Appendices

Appendix IS-1

Archaeological and Paleontological Resources
Records Searches

South Central Coastal Information Center
California State University, Fullerton
Department of Anthropology MH-426
800 North State College Boulevard
Fullerton, CA 92834-6846
657.278.5395
California Historical Resources Information System
Los Angeles, Orange, Ventura and San Bernardino Counties
sccic@fullerton.edu

10/21/2016 SCCIC File #: 16908.2973

Stephanie Eyestone-Jones
Eyestone Environmental
6701 Center Dr West, Suite 900
Los Angeles, CA 90045

Re: Records Search Results for the Westfield Promenade Project

The South Central Coastal Information Center received your records search request for the project area referenced above, located on the Canoga Park, CA USGS 7.5' quadrangle. The following summary reflects the results of the records search for the project area and a ½-mile radius. The search includes a review of all recorded archaeological and built-environment resources as well as a review of cultural resource reports on file. In addition, the California Points of Historical Interest (SPHI), the California Historical Landmarks (SHL), the California Register of Historical Resources (CAL REG), the National Register of Historic Places (NRHP), the California State Historic Properties Directory (HPD), and the City of Los Angeles Historic-Cultural Monuments (LAHCM) listings were reviewed for the above referenced project site. Due to the sensitive nature of cultural resources, archaeological site locations are not released.

RECORDS SEARCH RESULTS SUMMARY

Archaeological Resources	Within project area: 0 Within project radius: 0
Built-Environment Resources	Within project area: 0 Within project radius: 2
Reports and Studies	Within project area: 1 Within project radius: 22
OHP Historic Properties Directory (HPD)	Within project area: 0 Within project radius: 0
California Points of Historical Interest (SPHI)	Within project area: 0 Within project radius: 0
California Historical Landmarks (SHL)	Within project area: 0 Within project radius: 0
California Register of Historical Resources (CAL REG)	Within project area: 0 Within project radius: 0

National Register of Historic Places (NRHP)	Within project area: 0 Within project radius: 0
City of Los Angeles Historic-Cultural Monuments (LAHCM)	Within project area: 0 Within project radius: 0

HISTORIC MAP REVIEW - Calabasas (1903, 1947), CA 1:62,500 scale USGS Historic Map indicated that in 1903 there were two undeveloped roads and one paved road present. Arroyo Calabasas ran to the northwest of the search area. Place names nearby included Canoga, Owensmouth, Calabasas, Escorpion, and San Fernando Valley. In 1947, there were a couple more paved roads present. All other features mentioned above were still present.

RECOMMENDATIONS

According to our records, the cultural resource sensitivity of the project site is unknown. Although the project site appears to have been previously disturbed, there is still the potential for the discovery of prehistoric and historic cultural resources within the project boundaries. Agricultural remains, foundations, trails, hearths, trash dumps, privies, changes in soil colorations, human or animal bone, pottery, chipped or shaped stone, etc. are all potential indications of an archaeological site. Therefore, customary caution and a halt-work condition should be in place for any ground-disturbing activities. In the event that any evidence of cultural resources is discovered, all work within the vicinity of the find should stop until a qualified archaeological consultant can assess the find and make recommendations. Excavation of potential cultural resources should not be attempted by project personnel. It is also recommended that any buildings, structures or objects (45 years and older) be identified, recorded, and evaluated for significance as may be required by the lead agency. Finally, the Native American Heritage Commission should be consulted to identify if any additional traditional cultural properties or other sacred sites are known to be in the area.

For your convenience, you may find a professional consultant* at www.chrisinfo.org. Any resulting reports by the qualified consultant should be submitted to the South Central Coastal Information Center as soon as possible.
*The SCCIC does not endorse any particular consultant and makes no claims about the qualifications of any person listed. Each consultant on this list self-reports that they meet current professional standards.

If you have any questions regarding the results presented herein, please contact the office at 657.278.5395 Monday through Thursday 9:00 am to 3:30 pm.

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

Thank you for using the California Historical Resources Information System,

Michelle Galaz
Assistant Coordinator

Enclosures:

(X) Invoice #16908.2973

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

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

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12 October 2016

Eyestone Environmental
6701 Center Drive West, Suite 900
Los Angeles, CA 90045

Attn: Stephanie Eyestone-Jones, President

re: Paleontological resources for the proposed Westfield Promenade Project, in the City of Los Angeles, Los Angeles County, project area

Dear Stephanie:

I have conducted a thorough check of our paleontology collection records for the locality and specimen data for the proposed Westfield Promenade Project, in the City of Los Angeles, Los Angeles County, project area as outlined on the portion of the Canoga Park USGS topographic quadrangle map that Jacqueline De La Rocha sent to me via e-mail on 20 September 2016. We have no vertebrate fossil localities that lie directly within the proposed project area, but we do have localities nearby from the same sedimentary deposits that occur at depth within the proposed project area.

Surface deposits in the entire proposed project route area consist of soil on top of younger Quaternary Alluvium, derived as alluvial fan deposits from the hills to the south and west. These deposits typically do not contain significant vertebrate fossils, at least in the uppermost layers, but older Quaternary deposits at depth may well contain significant fossil vertebrate remains. Our closest vertebrate fossil locality from similar older Quaternary deposits is LACM 1213, just west of due south of the proposed project area off Mulholland Highway south of Woodland Hills that produced fossil specimens of horse, *Equus*, and ground sloth, *Paramylodon*. Our next closest vertebrate fossil locality from these deposits is LACM 5878, off Long Valley Road in Hidden Hills west-southwest of the proposed project area, that produced a fossil mastodon skeleton, *Mammut*. Farther to the north, just west of due north of the proposed project route area in Santa Susana Pass, we have the vertebrate fossil locality LACM 1406 that produced a fossil specimen of mastodon, *Mammut*.

Shallow excavations in the younger Quaternary Alluvium exposed throughout the proposed project area are unlikely to uncover significant vertebrate fossils. Deeper excavations that extend down into older deposits, however, may well encounter significant vertebrate fossil remains. Any substantial excavations below the uppermost layers in the proposed project area, therefore, should be monitored closely to quickly and professionally recover any fossil remains discovered while not impeding development. Also, sediment samples should be collected and processed to determine the small fossil potential in the proposed project area. Any fossils collected should be placed in an accredited scientific institution for the benefit of current and future generations.

This records search covers only the vertebrate paleontology records of the Natural History Museum of Los Angeles County. It is not intended to be a thorough paleontological survey of the proposed project area covering other institutional records, a literature survey, or any potential on-site survey.

Sincerely,

Samuel A. McLeod, Ph.D.
Vertebrate Paleontology

enclosure: invoice

Appendix IS-2

Geologic and Soils Report

Geotechnologies, Inc.
Consulting Geotechnical Engineers

439 Western Avenue
Glendale, California 91201-2837
818.240.9600 • Fax 818.240.9675

September 1, 2016
Revised October 6, 2016
File No. 21266

Westfield, LLC
c/o Latham & Watkins, LLP
355 South Grand Avenue
Los Angeles, California 90071

Attention: Heather Crossner

Subject: Environmental Impact Report, Soils and Geology Issues
Proposed Mixed-Use Development
Vesting Tentative Tract Map Nos. 74587, 74588 and 74589
6100 Topanga Canyon Boulevard, Los Angeles, California

Reference: *Report by Geotechnologies, Inc.:*
Preliminary Geotechnical Engineering Investigation, dated August 31, 2016, revised October 5, 2016.

Dear Ms. Crossner:

1.0 INTRODUCTION

This document is intended to discuss potential soil and geological issues for the proposed development, as required by Appendix G of the California Environmental Quality Act (CEQA) Guidelines. This document has been prepared subsequent to review of available geotechnical engineering documents, and review of the referenced preliminary geotechnical engineering investigation, prepared recently by this firm for the proposed development.

2.0 SITE CONDITIONS

The site is located at 6100 Topanga Canyon Boulevard, in the Woodland Hills area of the City of Los Angeles, California. The site is semi-square in shape, and approximately 34 acres in area. The site is bounded by Erwin Street to the north, Owensmouth Avenue to the east, Oxnard Street to the south, and Topanga Canyon Boulevard to the west. The site is shown relative to nearby topographic features in the enclosed Vicinity Map.

Overall, the existing site grade descends gently to the north, ranging from elevation 839 feet near the southeastern corner, to elevation 846 feet near the center of the site, to elevation 823 feet near the northwestern corner of the site. Contours of the existing site grade elevations are provided in the enclosed Survey Plan.

The site is currently developed with a shopping center and a paved parking lot. The existing development was built in the early 1970's. The shopping center structure is three levels in height, having a finished floor elevation of 826.5 feet. Due to the elevation relief observed across the site, the first level of the existing structure is semi-subterranean in nature. Along the northern side, the finished grade of the existing structure roughly matches the outdoor grade. However, along the southern side, the finished grade of the existing structure extends up to approximately 18 feet below the outdoor grade.

Vegetation at the site consists of mature trees, grass lawns, and shrubbery, contained in manicured planter areas. Drainage across the site appears to be by sheetflow to the City streets.

3.0 PROJECT SCOPE

Information concerning the proposed development was obtained by review of the Master Plan Drawings, prepared by Johnson Fain, dated October 6, 2016. The site is proposed to be developed with a mixed-use development. As shown in the enclosed Plot Plan, several structures are currently being proposed. The proposed structures will be occupied by residential, office, hospitality, parking and retail space, as well as an entertainment and sports complex. The location of the proposed structures is shown in the enclosed Plot Plan. Due to the preliminary stage of the project, structural information is not available for the proposed structures.

The proposed structures will range between one and twenty eight levels in height. The enclosed Plot Plan shows the anticipated height of each structure. It is anticipated that the structures proposed within the northwestern, southeastern and southwestern quadrants of the site will be serviced by subterranean levels, while the structures proposed within the northeastern quadrant of the site will be built near the existing grade.

The enclosed Plot Plan, Survey Plan, and Cross Sections A-A' and B-B' show the approximate alignment and depth of the proposed subterranean levels. These drawings reflect the maximum numbers of subterranean levels that would be constructed; however fewer numbers of subterranean levels may ultimately be built. The structures proposed within the southeastern quadrant of the site will be underlain by five subterranean levels, which finished floor will extend to an approximate depth of 65 feet below grade. The structures proposed within the southwestern quadrant of the site will be underlain by two subterranean levels, which finished floor will extend to an approximate depth of 23 feet below grade. The structures proposed within the northwestern quadrant of the site will be underlain by one and two subterranean levels, which finished floors will extend to an approximate depth of 12 and 23 feet below grade, respectively. Based on the currently proposed subterranean depths, it is anticipated that excavations up to 75 feet in depth may be required for construction of the proposed subterranean levels and their foundation elements.

4.0 FIELD EXPLORATION

Geotechnologies, Inc. has recently conducted subsurface exploration at the subject site for the preparation of the referenced preliminary geotechnical engineering investigation. The site was explored on June 30 and July 1, 2016 by excavating four borings, and on July 5, 2016 by performing four Cone Penetration Test sounding (CPT). The borings were excavated to depths ranging between 50 and 60 feet below grade with the aid of a truck-mounted drilling machine using 8-inch diameter hollowstem augers. The CPT's were conducted to depths ranging between 52.82 and 60.53 feet below grade. The borings and CPT's locations are shown on the enclosed plot plans, and interpretation of the geologic materials encountered is provided in the enclosed Boring Logs, Plates A-1 through A-4.

5.0 RESEARCH

This firm is in receipt of the following geotechnical report, which pertains to the design and construction of the existing development. A copy of this report was obtained by this firm from the City of Los Angeles, Department of Building and Safety, Data and Records Department.

