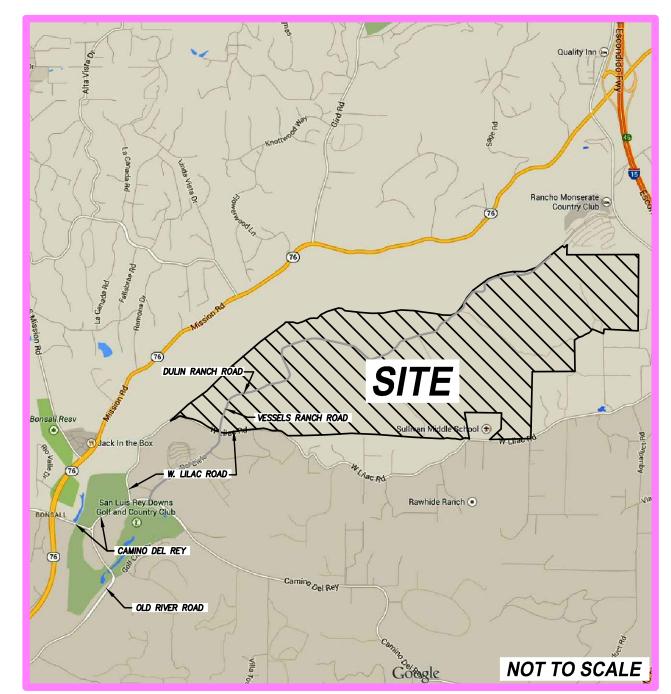
The purpose of this report is to evaluate if unique geologic features exist at the project and to determine their significance, if precluded from use.

Project Location and Description

The subject site is located in Bonsall, San Diego County, California (see Figure 1 - Regional Map). More specifically, the subject site consists of an irregular shaped, approximately 1,400 acres (gross) property, located along the southern margin of the San Luis Rey River Valley, in the vicinity of Dulin Ranch Road, including hilly and more rugged terrain generally between Dulin Ranch Road and West Lilac Road, in the community of Bonsall, San Diego County, California (see Figure 2 - Site Location Map), south of Mission Road/Highway 76, and west of Interstate 15.

GSI understands that proposed development includes several Planning Areas (PAs) with different product anticipated. Current plans (Project Design Consultants [PDC], 2018) indicate that there are three (3) planning areas, a hillside estate parcel, and a school parcel (which is to be sold to the school district). Each PA or parcel will contain an associated roadway(s), underground, and storm water (BMP) improvements, and their use is summarized in the following table:





Base Map: Google Maps, Copyright 2017 Google, Map Data Copyright 2017 Google

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SITE LOCATION MAP

Figure 2

PLANNING AREA	APPROX. NUMBER OF LOTS	COMMENTS
PA 1	144 Lots	Graded Pads Indicated*
PA-2	237 Lots	Graded Pads Indicated*
PA-3	14 Lots	Raw Land, No Grading Indicated*
Hillside Estate Parcel	1 Lot	Raw Land, No Grading Indicated*
School Parcel	-	Raw Land, No Grading Indicated*

^{*} per PDC (2018)

The layout of the project, along with the acreage utilized, is shown on Figure 3 (Proposed Land Use Plan), which uses PDC (2018), as a base.