1. ***Maurseth, Howe, Lockwood and Associates, January 15, 1971, Report of Foundation Investigation, Proposed Warner Ranch Shopping Mall, Woodland Hills, California, Project Number 5669-F.***
   This report pertains to the design and construction of the existing shopping center structure. A total of seven geotechnical borings were excavated as part of this investigation, within the central portion of the site. The borings were excavated to depths ranging between 25 and 60 feet below the ground surface. The location of these borings is shown in the enclosed plot plans, and the individual logs may be found in the Appendix of this report.

6.0 GEOLOGIC MATERIALS

Fill:
Fill materials were encountered in the exploratory excavations conducted by this firm to depths ranging between 3 and 5 feet below the existing grade in the exploratory excavations. However, it is anticipated that deeper fill materials, placed during the previous site grading, may be encountered in the immediate vicinity of the existing structure. The fill observed consists of a mixture of silty sands, clayey sands, and sandy clay, which is dark brown to dark gray in color, moist, medium dense or stiff and fine grained.

Alluvium:
The fill materials were observed to be underlain by native alluvial soils, consisting of interlayered mixtures of clay, silt and sand. The native alluvial soils range from medium brown to dark brown in color, and are moist to very moist, medium dense, or stiff to very stiff, and fine grained.

Bedrock (Modelo Formation):
Bedrock of the mid-Miocene Modelo formation was encountered in all four borings, at depths ranging between 30 and 45 feet below the existing grade. The bedrock observed consists of claystone, siltstone and sandstone, and is dark yellowish brown to dark gray in color, moist to wet, and moderately hard to hard.

The Modelo Formation is typically bedded. Bedding within the Modelo Formation has been mapped south and west of the site by Dibblee, 1992. As shown in the enclosed Local Geologic Map, the closest beddings mapped dip north between 5 and 18 degrees.

More detailed descriptions of the earth materials encountered may be obtained from individual logs of the subsurface excavations.

7.0 GROUNDWATER

The historically highest groundwater level for the site was established by review of California Geological Survey Seismic Hazard Zone Report of the Canoga Park Quadrangle, Plate 1.2 entitled “Historically Highest Ground Water Contours” (2006). Review of this plate indicates that the historically highest groundwater level for the site varies from 23 feet within the northern portion of the site, to 30 feet within the southern portion. A copy of this plate has been enclosed herein.

Groundwater was observed in all four borings excavated by this firm, as well as all seven borings excavated by a previous geotechnical consultant. Copies of the boring logs prepared by the previous geotechnical consultant may be found in the Appendix of this report. The groundwater observed is likely the result of a perched water condition created by the underlying clay soils and bedrock. The table below summarizes the depth at which groundwater was observed:

Boring No.	**Geotechnical Consultant**	**Drilling Date**	**Depth to Water Below G.S (feet)**	**Approx. Groundwater Level Elevation (feet)**
B1	Geotechnologies, Inc.	06/30/2016	30.0	811.0
B2	Geotechnologies, Inc.	07/01/2016	25.0	815.5
B3	Geotechnologies, Inc.	06/30/2016	30.0	794.7
B4	Geotechnologies, Inc.	07/01/2016	21.5	803.1
1	*Maurseth, Howe, Lockwood* & Assoc.	12/15/1970	16.0	814.0
2	*Maurseth, Howe, Lockwood* & Assoc.	12/15/1970	19.0	815.0
3	*Maurseth, Howe, Lockwood* & Assoc.	12/28/1970	19.0	810.0
4	*Maurseth, Howe, Lockwood* & Assoc.	12/29/1970	17.0	816.0
5	*Maurseth, Howe, Lockwood* & Assoc.	12/15/1970	19.0	810.0
6	*Maurseth, Howe, Lockwood* & Assoc.	12/29/1970	18.0	813.0
7	*Maurseth, Howe, Lockwood* & Assoc.	12/28/1970	19.0	812.0

Fluctuations in the level of groundwater may occur due to variations in rainfall, temperature, and other factors not evident at the time of the measurements reported herein. Fluctuations also may occur across the site. High groundwater levels can result in changed conditions.

8.0 LOCAL GEOLOGY

The site is located in the western portion of the San Fernando Valley, on a relatively flat area surrounded by knolls to the east, south and west. At the site, alluvial soils comprised mainly of clays and silts were observed to be underlain by the Modelo Formation bedrock, which is a moderately bedded assemblage of sandstone, siltstone and claystone. The distribution of nearby geologic materials is shown on the Local Geologic Map enclosed in the Appendix of this report.

9.0 REGIONAL GEOLOGIC SETTINGS

The subject property is located in the Transverse Ranges Geomorphic Province. The Transverse Ranges are characterized by roughly east-west trending mountains and the northern and southern boundaries are formed by reverse fault scarps. The convergent deformational features of the Transverse Ranges are a result of north-south shortening due to plate tectonics. This has resulted in local folding and uplift of the mountains along with the propagation of thrust faults (including blind thrusts). The intervening valleys have been filled with sediments derived from the bordering mountains.

10.0 SOIL AND GEOLOGY ISSUES

a) Regional Faulting

Based on criteria established by the California Division of Mines and Geology (CDMG) now called California Geologic Survey (CGS), faults may be categorized as active, potentially active, or inactive. Active faults are those which show evidence of surface displacement within the last 11,000 years (Holocene-age). Potentially-active faults are those that show evidence of most recent surface displacement within the last 1.6 million years (Quaternary-age). Faults showing no evidence of surface displacement within the last 1.6 million years are considered inactive for most purposes, with the exception of design of some critical structures.

Buried thrust faults are faults without a surface expression but are a significant source of seismic activity. They are typically broadly defined based on the analysis of seismic wave recordings of hundreds of small and large earthquakes in the Southern California area. Due to the buried nature of these thrust faults, their existence is usually not known until they produce an earthquake. The risk for surface rupture potential of these buried thrust faults is inferred to be low (Leighton, 1990). However, the seismic risk of these buried structures in terms of recurrence and maximum potential magnitude is not well established. Therefore, the potential for surface rupture on these surface-verging splays at magnitudes higher than 6.0 cannot be precluded.

A list of faults located within 60 miles (100 kilometers) from the project sites has been provided in the enclosed table titled: Seismic Source Summary Table. A Southern California Fault Map has also been enclosed. The following sections describe some of the regional active faults, potentially active faults, and blind thrust faults.

i) <u>Active Faults</u>

<u>Santa Susana Fault</u>

The Santa Susana fault extends approximately 17 miles west-northwest from the northwest edge of the San Fernando Valley into Ventura County and is at the surface high on the south flank of the Santa Susana Mountains. The fault ends near the point where it overrides the south-side-up South strand of the Oak Ridge fault. The Santa Susana fault strikes northeast at the Fernando lateral ramp and turns east at the northern margin of the Sylmar Basin to become the Sierra Madre fault. This fault is exposed near the base of the San Gabriel Mountains for approximately 46 miles from the San Fernando Pass at the Fernando lateral ramp east to its intersection with the San Antonio Canyon fault in the eastern San Gabriel Mountains, east of which the range front is formed by the Cucamonga fault. The Santa Susana fault has not experienced any recent major ruptures except for a slight rupture during the 6.5 magnitude 1971 Sylmar earthquake.[a] The Santa Susana Fault is considered to be active by the County of Los Angeles. It is believed that the Santa Susana fault has the potential to produce a 6.9 magnitude earthquake. The closest trace of the fault is located approximately 8.84 miles north of the site.

<u>Malibu Coast Fault</u>

The Malibu Coast fault is part of the Transverse Ranges Southern Boundary fault system, a west-trending system of reverse, oblique-slip, and strike-slip faults that extends for more than approximately 124 miles along the southern edge of the Transverse Ranges and includes the Hollywood, Raymond, Anacapa–Dume, Malibu Coast, Santa Cruz Island, and Santa Rosa Island faults.

The Malibu Coast fault zone runs in an east-west orientation onshore subparallel to and along the shoreline for a linear distance of about 17 miles through the Malibu City limits, but also extends offshore to the east and west for a total length

[a] *California Institute of Technology, Southern California Data Center. Chronological Earthquake Index, www.data.scec.org/significant/santasusana.html; accessed May 24, 2012.*

of approximately 37.5 miles. The onshore Malibu Coast fault zone involves a broad, wide zone of faulting and shearing as much as 1 mile in width. While the Malibu Coast Fault Zone has not been officially designated as an active fault zone by the State of California and no Special Studies Zones have been delineated along any part of the fault zone under the Alquist-Priolo Act of 1972, evidence for Holocene activity (movement in the last 11,000 years) has been established in several locations along individual fault splays within the fault zone. Due to such evidence, several fault splays within the onshore portion of the fault zone are identified as active.[b]

Large historic earthquakes along the Malibu Coast fault include the 1979, 5.2 magnitude earthquake and the 1989, 5.0 magnitude earthquake.[c] The Malibu Coast fault zone is approximately 9.95 miles south of the site and is believed to be capable of producing a maximum 7.0 magnitude earthquake.

Sierra Madre Fault System

The Sierra Madre fault alone forms the southern tectonic boundary of the San Gabriel Mountains in the northern San Fernando Valley. It consists of a system of faults approximately 75 miles in length. The individual segments of the Sierra Madre fault system range up to 16 miles in length and display a reverse sense of displacement and dip to the north. The most recently active portions of the zone include the Mission Hills, Sylmar and Lakeview segments, which produced an earthquake in 1971 of magnitude 6.4. Tectonic rupture along the Lakeview Segment during the San Fernando Earthquake of 1971 produced displacements of approximately 2½ to 4 feet upward and southwestward.

It is believed that the Sierra Madre fault zone is capable of producing an earthquake of magnitude 7.3. The closest trace of the fault is located approximately 11.01 miles northeast of the site.

Verdugo Fault

The Verdugo Fault is located approximately 11.80 miles to the east of the site. The Verdugo Fault runs along the southwest edge of the Verdugo Mountains. The fault displays a reverse motion. According to Weber, et. al., (1980) 2 to 3 meter high scarps were identified in alluvial fan deposits in the Burbank and Glendale areas. Further to the northeast, in Sun Valley, a fault was reportedly

[b] *City of Malibu Planning Department, Malibu General Plan, Chapter 5.0, Safety and Health Element, http://qcode.us/codes/malibu-general-plan/; accessed October 25, 2012.*
[c] *California Institute of Technology, Southern California Data Center. Chronological Earthquake Index, www.data.scec.org/significant/malibu1979.html; accessed October 25, 2012.*

identified at a depth of 40 feet in a sand and gravel pit. Although considered active by the County of Los Angeles, Department of Public Works (Leighton, 1990), and the United States Geological Survey, the fault is not designated with an Earthquake Fault Zone by the California Geological Survey. It is estimated that the Verdugo Fault is capable of producing a maximum 6.9 magnitude earthquake.

Hollywood Fault

The Hollywood fault is part of the Transverse Ranges Southern Boundary fault system. The Hollywood fault is located approximately 13.09 miles southeast of the site. This fault trends east-west along the base of the Santa Monica Mountains from the West Beverly Hills Lineament in the West Hollywood–Beverly Hills area to the Los Feliz area of Los Angeles. The Hollywood fault is the eastern segment of the reverse oblique Santa Monica–Hollywood fault. Based on geomorphic evidence, stratigraphic correlation between exploratory borings, and fault trenching studies, this fault is classified as active.

Until recently, the approximately 9.3-mile long Hollywood fault was considered to be expressed as a series of linear ground-surface geomorphic expressions and south-facing ridges along the south margin of the eastern Santa Monica Mountains and the Hollywood Hills. Multiple recent fault rupture hazard investigations have shown that the Hollywood fault is located south of the ridges and bedrock outcroppings along portions of Sunset Boulevard. The Hollywood fault has not produced any damaging earthquakes during the historical period and has had relatively minor micro-seismic activity. It is estimated that the Hollywood fault is capable of producing a maximum 6.7 magnitude earthquake. In 2014, the California Geological Survey established an Earthquake Fault Zone for the Hollywood Fault.

Palos Verdes Fault

Studies indicate that there are several active on-shore extensions of the strike-slip Palos Verdes fault, which is located approximately 14.76 miles south of the site. Geophysical data also indicate the off-shore extensions of the fault are active, offsetting Holocene age deposits. No historic large magnitude earthquakes are associated with this fault. However, the fault is considered active by the California Geological Survey. It is estimated that the Palos Verdes fault is capable of producing a maximum 7.7 magnitude earthquake.

Newport-Inglewood Fault System

The Newport-Inglewood fault system is located 15.47 miles to the south of the site. The Newport-Inglewood fault zone is a broad zone of discontinuous north to northwestern echelon faults and northwest to west trending folds. The fault zone extends southeastward from West Los Angeles, across the Los Angeles Basin, to Newport Beach and possibly offshore beyond San Diego (Barrows, 1974; Weber, 1982; Ziony, 1985).

The onshore segment of the Newport-Inglewood fault zone extends for about 37 miles from the Santa Ana River to the Santa Monica Mountains. Here it is overridden by, or merges with, the east-west trending Santa Monica zone of reverse faults.

The surface expression of the Newport-Inglewood fault zone is made up of a strikingly linear alignment of domal hills and mesas that rise on the order of 400 feet above the surrounding plains. From the northern end to its southernmost onshore expression, the Newport-Inglewood fault zone is made up of: Cheviot Hills, Baldwin Hills, Rosecrans Hills, Dominguez Hills, Signal Hill-Reservoir Hill, Alamitos Heights, Landing Hill, Bolsa Chica Mesa, Huntington Beach Mesa, and Newport Mesa. Several single and multiple fault strands, arranged in a roughly left stepping en echelon arrangement, make up the fault zone and account for the uplifted mesas.

The most significant earthquake associated with the Newport-Inglewood fault system was the Long Beach earthquake of 1933 with a magnitude of 6.3 on the Richter scale. It is believed that the Newport-Inglewood fault zone is capable of producing a 7.5 magnitude earthquake.

San Gabriel Fault System

The San Gabriel fault system is located approximately 16.09 miles northeast of the site. The San Gabriel fault system comprises a series of subparallel, steeply north-dipping faults trending approximately north 40 degrees west with a right-lateral sense of displacement. There is also a small component of vertical dip-slip separation. The fault system exhibits a strong topographic expression and extends approximately 90 miles from San Antonio Canyon on the southeast to Frazier Mountain on the northwest. The estimated right lateral displacement on the fault varies from 34 miles (Crowell, 1982) to 40 miles (Ehlig, 1986), to 10 miles (Weber, 1982). Most scholars accept the larger displacement values and place the majority of activity between the Late Miocene and Late Pliocene Epochs of the Tertiary Era (65 to 1.8 million years before present).

Portions of the San Gabriel fault system are considered active by California Geological Survey. Recent seismic exploration in the Valencia area (Cotton and others, 1983; Cotton, 1985) has established Holocene offset. Radiocarbon data acquired by Cotton (1985) indicate that faulting in the Valencia area occurred between 3,500 and 1,500 years before present.

It is hypothesized by Ehlig (1986) and Stitt (1986) that the Holocene offset on the San Gabriel fault system is due to sympathetic (passive) movement as a result of north-south compression of the upper Santa Susana thrust sheet. Seismic evidence indicates that the San Gabriel fault system is truncated at depth by the younger, north-dipping Santa Susana-Sierra Madre faults (Oakeshott, 1975; Namson and Davis, 1988).

Raymond Fault

The Raymond fault is located approximately 22.13 miles to the east of the site. The Raymond fault is an effective groundwater barrier which divides the San Gabriel Valley into groundwater sub-basins. Much of the geomorphic evidence for the Raymond fault has been obliterated by urbanization of the San Gabriel Valley. However, a discontinuous escarpment can be traced from Monrovia to the Arroyo Seco in South Pasadena. The very bold, “knife edge” escarpment in Monrovia parallel to Scenic Drive is believed to be a fault scarp of the Raymond fault. Trenching of the Raymond fault is reported to have revealed Holocene movement (Weaver and Dolan, 1997).

The recurrence interval for the Raymond fault is probably slightly less than 3,000 years, with the most recent documented event occurring approximately 1,600 years ago (Crook, et al, 1978). However, historical accounts of an earthquake that occurred in July 1855 as reported by Toppozada and others, 1981, places the epicenter of a Richter Magnitude 6 earthquake within the Raymond fault. It is believed that the Raymond fault is capable of producing a 6.8 magnitude earthquake. The Raymond Fault is considered active by the California Geological Survey.

Whittier-Elsinore Fault System

The Whittier fault is located approximately 34.29 miles to the southeast of the site. The Whittier fault together with the Chino fault comprises the northernmost extension of the northwest trending Elsinore fault system. The mapped surface of the Whittier fault extends in a west-northwest direction for a distance of 20 miles from the Santa Ana River to the terminus of the Puente Hills. The Whittier fault is essentially a strike-slip, northeast dipping fault zone which also exhibits evidence of reverse movement along with en echelon[d] fault segments, en echelon folds and anatomizing (braided) fault segments. Right lateral offsets of stream

[d] *En echelon refers to closely-spaced, parallel or subparallel, overlapping or step-like minor structural features*

drainages of up to 8800 feet (Durham and Yerkes, 1964) and vertical separation of the basement complex of 6,000 to 12,000 feet (Yerkes, 1972), have been documented. It is believed that the Whittier fault is capable of producing a 7.8 magnitude earthquake.

The Whittier Narrows earthquakes of October 1, 1987, and October 4, 1987, occurred in the area between the westernmost terminus of the mapped trace of the Whittier fault and the frontal fault system. The main 5.9 magnitude shock of October 1, 1987 was not caused by slip on the Whittier fault. The quake ruptured a gently dipping thrust fault with an east-west strike (Haukson, Jones, Davis and others, 1988). In contrast, the earthquake of October 4, 1987, is assumed to have occurred on the Whittier fault as focal mechanisms show mostly strike-slip movement with a small reverse component on a steeply dipping northwest striking plane (Haukson, Jones, Davis and others, 1988).

San Andreas Fault System

The San Andreas Fault system forms a major plate tectonic boundary along the western portion of North America. The system is predominantly a series of northwest trending faults characterized by a predominant right lateral sense of movement. At its closest point the San Andreas Fault system is located approximately 37.74 miles to the northeast of the site.

The San Andreas and associated faults have had a long history of inferred and historic earthquakes. Cumulative displacement along the system exceeds 150 miles in the past 25 million years (Jahns, 1973). Large historic earthquakes have occurred at Fort Tejon in 1857, at Point Reyes in 1906, and at Loma Prieta in 1989. Based on single-event rupture length, the maximum Richter magnitude earthquake is expected to be approximately 8.25 (Allen, 1968). The recurrence interval for large earthquakes on the southern portion of the fault system is on the order of 100 to 200 years.

ii) Potentially Active Faults

Santa Monica Fault

The Santa Monica fault, located approximately 10.61 miles to the southeast of the sites, is also part of the Transverse Ranges Southern Boundary fault system. The Santa Monica fault extends east from the coastline in Pacific Palisades through Santa Monica and West Los Angeles and merges with the Hollywood fault at the West Beverly Hills Lineament in Beverly Hills where its strike is northeast. It is believed that at least six surface ruptures have occurred in the past 50 thousand years. In addition, a well-documented surface rupture occurred between 10 and

17 thousand years ago, although a more recent earthquake probably occurred 1 to 3 thousand years ago. This leads to an average earthquake recurrence interval of 7 to 8 thousand years.[e] It is thought that the Santa Monica fault system may produce earthquakes with a maximum magnitude of 7.4.

Anacapa-Dume Fault

The Anacapa–Dume fault, located approximately 11.45 miles to the southwest of the site, is a near-vertical offshore escarpment exceeding 600 meters locally, with a total length exceeding 62 miles. This fault is also part of the Transverse Ranges Southern Boundary fault system. It occurs as close as 3.6 miles offshore south of Malibu at its western end, but trends northeast where it merges with the offshore segments of the Santa Monica Fault Zone. It is believed that the Anacapa–Dume fault is responsible for generating the historic 1930 magnitude 5.2 Santa Monica earthquake, the 1973 magnitude 5.3 Point Mugu earthquake, and the 1979 and 1989 Malibu earthquakes, each of which possessed a magnitude of 5.0.[f] The Anacapa–Dume fault is thought to be capable of producing a maximum magnitude 7.2 earthquake.

iii) Blind Thrusts Faults

Blind or buried thrust faults are faults without a surface expression but are a significant source of seismic activity. They are typically broadly defined based on the analysis of seismic wave recordings of hundreds of small and large earthquakes in the Southern California area. Due to the buried nature of these thrust faults, their existence is sometimes not known until they produce an earthquake. Two blind thrust faults in the Los Angeles metropolitan area are the Puente Hills blind thrust located just east of downtown and the Elysian Park blind thrust just north of downtown. Another blind thrust fault of note is the Northridge fault located in the northwestern portion of the San Fernando Valley.

The Elysian Park anticline is thought to overlie the Elysian Park blind thrust. This fault has been estimated to cause an earthquake every 500 to 1,300 years in the magnitude range 6.2 to 6.7. The Elysian Park anticline is approximately 18.15 miles to the southeast of the site.

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[e] *Southern California Earthquake Center, a National Science Foundation and U.S. Geological Survey Center. Active Faults in the Los Angeles Metropolitan Region, www.scec.org/research/special/SCEC001activefaultsLA.pdf; accessed May 24, 2012.*

[f] *City of Malibu Planning Department. Malibu General Plan, Chapter 5.0, Safety and Health Element, http://qcode.us/codes/malibu-general-plan/; accessed May 24, 2012.*

The Puente Hills blind thrust fault extends eastward from Downtown Los Angeles to the City of Brea in northern Orange County. The Puente Hills blind thrust fault includes three north-dipping segments, named from east to west as the Coyote Hills segment, the Santa Fe Springs segment, and the Los Angeles segment. These segments are overlain by folds expressed at the surface as the Coyote Hills, Santa Fe Springs Anticline, and the Montebello Hills. The Puente Hills blind thrust fault lies directly beneath downtown Los Angeles.

The Santa Fe Springs segment of the Puente Hills blind thrust fault is believed to be the cause of the October 1, 1987, Whittier Narrows Earthquake. Based on deformation of late Quaternary age sediments above this fault system and the occurrence of the Whittier Narrows earthquake, the Puente Hills blind thrust fault is considered an active fault capable of generating future earthquakes beneath the Los Angeles Basin. The Puente Hills Thrust is located approximately 18.44 miles to the southeast of the site. A maximum moment magnitude of 7.0 is estimated by researchers for the Puente Hills blind thrust fault.

The Mw 6.7 Northridge earthquake was caused by the sudden rupture of a previously unknown, blind thrust fault. This fault has since been named the Northridge Thrust, however it is also known in some of the literature as the Pico Thrust. It has been assigned a maximum magnitude of 6.9 and a 1,500 to 1,800 year recurrence interval. The Northridge thrust is located 12.37 miles to the north of the site.

b) <u>Surface Ground Rupture</u>

In 1972, the Alquist-Priolo Special Studies Zones Act (now known as the Alquist-Priolo Earthquake Fault Zoning Act) was passed into law. The Act defines “active” and “potentially active” faults utilizing the same aging criteria as that used by California Geological Survey (CGS). However, established state policy has been to zone only those faults which have direct evidence of movement within the last 11,000 years. It is this recency of fault movement that the CGS considers as a characteristic for faults that have a relatively high potential for ground rupture in the future.

CGS policy is to delineate a boundary from 200 to 500 feet wide on each side of the known fault trace based on the location precision, the complexity, or the regional significance of the fault. If a site lies within an Earthquake Fault Zone, a geologic fault rupture investigation must be performed that demonstrates that the proposed building site is not threatened by surface displacement from the fault before development permits may be issued.