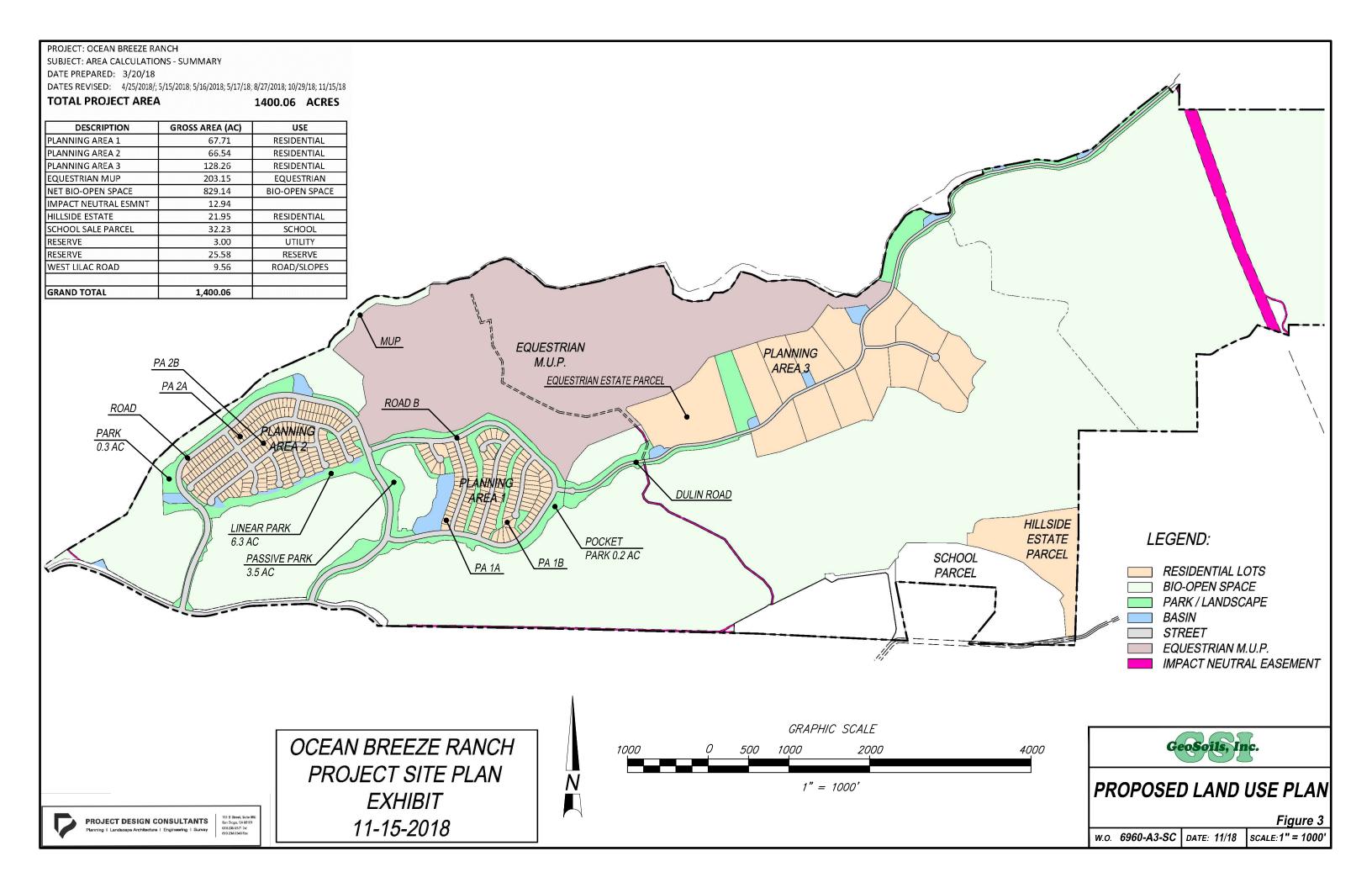
Cut and fill grading techniques are anticipated to bring Planning Area PA 1 to the desired grades. Within Planning Area PA 1, maximum cuts and fills on the order of 50 feet, and 46 feet, respectively, are anticipated, with graded slopes ranging from about 50 feet (cut), and 35 feet (fill) in height, at gradients ranging from 1.5:1 (h:v), or flatter, for cut slopes, and 2:1 (h:v), or flatter, for fill slopes. Within Planning Area PA 2, maximum fills on the order of 5 to 12 feet, are anticipated, with graded slopes ranging up to about 15 feet, or less, in height, at gradients of 2:1 (h:v), or flatter.

EXISTING CONDITIONS

Topographic Setting

Site topography is shown on Figure 1. Topographically, portions of the property (Planning Area PA 2) within the San Luis Rey Valley floor area are generally flat-lying/low gradient. South of the river valley (generally south of Dulin Ranch Road), the westernmost third of the property ascends from the valley floor to somewhat more rugged, inclined terrain, with slope gradients generally steeper than about 4:1 (horizontal to vertical [h:v]), that form a roughly east-west trending ridgeline across the southern portion of the site (south and east of Planning Area PA 1). Within the remaining, easternmost portion of the property, the relatively flat-lying river valley floor transitions to moderately sloping terrain, with north facing slopes at gradients generally on the order of 4:1 (h:v), or less (lower elevations of Planning Area PA 3). As with the western portion of the property, these low/moderate gradient slopes ascend to somewhat more rugged, craggy terrain along the southern portion of the property (Hillside Estate Parcel, and the upper elevations of Planning Area PA 3). Drainage is generally directed northward, from the crest of the east-west trending ridgeline, toward the San Luis Rey River, via tributary drainages incised into the north facing slope. On the backside, or south side of the ridge, drainage is generally directed offsite to the south.