The subject site is not located within an Alquist-Priolo Earthquake Fault Zone. The nearest active fault that has been given an Earthquake Fault Zone designation is the Malibu Coast Fault. The USGS 2008 National Seismic Hazard Maps database indicates that the closest trace of the Malibu Coast fault zone is approximately 9.95 miles south of the site. Based on these considerations, the potential for surface rupture at the site is considered remote.

c) Seismicity

As with all of Southern California, the project site is subject to potential strong ground motion, should a moderate to strong earthquake occur on a local or regional fault. Design of any proposed structures on the site in accordance with the provisions of the applicable City of Los Angeles Building Code will mitigate the potential effects of strong ground shaking.

d) Liquefaction

The Seismic Hazards Zone Map of the Canoga Park Quadrangle by the State of California (CDMG, 1998), indicates that the subject site is located within an area designated as "Liquefiable." This determination is based on groundwater depth records, soil type and distance to a fault capable of producing a substantial earthquake. A copy of this map is provided in the Appendix.

As part of the referenced geotechnical engineering investigation, this firm has performed several site-specific liquefaction analyses. Results from the liquefaction analyses indicate that some of the alluvial soil layers and/or lenses may liquefy in the event of an earthquake on a local or regional fault. Liquefaction is not anticipated within the Modelo Formation bedrock due to its density and long tectonic history.

Seismically induced settlement between zero and 1.15 inches could potentially occur at the site as a result of liquefaction within the alluvial soils. Such settlements are typically most damaging when the settlements are differential in nature across the length of structures. Seismically induced differential settlement is anticipated to be on the order of 0.77 inches.

It is anticipated that the structures proposed within the southeastern and southwestern quadrants of the site will be sufficiently deep to bear in bedrock. Since the bedrock is not considered to be susceptible to liquefaction, these structures would not be considered to be susceptible to seismically induced settlement.

The structures proposed within the northeastern and northwestern quadrants are expected to bear on top of native alluvial soils. Therefore, these structures will be subject to liquefaction settlement. It is anticipated that these structures will have to be supported on a mat foundation system, or a deep foundation system, such as friction piles, in order to tolerate the anticipated seismically-induced settlement.

As addressed in the referenced geotechnical engineering investigation, the potential for lateral spread and surface manifestations due to liquefaction is considered to be low for the site.

e) Deaggregated Seismic Source Parameters

The peak ground acceleration (PGA) and mean earthquake magnitude were obtained from the USGS Probabilistic Seismic Hazard Deaggregation program (USGS, 2008). The results are based on a 2 percent in 50 years ground motion (2,475 year return period). A published shear wave velocity, consistent with fine grained sediment, of 210 meters per second was utilized for Vs30 (Tinsley and Fumal, 1985). The deaggregation program indicates a PGA of 0.66g and a mean magnitude of 6.78 for the site.

f) 2013 California Building Code Seismic Parameters

It is anticipated that the structures proposed within the southeastern and southwestern quadrants of the site will bear directly in bedrock. The bedrock is not considered susceptible to liquefaction. Therefore, where structures bear directly on bedrock, this portion of the project may be classified as Site Class D.

It is anticipated that the structures proposed within the northeastern and northwestern portion of the site will bear in native alluvial soils. Some of these alluvial soil layers were determined to be liquefiable. According to Table 20.3-1 presented in ASCE 7-10, this portion of the project would be classified as Site Class F due to the liquefiable nature of the underlying soils. For Site Class F soils, ASCE 7-10 requires that a site-specific response spectrum evaluation be conducted. However, according to Section 20.3.1 of ASCE 7-10 (site class definition for Site Class F) the following exception is provided under Site Classification F:

EXCEPTION: *For structures having fundamental periods of vibration equal to or less than 0.5 s, site-response analysis is not required to determine spectral accelerations for liquefiable soils. Rather, a site class is permitted to be determined in accordance with Section 20.3 and the corresponding values of F_a and F_v determined from Tables 11.4-1 and 11.4-2.*

The alluvial soils underlying the subject site do not fall under any other characteristics of Site Class F, but fall within the characteristics of Site Class D. Therefore, for structures having a fundamental period of vibration equal to or less than 0.5 second, the subject site may be classified as Site Class D, which corresponds to a "Stiff Soil" Profile in accordance with the ASCE 7 standard.

The anticipated fundamental periods of vibration for the proposed structures are not available at this time. However, based on the experience of this firm, it is likely that the taller structures will have a fundamental period of vibration greater than 0.5 second. If it is determined that the fundamental period of vibration of some of the proposed structures will be greater than 0.5 second, a site-specific response spectrum evaluation will be required.

The following seismic parameters are provided for the proposed structures which will have a fundamental period of vibration equal or less than 0.5 second, and for structures that will bear directly on bedrock:

2013 CALIFORNIA BUILDING CODE SEISMIC PARAMETERS	
Site Class	D (Limited to structures with a fundamental period of vibration equal or less than 0.5 second, or for structures that will bear directly on bedrock)
Mapped Spectral Acceleration at Short Periods (S_S)	1.852g
Site Coefficient (F_a)	1.0
Maximum Considered Earthquake Spectral Response for Short Periods (S_{MS})	1.852g
Five-Percent Damped Design Spectral Response Acceleration at Short Periods (S_{DS})	1.235g
Mapped Spectral Acceleration at One-Second Period (S_1)	0.650g
Site Coefficient (F_v)	1.5
Maximum Considered Earthquake Spectral Response for One-Second Period (S_{M1})	0.975g
Five-Percent Damped Design Spectral Response Acceleration for One-Second Period (S_{D1})	0.650g

g) Landsliding

The probability of seismically-induced landslides occurring on the site is considered to be negligible due to the general lack of substantive elevation difference across or adjacent to the site. Therefore, potential impacts related to landsliding would be less than significant.

h) Tsunamis, Seiches and Flooding

Tsunamis are large ocean waves generated by sudden water displacement caused by a submarine earthquake, landslide, or volcanic eruption. The site is high enough and far enough from the ocean to preclude being prone to hazards of a tsunami.

Seiches are large waves generated in enclosed bodies of water in response to ground shaking. No major water-retaining structures are located immediately up gradient from the site. Therefore, the risk of flooding from a seismically-induced seiche is considered to be remote.

Review of the County of Los Angeles Flood and Inundation Hazards Map, Leighton (1990), indicates the site does not lie within mapped inundation boundaries due to a breached upgradient reservoir.

Review of the applicable Flood Insurance Rate Map indicates the site lies outside the 0.2% annual chance floodplain area. A copy of this map is enclosed.

i) City of Los Angeles Methane Zone

Based on review of the NavigateLA Website, developed by the City of Los Angeles, Bureau of Engineering, Department of Public Works, the subject site is not located within the limits of a City of Los Angeles Methane Zone or Methane Buffer Zone.

j) Oil Wells

Based on review of the California State Division of Oil, Gas and Geothermal Resources (DOGGR) On-line Mapping System, the site is not located within the limits of an oil field, and no oil or gas wells were drilled on the site.

k) Temporary Excavations

All required excavations are expected to be sloped, or properly shored, in accordance with the provisions of the applicable City of Los Angeles Building Code. Therefore, the project would not result in any on-site or off-site landslide. Shoring systems may include soldier piles with rakers and/or tiebacks. Tiebacks would extend below adjacent properties and public right of ways. Appropriate notifications and agreements will be obtained by the development team prior to tieback installations.

l) Ground Failure

The proposed construction will not cause, or increase the potential for any seismic related ground failure on the project site or adjacent sites.

m) Expansive Soils

The onsite geologic materials are in the moderate to high expansion range. The Expansion Index was found to be between 58 and 118 for representative bulk samples. Design of the proposed structures in accordance with the provisions of the applicable City of Los Angeles Building Code will fully mitigate the potential effects of moderately expansive soils.

n) Sedimentation and Erosion

Grading, excavation and other earth moving activities could potentially result in erosion and sedimentation. For any grading proposed in the site from November to April (generally considered the rainy season) an erosion control plan consistent with the City of Los Angeles requirements would need to be prepared. Compliance with minimum code requirements will render project impacts related to sedimentation and erosion less than significant.

o) Landform Alterations

There are no significant hills, canyons, ravines, outcrops or other geologic or topographic features on the site. Therefore, any proposed project would not adversely affect any prominent geologic or topographic features.

p) Septic Tanks

It is the understanding of this firm that sewers are available at the site for wastewater disposal. No septic tanks or alternative disposal systems are necessary or anticipated for any future site projects.

q) Dewatering

Based on the depth of the proposed subterranean levels, it is anticipated the majority of these excavations will extend below the existing groundwater level, and temporary dewatering will be required during construction.

This firm recommends that where the subterranean retaining walls and concrete slabs-on-grade will extend below the existing groundwater level, the portion of the walls and slabs-on-grade extending below this level shall be designed for an undrained condition with full hydrostatic pressure. Therefore, permanent dewatering is not anticipated for the project.

The conditions identified in this document are typical of sites within this area of Los Angeles, and of a type that are routinely addressed through regulatory measures. Geotechnologies, Inc. appreciates the opportunity to provide our services on this project. Should you have any questions please contact this office.

Respectfully submitted,
GEOTECHNOLOGIES, INC.

GREGORIO VARELA
R.C.E. 81201

EDWARD F. HILL
G.E. 2126/C.E.G. 1403

GV:km

Enclosures: References
Vicinity Map
Plot Plan
Survey Plan
Cross Sections
Local Geologic Map
Historically Highest Groundwater Levels Plate
Seismic Source Summary Table
Southern California Fault Map
Seismic Hazard Zone Map
Flood Insurance Rate Map
Plates A-1 through A-4
Boring Logs by Maurseth, Howe, Lockwood & Associates (7 pages)

E-mail to: [Heather.Crossner@lw.com]

REFERENCES

California Department of Conservation, 2008, Guidelines for Evaluating and Mitigating Seismic Hazards in California, Special Publication 117A, California Geological Survey.

California Department of Conservation, Division of Mines and Geology, 1998, Seismic Hazard Zones Map, Canoga Park 7½-minute Quadrangle, CDMG Seismic Hazard Zone Mapping Act of 1990.

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Dibblee, T.W., 1992, Geologic Map of the Topanga and Canoga Park (South ½) 7.5-Minute Quadrangles, Map No DF-35, map scale 1: 24,000.

Leighton and Associates, Inc., 1990, Technical Appendix to the Safety Element of the Los Angeles County General Plan: Hazard Reduction in Los Angeles County.