The relatively flat-lying valley floor portion of the site has elevations ranging from about 180 to 225 feet Mean Sea Level (MSL), with the area of low gradient slopes, south of the



valley floor, ranging from 180 to 225 feet MSL at the valley floor/margin, up to approximately 300 feet MSL. The somewhat rugged, steeper terrain that ascends to the south, range from about 200 to as much as 747 feet MSL. Thus, overall relief across the site is on the order of about 567 feet. Portions of the site (i.e., valley floor), generally within the low/flat-lying portions of the site, lie within a San Diego County 100-year flood plain.

Site Land Use

The property is and has been used for both equestrian and agricultural purposes. Existing improvements generally consist of an equestrian facility located within the low lying, northerly portions of the site (north of Planning Area PA 1), with an existing residence, overlooking the equestrian facility. Scattered outbuildings are present throughout, and are predominately located in close proximity to the equestrian facility. Vegetation generally consists of some native trees, planted trees, grass pasture, areas of irrigated row crops, groves, and also areas with native grasses and brush. Figure 3, shows land use at the subject site.

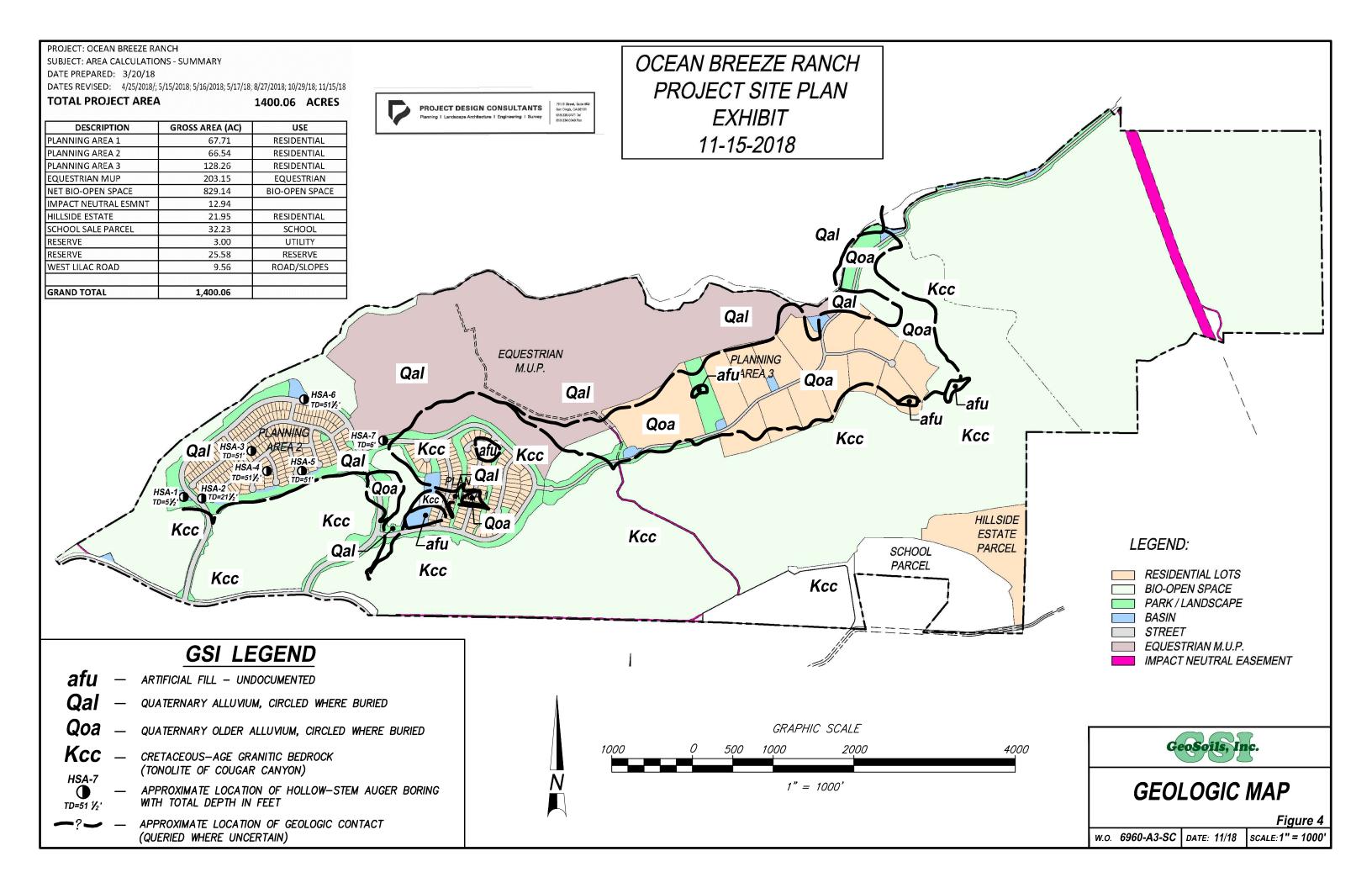
GEOLOGY

GSI performed geologic mapping and subsurface exploration of the subject site and documented their findings in GSI's geotechnical evaluation for Ocean Breeze Ranch (October 6, 2016). The regional and site specific geology from this investigation, is summarized below. The distribution of geologic units across the subject site is presented on Figure 4.

Regional Geology

The subject property is located within the Peninsular Ranges geomorphic province, which is characterized by steep, elongated mountain ranges and valleys that trend northwesterly (Norris and Webb, 1990). The Peninsular Ranges Geomorphic Province extends north to the base of the east-west aligned Santa Monica - San Gabriel Mountains, and south into Baja California. The province is bounded by the east-west trending Transverse Ranges Geomorphic Province to the north and northeast, by the Colorado Desert Geomorphic Province to the southeast, and by the Continental Borderlands Geomorphic Province to the west. The mountain ranges are underlain by regional basement rocks consisting of pre-Cretaceous metasedimentary rocks, Jurassic metavolcanic rocks, and Cretaceous plutonic (granitic) rocks, which have been uplifted, tilted, faulted, eroded and deeply incised since their formation.

In the Bonsall area, during the mid to late Pleistocene (within the Quaternary-age), the granitic rocks belonging to the Peninsular Ranges Batholith have been eroded and alluvial deposits have since filled the lower valleys. Regional mapping by Tan (2000) indicates that where site development is proposed, it is primarily underlain by Cretaceous-age granitic



rocks referred to as the Couser Canyon tonalite, with some smaller outcropping of the Indian Mountain granodiorite, and undivided metavolcanic and metasedimentary rocks of Cretaceous- and Jurassic-age, located east of the proposed development (the latter two units were not encountered during our field investigation). Pleistocene-age older alluvium (stream terrace deposits), and younger alluvium associated with deposits along the San Luis Rey River, also occurs in the site vicinity (Tan, 2000). Figure 4, shows the distribution of significant geologic units at the subject site. The proposed OBR project is located in Mineral Resource Zones (deemed MRZ-2 and MRZ-3) by the State of California. The MRZ-2 designation encompasses the alluvium in the San Luis Rey River, and the MRZ-3 designation includes the upland areas, which contains some older alluvium, but primarily granitic rock of varying composition. Below is a description of the significant geologic units found at the subject site.

Site Geologic Units

Quaternary-age Alluvium (Map Symbol - Qal)

Alluvium was observed within the northern portions of the site, in areas of flat lying ground, primarily north of Dulin Ranch Road, and generally within the 100-year flood plain, including Planning Area PA 2, the lower elevations of PA 1, and along the northern edge of PA 3.

Alluvium generally consists of light brown and very dark brown, interbedded sands, and silty sands, with silts and clays indicated at depth, based on CPT data. The thickness of this deposit generally varies from a daylight contact, adjacent to deposits of older alluvium and granitic bedrock, thickening northward to depths on the order of 42 to 62 feet below existing grades, based on field mapping, test pit, and CPT data. Within a tributary drainage located within a portion of Planning Area PA 3, alluvium was encountered to a depth of at least 17 feet below existing grades. Based on a review of California Department of Water Resources Bulletin No. 106-2 (State, 1967), the maximum thickness of alluvium along the nearby reach of the San Luis Rey river valley is less than 100 feet. Owing to the manner of relatively rapid deposition, fossils are not typically encountered in the younger alluvium.