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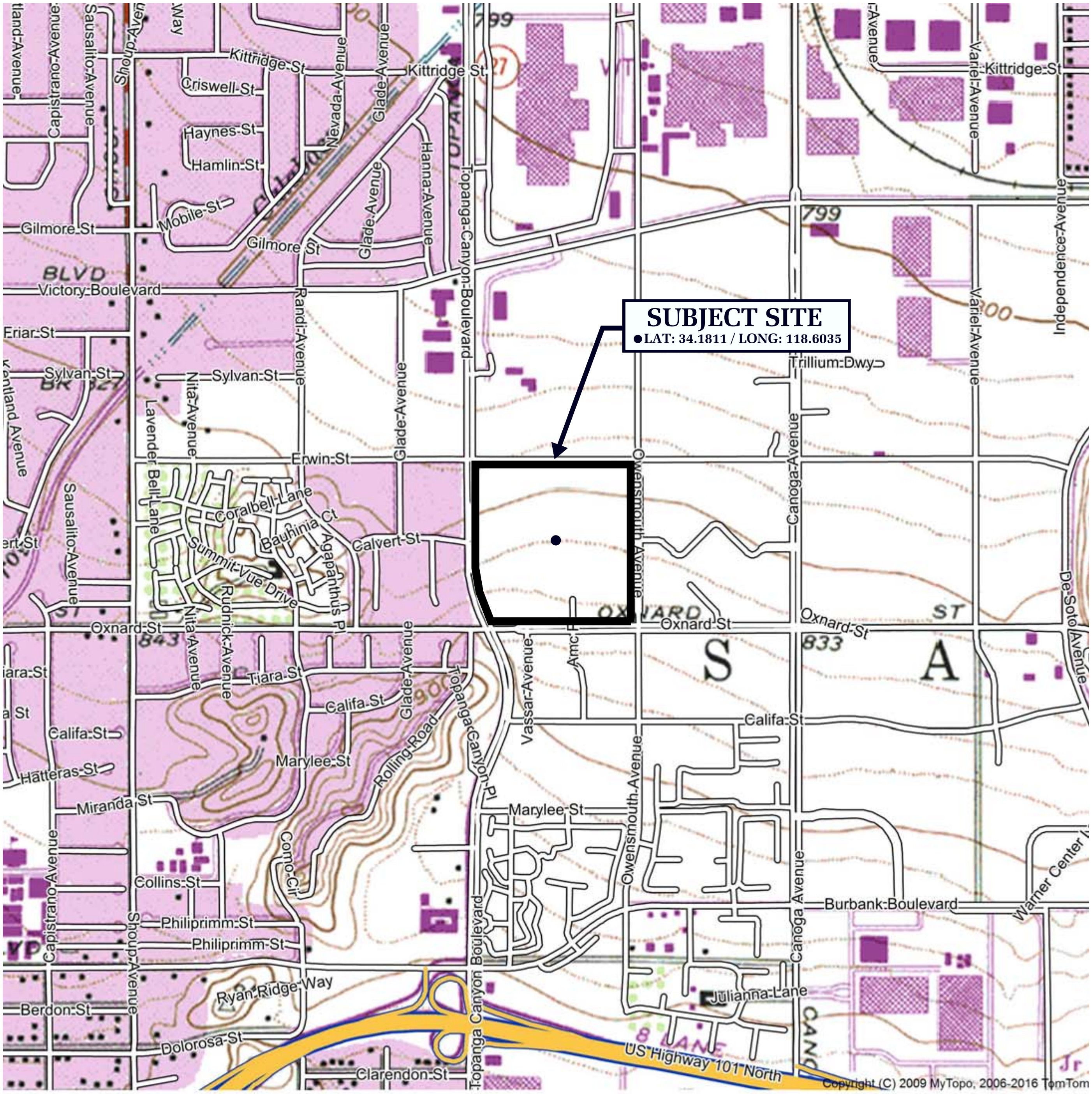
Youd, et al., 2001, Liquefaction Resistance of Soils: Summary report from the 19967 NCEER and 1998 NCEER/NSF Workshop on Evaluation of Liquefaction Resistance of Soils, ASCE, Journal of Geotechnical & Geoenvironmental Engineering, Vol. 127, October, pp 817-833.

Youd, T. L. and Garris, C. T., 1995, Liquefaction-Induced Ground Surface Disruption, Journal of Geotechnical Engineering, ASCE, Vol. 121, No. 11, P. 805-809.



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0.0 0.1 0.2 0.3 0.4 0.5 0.6
MILES

0 1000 2000 3000
FEET

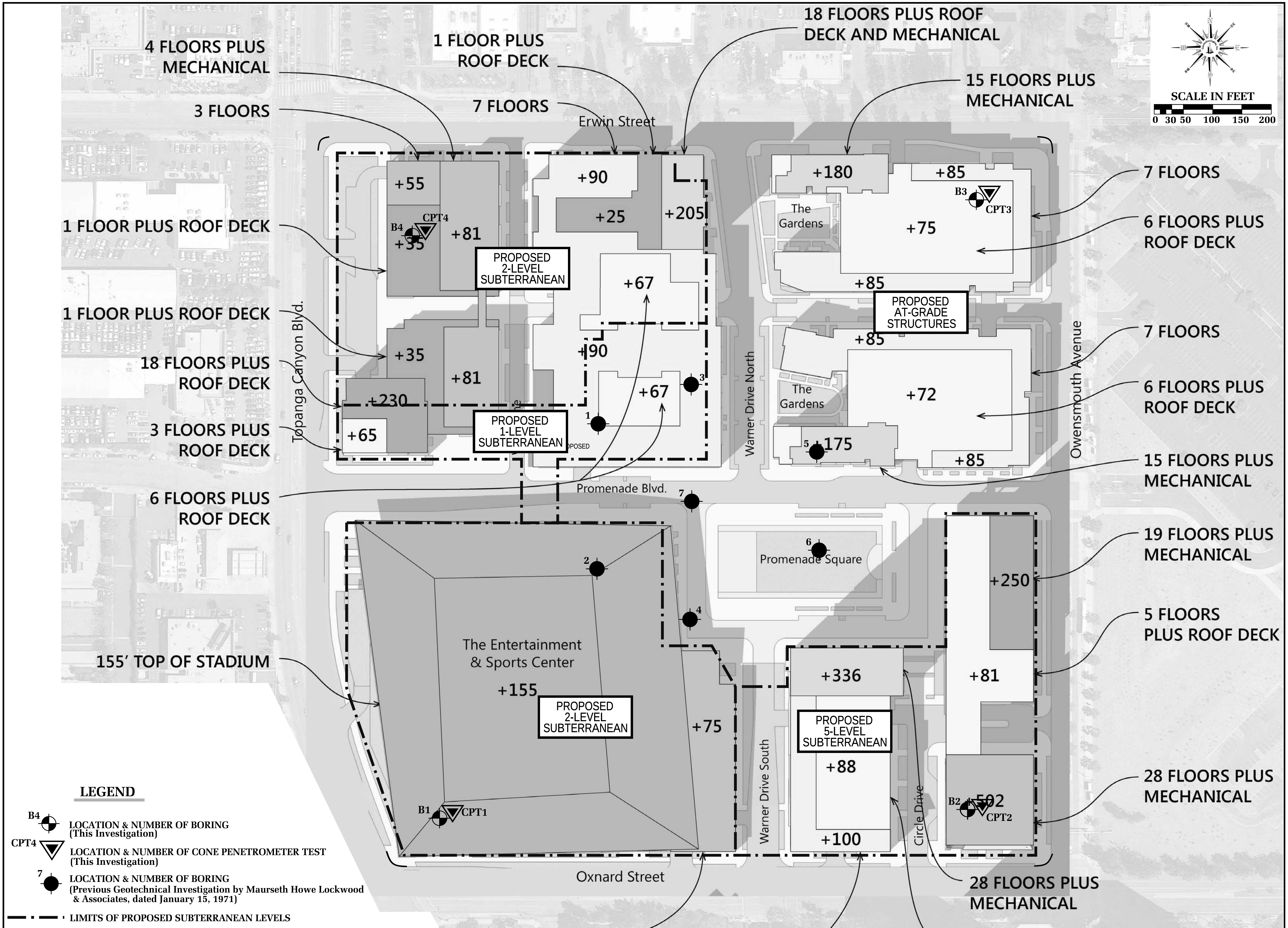
REFERENCE: U.S.G.S. TOPOGRAPHIC MAPS, 7.5 MINUTE SERIES, CANOGA PARK, CA QUADRANGLE

VICINITY MAP

Geotechnologies, Inc.
Consulting Geotechnical Engineers

WESTFIELD, LLC

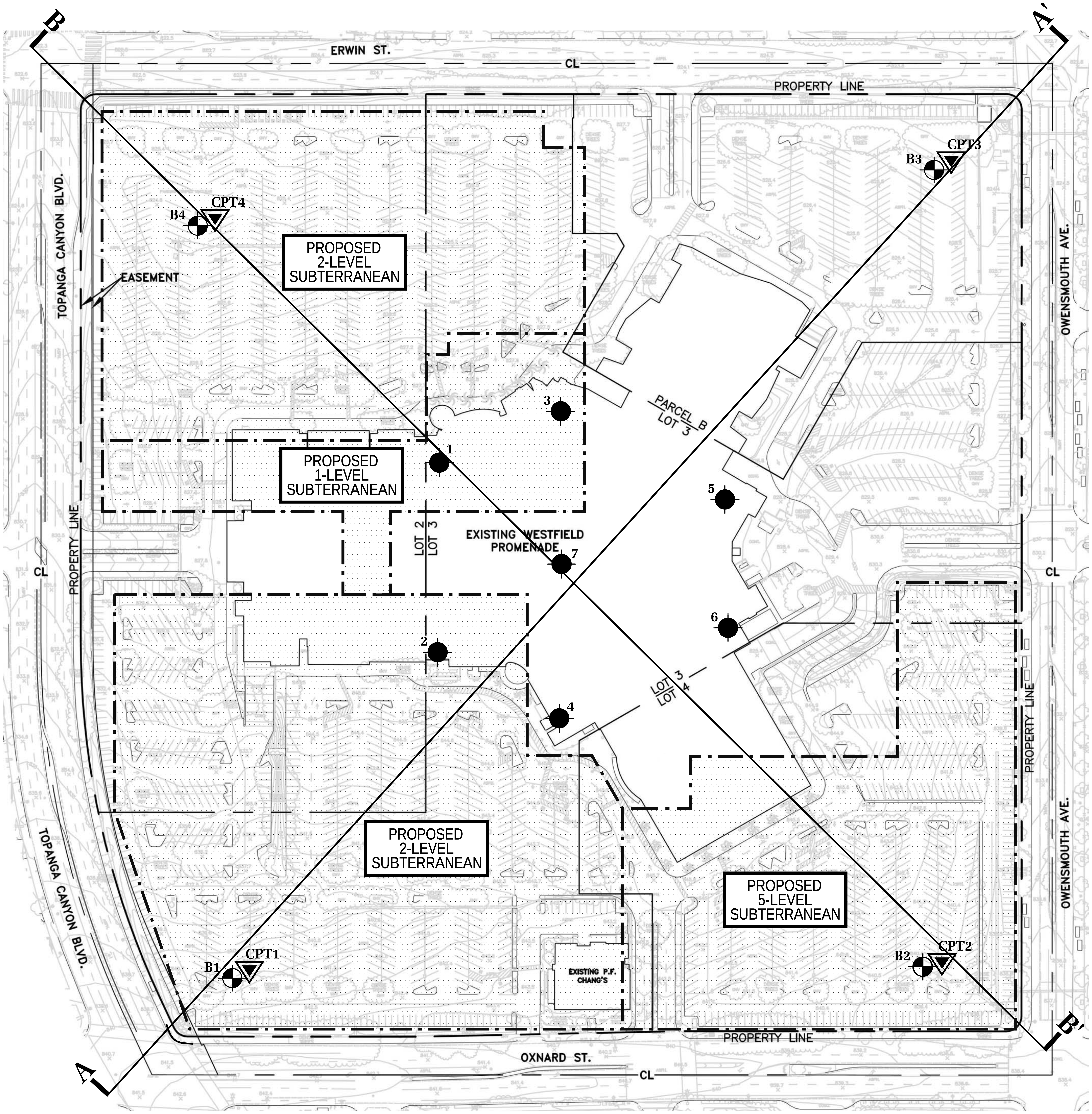
FILE NO. 21266

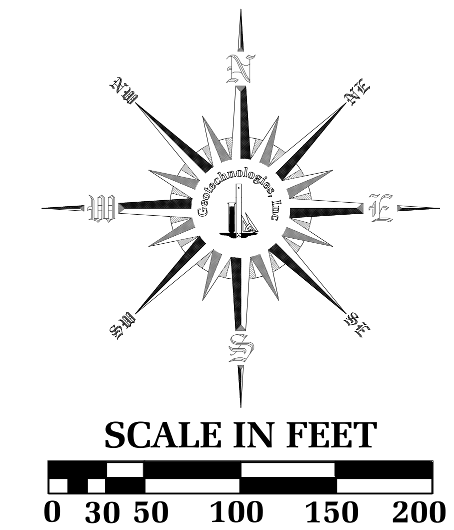


Geotechnologies, Inc.
Consulting Geotechnical Engineers

PLOT PLAN
WESTFIELD, LLC
File No.: 21266
Date: October '16

REFERENCE: MASTER PLAN BY JOHNSON FAIN DATED OCTOBER 6, 2016





LEGEND

B4 LOCATION & NUMBER OF BORING (This Investigation)