Quaternary-age Older Alluvium (Map Symbol - Qoa)

Deposits of Quaternary (Pleistocene)-age older alluvium (less than ±500,000 years old) were generally encountered at/near the surface, typically underlying the lower elevations of PA 1 and PA 3, forming the moderate slopes located between the valley floor and the southern highland ridge areas. Based on the distribution of these materials in plan view, and in cross section, the thickness of these sediments may be on the order of up to 30 to 50 feet locally. The older alluvium (stream terrace deposits) generally consists of interbedded silty sand, with lesser amounts of silty sand with some clay. Where observed in preparation of GSI (2016), stream terrace deposits are light brown, brown, and yellowish brown, damp, and medium dense. Fossils are rare, but have been encountered in the older alluvium.

Cretaceous-age Granitic Bedrock (Map Symbol - Kcc)

Within areas proposed for development, Cretaceous-age granitic bedrock, referred to as the Couser Canyon Tonalite (Tan, 2000), was encountered near the surface, and at depth. Where encountered, bedrock consists of fractured rock, disintegrating to sand and silty sand with brittle gravel- to cobble-size rock fragments in near-surface excavations. Bedrock was generally observed to be brown to olive brown, brownish yellow to yellowish brown, dry to moist, and dense. Owing to the intrusive igneous origin of granitic rocks, fossils do not typically occur associated with such.

GROUNDWATER

In preparation of GSI (2015), during the month of March, 2014, the regional groundwater table was encountered at depths on the order of 13½ to 15½ feet below existing grades, within the relatively flat-lying, alluviated areas underlying Planning Area PA 2, and within the flood plain area north of Planning Area PA 3. These depths generally correspond to approximate elevations ranging from about 189½ feet above Mean Sea Level (MSL), up gradient, within alluvial areas north of Planning Area PA 3, to approximately 178 feet MSL, down gradient, toward the western end of the property, within the current boundaries of Planning Area PA 2.

In preparation of GSI (2016), groundwater was encountered in both the additional CPT soundings, and the hollow stem auger borings, at depths on the order of 11½ to 18 feet below existing grades within Planning Area PA 2, or at corresponding elevations of 178 to 179 feet MSL. Up gradient from Planning Area PA 2, within a tributary drainage located within the lower elevations of Planning Area PA 3, groundwater was encountered at a depth of about 21 feet below the surface grade, or at an approximate elevation of 204 feet MSL.

MINERALOGIC RESOURCES

Mineralogic resources are being evaluated by GSI in conjunction with the referenced scoping letter by the County of San Diego (2018). Although at the time of this report, the 2nd Draft of the Mineral Resources Investigation technical report had not been reviewed by the County, the fundamental conclusions of the report have not changed. There are no known unique gemstones that occur in the granitic rocks onsite. The proposed OBR project is located in Mineral Resource Zones (deemed MRZ-2 and MRZ-3) by the State of California. There would be a loss of Quaternary-age alluvial deposits (younger and older), and granitic rock (MRZ-2 and MRZ-3) from the site area; but there is nothing unique about these resources, and they are widespread in the region. Aggregate from the San Gabriel Valley production district is hauled as far south as northern San Diego County. Northern San Diego County imports aggregate from the San Bernardino production area and from

Temescal Valley (Kohler, 2006). Generally, it has not been economically viable for the production of aggregate in the site vicinity.

CONCLUSION

Based upon our research, site reconnaissance, and field investigations, there is no evidence that "unique geologic features" are present on the property.

LIMITATIONS

GSI has performed the services for this project in accordance with the terms of a contract between GSI and Client and in accordance with current professional standards for investigations of this type. The conclusions presented in this report are based on the information collected during the study, the present understanding of the site conditions, and professional judgment.

These opinions have been derived in accordance with current standards of practice, and no warranty, either express or implied, is given. Standards of practice are subject to change with time. GSI assumes no responsibility or liability for work or testing performed by others, or their inaction; or work performed when GSI is not requested to be onsite, to evaluate if our recommendations have been properly implemented. Use of this report constitutes an agreement and consent by the user to all the limitations outlined above, notwithstanding any other agreements that may be in place. In addition, this report may be subject to review by the controlling authorities. Thus, this report brings to completion our scope of services for this portion of the project.

The opportunity to be of service is sincerely appreciated. If you should have any questions, please do not hesitate to contact our office.

P. FRA Respectfully submitted,

GeoSoils, Inc.

John P. Franklin
Engineering Geologist, CEG 1340

Certified Engineering Geologist

JPF/jh

Attachment: Appendix - References

Distribution: (4) Addressee

APPENDIX

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