CPT4 LOCATION & NUMBER OF CONE PENETROMETER TEST (This Investigation)

7 LOCATION & NUMBER OF BORING (Previous Geotechnical Investigation by Maurseth Howe Lockwood & Associates, dated January 15, 1971)

B B' CROSS SECTION

LIMITS OF PROPOSED SUBTERRANEAN LEVELS

REFERENCE: EXISTING CONDITIONS SURVEY BY INCLEDON CONSULTING GROUP, NOT DATED
MASTER PLAN BY JOHNSON FAIN, DATED OCTOBER 6, 2016

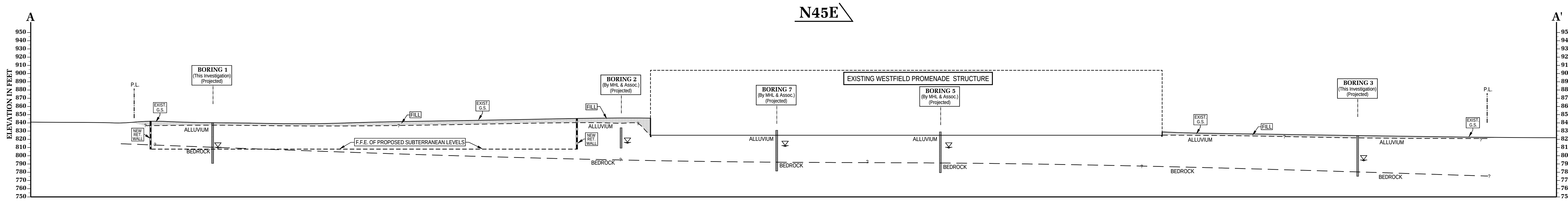
Geotechnologies, Inc.
Consulting Geotechnical Engineers

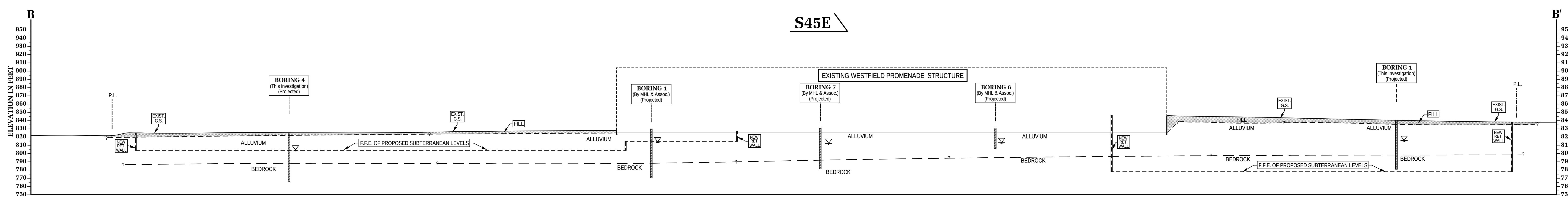
SURVEY PLAN

WESTFIELD, LLC

File No.: 21266

Date: October '16





SCALE IN FEET

0 30 50 100 150 200

LEGEND

GROUNDWATER LEVEL OBSERVED IN BORING

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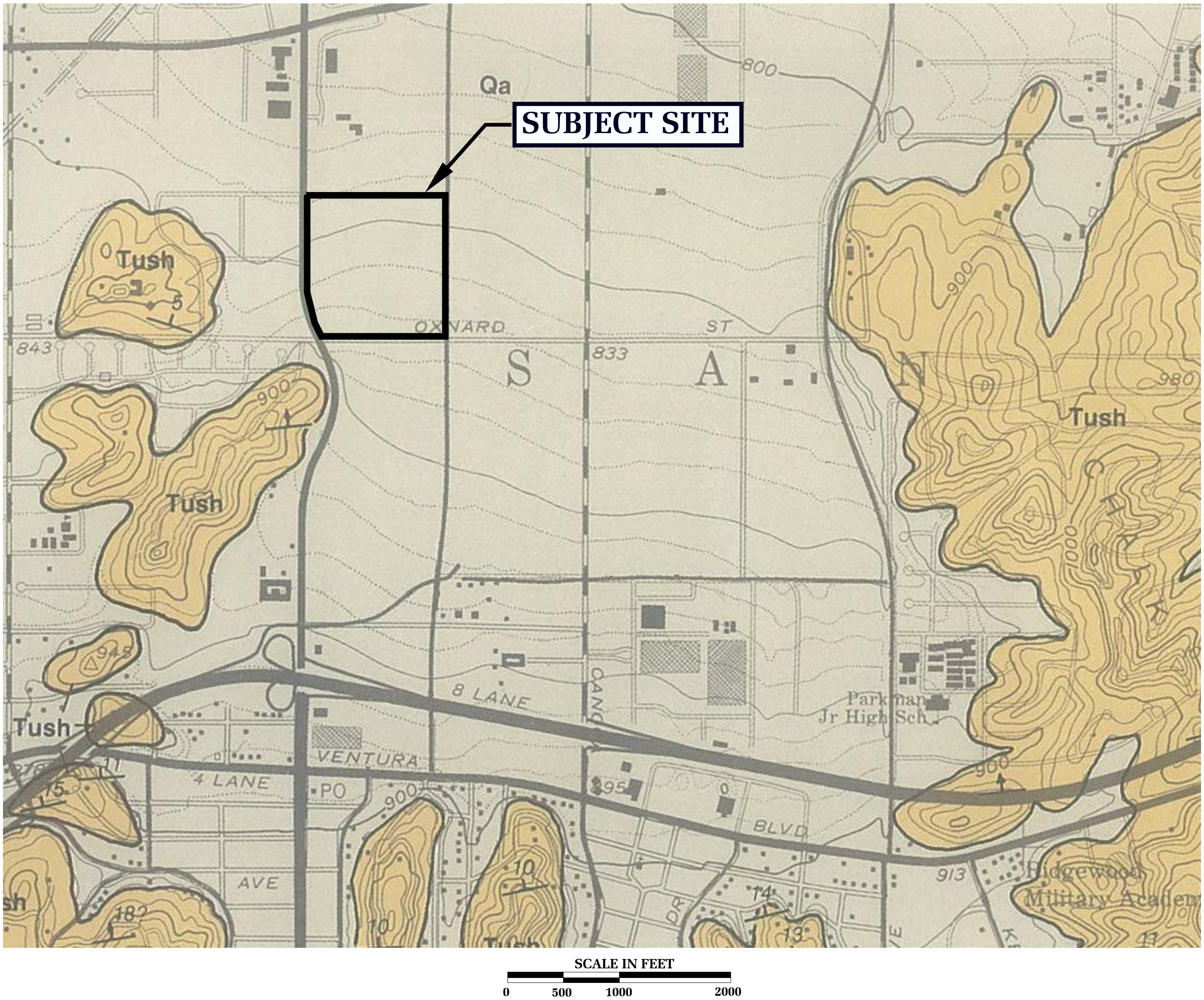
CROSS SECTIONS A-A' AND B-B'

WESTFIELD, LLC

File No.: 21266

Date: October '16

REFERENCES: EXISTING CONDITIONS SURVEY BY INCLEDON CONSULTING GROUP, NOT DATED
ANTICIPATED SUBTERRANEAN LEVEL DEPTHS, PROVIDED BY JOHNSON FAIN



LEGEND

Qa: **Surficial Sediments - alluvial gravel, sand and clay of valley areas**

Tush: **Unnamed Shale - light gray claystone and siltstone, moderately to vaguely bedded, crumbly where weathered**

18 **Bedrock Bedding and Orientation**

N

Geotechnologies, Inc

REFERENCE: DIBBLEE, T.W., (1992) GEOLOGIC MAP OF THE TOPANGA & CANOGA PARK (SOUTH HALF) QUADRANGLES (#DF-35)

LOCAL GEOLOGIC MAP - DIBBLEE

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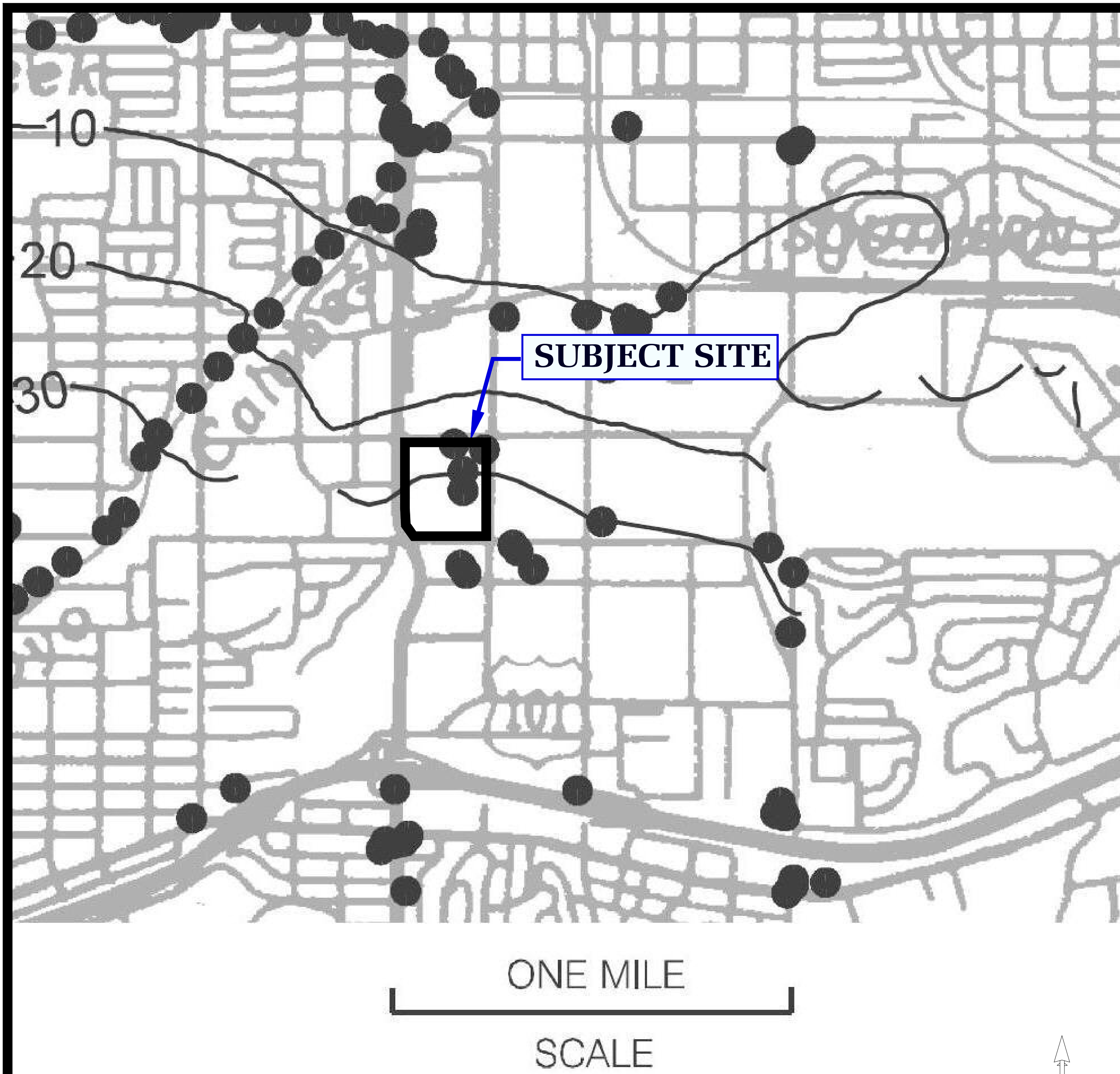
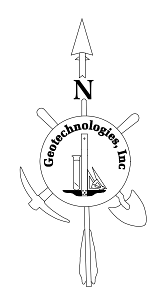
Consulting Geotechnical Engineers

WESTFIELD, LLC

FILE NO. 21266





20 Depth to groundwater in feet

REFERENCE: CDMG, SEISMIC HAZARD ZONE REPORT, 007
CANOGA PARK 7.5 - MINUTE QUADRANGLE, LOS ANGELES COUNTY, CALIFORNIA (1997, REVISED 2005)

HISTORICALLY HIGHEST GROUNDWATER LEVELS

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SEISMIC SOURCE SUMMARY TABLE

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Westfield, LLC

File No.: 21266

Based on USGS 2008 National Seismic Hazard Maps

Fault Name	Distance (Miles)	Preferred Dip (degrees)	Dip Direction	Slip Sense	Activity	Reference
Santa Susana	8.84	55	N	reverse	A	3
Malibu Coast	9.95	75	N	strike slip	A (EFZ)	2
Simi-Santa Rosa	10.01	60		strike slip	A (EFZ)	2
Santa Monica	10.61	44		strike slip	PA	2
Sierra Madre (San Fernando)	11.01	45	N	reverse	A (EFZ)	2
Anacapa-Dume	11.45	41	N	thrust	PA	3
Verdugo	11.8	55	NE	reverse	A	1,3
Northridge	12.37	35	S	thrust	A	3
Hollywood	13.09	70	N	strike slip	A (EFZ)	2
Palos Verdes	14.76	90	V	strike slip	A	2
Newport-Inglewood	15.47	88		strike slip	A (EFZ)	2
San Gabriel	16.09	61	N	strike slip	A (EFZ)	2
Oak Ridge	16.45	53		reverse	-	1
Holser	16.57	58	S	reverse	-	1
Elysian Park (Upper)	18.15	50	NE	reverse	-	1
Puente Hills (LA)	18.44	27	N	thrust	-	1
Sierra Madre	19.03	53	N	reverse	A	3
San Cayetano	19.8	42	N	thrust	A (EFZ)	2
Raymond	22.13	79	N	strike slip	A (EFZ)	2
Santa Ynez	32.67	70		strike slip	A	2
Pitas Point	32.78	55		reverse	A (EFZ)	2
Ventura-Pitas Point	32.78	64	N	reverse	A (EFZ)	2
Elsinore (Whittier)	34.29	75	NE	strike slip	A (EFZ)	2
Clamshell-Sawpit	34.58	50	NW	reverse	PA	3
San Andreas	37.74	90	V	strike slip	A (EFZ)	2
Channel Islands Thrust	39.35	20	N	thrust	-	1
Santa Cruz Island	40.1	90	V	strike slip	A	2
Red Mountain	41.59	56	N	reverse	A (EFZ)	2
San Jose	42.63	74	NW	strike slip	-	1
Garlock	47.18	90	V	strike slip	A (EFZ)	2
Chino	50.19	65	SW	strike slip		2
Cucamonga	50.22	45	N	reverse	A (EFZ)	2
San Joaquin Hills	51.01	23	SW	thrust	-	1
Pleito	54.31	46	S	Reverse	A (EFZ)	2
Newport-Inglewood (Offshore)	56.73	90	V	Strike Slip	A	3
San Jacinto	59.9	90	V	strike slip	-	1

Reference:

1 = United States Geological Survey

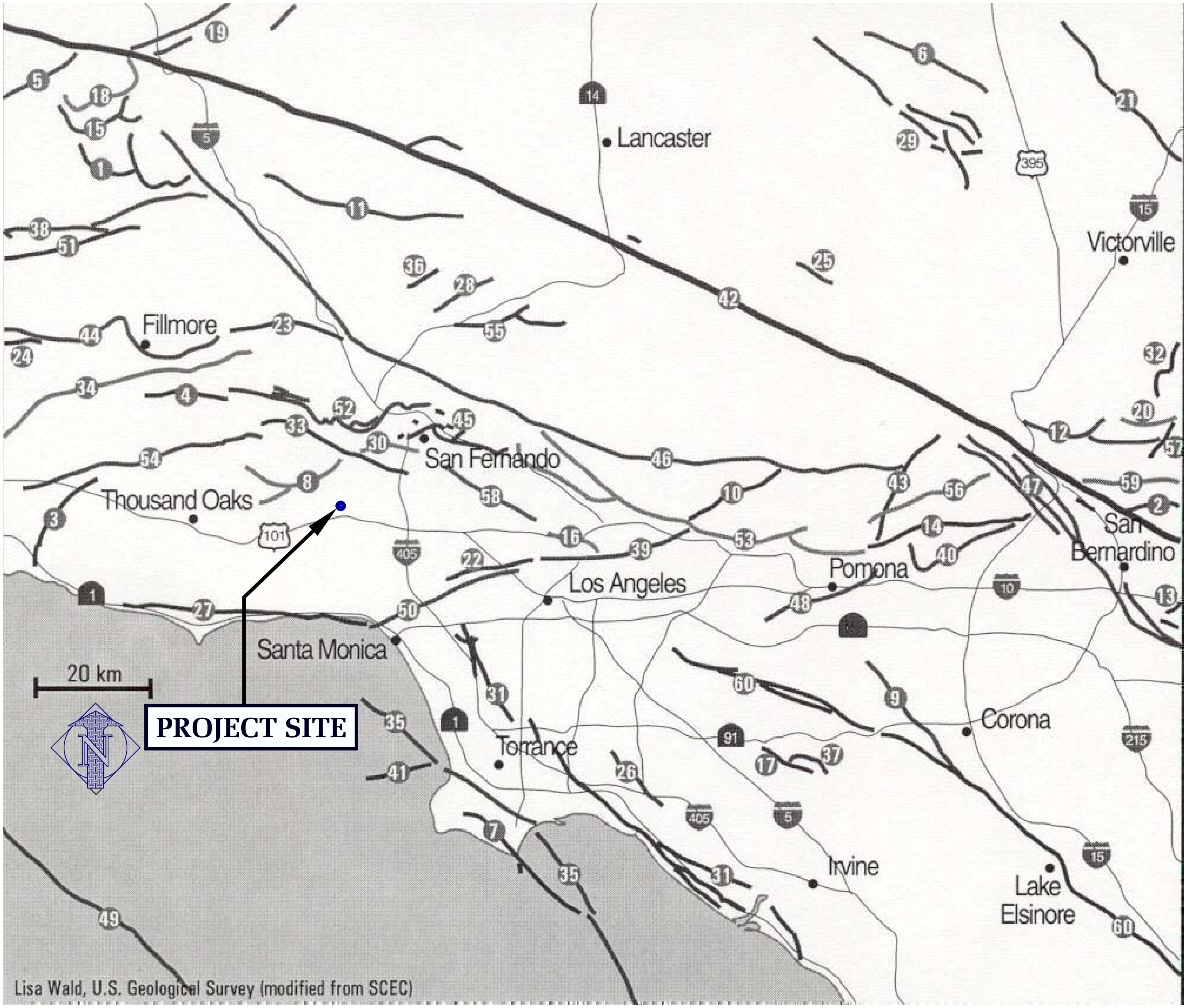
2 = California Geological Survey

3 = County of Los Angeles, Dept. of Public Works, 1990

A = Active

PA = Potentially Active

A (EFZ) = Active (Earthquake Fault Zone)



1 Alamo thrust
2 Arrowhead fault
3 Bailey fault
4 Big Mountain fault
5 Big Pine fault
6 Blake Ranch fault
7 Cabrillo fault
8 Chatsworth fault
9 Chino fault
10 Clamshell-Sawpit fault
11 Clearwater fault
12 Cleghorn fault
13 Crafton Hills fault zone
14 Cucamonga fault zone
15 Dry Creek fault
16 Eagle Rock fault
17 El Modeno fault
18 Frazier Mountain thrust
19 Garlock fault zone
20 Grass Valley fault
24 Lion Canyon fault
25 Llano fault
26 Los Alamitos fault
27 Malibu Coast fault
28 Mint Canyon fault
29 Mirage Valley fault zone
30 Mission Hills fault
31 Newport Inglewood fault zone
32 North Frontal fault zone
33 Northridge Hills fault
34 Oak Ridge fault
35 Palos Verdes fault zone
36 Pelona fault
37 Peralta Hills fault
38 Pine Mountain fault
39 Raymond fault
40 Red Hill (Etiwanda Ave) fault
44 San Cayetano fault
45 San Fernando fault zone
46 San Gabriel fault zone
47 San Jacinto fault
48 San Jose fault
49 Santa Cruz-Santa Catalina Ridge f.z.
50 Santa Monica fault
51 Santa Ynez fault
52 Santa Susana fault zone
53 Sierra Madre fault zone
54 Simi fault
55 Soledad Canyon fault
56 Stoddard Canyon fault
57 Tunnel Ridge fault
58 Verdugo fault
59 Waterman Canyon fault
60 Whittier fault

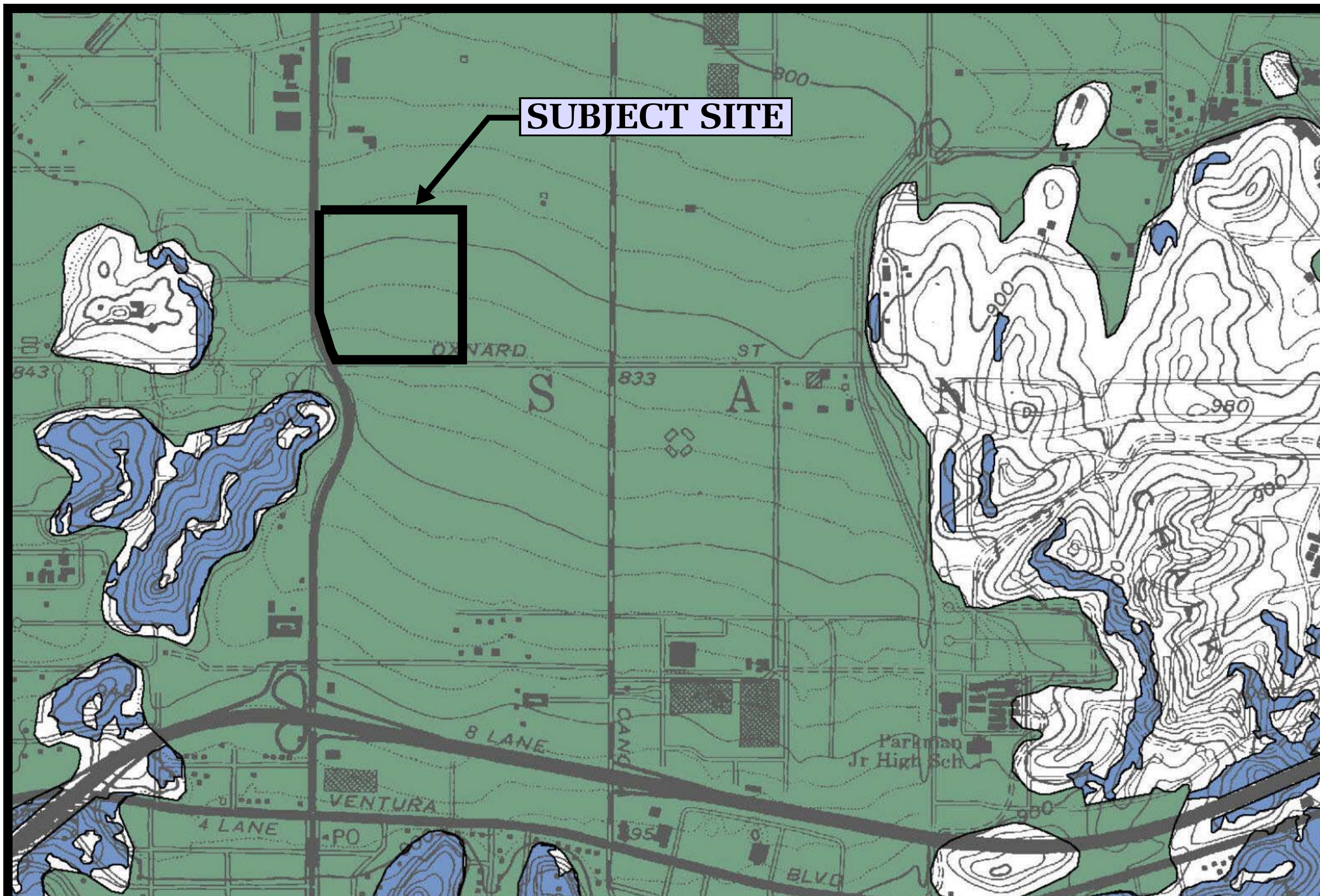
REFERENCE: http://pasadena.wr.usgs.gov/info/images/LA%20Faults.pdf

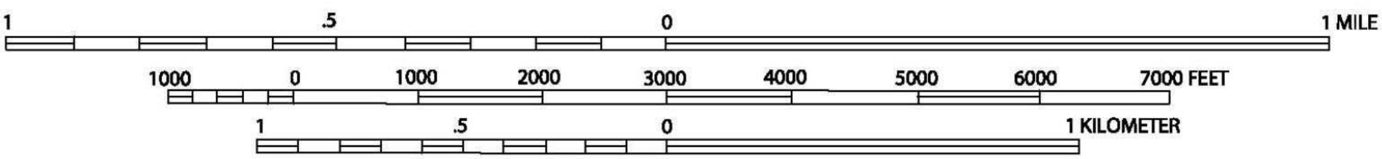
SOUTHERN CALIFORNIA FAULT MAP

Geotechnologies, Inc.
Consulting Geotechnical Engineers

WESTFIELD, LLC

FILE NO. 21266





LIQUEFACTION AREA

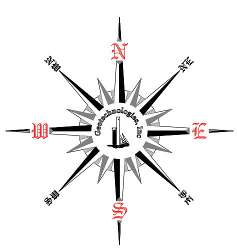
REFERENCE: **SEISMIC HAZARD ZONES, CANOGA PARK QUADRANGLE OFFICIAL MAP (CDMG, 1998)**

SEISMIC HAZARD ZONE MAP

Geotechnologies, Inc.
Consulting Geotechnical Engineers

WESTFIELD, LLC

FILE NO. 21266



LEGEND

[ ]	OTHER AREAS
ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.

REFERENCE: F.I.R.M. 06037C1290F DATED 9/26/08

FLOOD INSURANCE RATE MAP

Geotechnologies, Inc.
Consulting Geotechnical Engineers

WESTFIELD, LLC

FILE No. 21021

BORING LOG NUMBER 1

Latham & Watkins, LLP **Date: 06/30/16** **Elevation: 841.0'***

File No. 21266 **8-inch Diameter Hollow Stem Auger**

ae *Reference: Existing Conditions Map by Incledon Consulting Group, not dated

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Asphalt
				0 --		FILL: Silty Sand, dark brown, moist, medium dense, fine grained
				-		
				1 --		
				-		
				2 --		
2.5	20	10.1	101.8	-		
				3 --		
				-	SM	ALLUVIUM: Silty Sand, dark brown, moist, medium dense, fine grained
				4 --		
				-		
5	22	12.3	92.1	5 --		
				-	SM/ML	Silty Sand to Sandy Silt, dark brown, moist, medium dense, stiff, fine grained
				6 --		
				-		
				7 --		
				-		
				8 --		
				-		
				9 --		
				-		
10	26	8.4	101.1	10 --		
				-		
				11 --		
				-		
				12 --		
				-		
				13 --		
				-		
				14 --		
				-		
15	11	8.1	103.4	15 --		
				-	SM	Silty Sand, dark brown, moist, medium dense, fine grained
				16 --		
				-		
				17 --		
				-		
				18 --		
				-		
				19 --		
				-		
20	18	12.8	104.8	20 --		
				-		
				21 --		
				-		
				22 --		
				-		
				23 --		
				-		
				24 --		
				-		
25	20	23.9	102.3	25 --		
				-	CL	Sandy Clay, dark to olive brown, moist, stiff

BORING LOG NUMBER 1

Latham & Watkins, LLP

File No. 21266

ae

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	37	39.8	78.0	30		BEDROCK: Siltstone, gray to dark brown, moist, moderately hard
				31		
				32		
				33		
				34		NOTE: The stratification lines represent the approximate boundary between earth types; the transition may be gradual.
35	41	No Sample	No Sample	35		Used 8-inch diameter Hollow-Stem Auger 140-lb. Automatic Hammer, 30-inch drop Modified California Sampler used unless otherwise noted
				36		
				37		
				38		
				39		
40	66	43.3	76.5	40		
				41		
				42		
				43		
				44		
45	50/5"	35.0	88.1	45		Siltstone to Sandstone, dark grayish brown, moist, hard
				46		
				47		
				48		
				49		Claystone, dark gray, moist, hard
50	50/5"	44.6	73.9	50		Total Depth 50 feet Water at 30 feet Fill to 3 feet

BORING LOG NUMBER 2

Latham & Watkins, LLP **Date: 07/01/16** **Elevation: 840.5'***

File No. 21266 **8-inch Diameter Hollow Stem Auger**

ae *Reference: Existing Conditions Map by Incledon Consulting Group, not dated

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Asphalt
				0 --		5-inch Asphalt, No Base
				-		
				1 --		FILL: Clayey Sand, dark brown to dark gray, moist, medium dense, fine grained
				-		
				2 --		
2.5	27	20.0	105.3	-		
				3 --		
				-		
				4 --		
				-		
5	11	16.6	SPT	5 --		
				-	CL	ALLUVIUM: Sandy Clay, dark brown, moist, stiff
				6 --		
				-		
				7 --		
7.5	21	18.6	104.2	-		
				8 --		medium brown
				-		
				9 --		
				-		
10	18	16.2	SPT	10 --		
				-	CL/SC	Sandy Clay to Clayey Sand, medium brown, moist, stiff or medium dense, fine grained
				11 --		
				-		
				12 --		
12.5	28	23.8	94.8	-		
				13 --		
				-		
				14 --		
				-		
15	15	20.3	SPT	15 --		
				-	CL	Sandy Clay, dark brown, moist, stiff
				16 --		
				-		
				17 --		
17.5	27	19.9	99.5	-		
				18 --		medium brown
				-		
				19 --		
				-		
20	13	17.3	SPT	20 --		
				-	SC/CL	Clayey Sand to Sandy Clay, dark brown, moist, medium dense, stiff, fine grained
				21 --		
				-		
				22 --		
22.5	21	19.4	106.1	-		
				23 --		
				-		
				24 --		
				-		
25	8	17.1	SPT	25 --		
				-	CL	Sandy Clay, dark brown, moist to very moist, stiff

BORING LOG NUMBER 2

Latham & Watkins, LLP

File No. 21266

ae

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				-		
				26 --		
				-		
				27 --		
27.5	48	17.6	110.9	-		
				28 --		dark grayish brown
				-		
				29 --		
				-		
30	18	23.2	SPT	30 --		
				-	CL	Silty Clay, dark brown, moist, stiff
				31 --		
				-		
				32 --		
32.5	20	31.1	91.3	-		
				33 --		
				-		
				34 --		
				-		
35	12	30.0	SPT	35 --		
				-		
				36 --		
				-		
				37 --		
37.5	80	18.2	105.3	-		
				38 --	SC/SM	Clayey Sand to Silty Sand, dark yellowish brown, moist, dense, fine grained, minor rock fragments
				-		
				39 --		
				-		
40	25	23.8	SPT	40 --		
				-	ML	Sandy to Clayey Silt, dark yellowish brown, moist, stiff
				41 --		
				-		
				42 --		
42.5	32	36.3	85.0	-		
				43 --		BEDROCK: Siltstone, dark yellowish brown, moist, moderately hard
				-		
				44 --		
				-		
45	28	38.9	SPT	45 --		
				-		
				46 --		
				-		
				47 --		
47.5	70	41.0	79.7	-		
				48 --		
				-		
				49 --		
				-		
50	34	41.1	SPT	50 --		
				-		

BORING LOG NUMBER 2

Latham & Watkins, LLP

File No. 21266
ae

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				51		
				52		
52.5	56	37.3	86.4			
				53		
				54		
55	72	29.9	SPT	55		
						Sandstone, gray to dark gray, wet, hard
				56		
				57		
57.5	78	30.5	87.5			
				58		Siltstone, dark grayish brown, moist, hard
				59		
60	79	36.5	SPT	60		
						Total Depth 60 feet Water at 25 feet Fill to 5 feet
				61		
				62		
						NOTE: The stratification lines represent the approximate boundary between earth types; the transition may be gradual.
				63		
				64		Used 8-inch diameter Hollow-Stem Auger 140-lb. Automatic Hammer, 30-inch drop Modified California Sampler used unless otherwise noted
				65		
				66		SPT=Standard Penetration Test
				67		
				68		
				69		
				70		
				71		
				72		
				73		
				74		
				75		

BORING LOG NUMBER 3

Latham & Watkins, LLP | **Date: 06/30/16** | **Elevation: 824.7'***

File No. 21266 | **8-inch Diameter Hollow Stem Auger**

ae

*Reference: Existing Conditions Map by Incledon Consulting Group, not dated

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
						Surface Conditions: Asphalt
				0 --		6-inch Asphalt, No Base
				-		
				1 --		FILL: Sandy Clay, dark brown, moist, stiff
				-		
				2 --		
2.5	28	20.8	105.9	-		
				3 --		
				-	CL	ALLUVIUM: Sandy Clay, dark brown, moist, stiff
				4 --		
				-		
5	24	13.7	115.2	5 --		
				-	CL/SC	Sandy Clay to Clayey Sand, dark brown, moist, stiff
				6 --		
				-		
				7 --		
				-		
				8 --		
				-		
				9 --		
				-		
10	22	12.6	114.0	10 --		
				-	SM	Silty Sand, medium brown, moist, medium dense, fine grained
				11 --		
				-		
				12 --		
				-		
				13 --		
				-		
				14 --		
				-		
15	28	13.7	112.8	15 --		
				-		
				16 --		
				-		
				17 --		
				-		
				18 --		
				-		
				19 --		
				-		
20	34	19.3	104.0	20 --		
				-	CL	Sandy Clay, dark brown, moist, stiff
				21 --		
				-		
				22 --		
				-		
				23 --		
				-		
				24 --		
				-		
25	50/5"	18.2	112.6	25 --		
				-	ML	Sandy Silt, dark brown, moist, very stiff

BORING LOG NUMBER 3

Latham & Watkins, LLP

File No. 21266

ae

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
				28		
				29		
30	20	27.7	98.3	30		
					CL	Silty to Sandy Clay, dark brown, very moist, stiff
				31		
				32		
				33		
						NOTE: The stratification lines represent the approximate boundary between earth types; the transition may be gradual.
				34		
35	25	22.2	103.8	35		Used 8-inch diameter Hollow-Stem Auger 140-lb. Automatic Hammer, 30-inch drop Modified California Sampler used unless otherwise noted
				36		
				37		
				38		
				39		
40	50	18.6	110.9	40		
						dark grayish brown, moist, stiff
				41		
				42		
				43		
				44		
45	72	27.3	94.8	45		
						BEDROCK: Siltstone, dark grayish brown, moist, medium hard to hard
				46		
				47		
				48		
				49		
50	64	34.3	86.9	50		
						Total Depth 50 feet Water at 30 feet Fill to 3 feet

BORING LOG NUMBER 4

Latham & Watkins, LLP **Date: 07/01/16** **Elevation: 824.6'***

File No. 21266 **8-inch Diameter Hollow Stem Auger**

ae
*Reference: Existing Conditions Map by Incledon Consulting Group, not dated

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description Surface Conditions: Asphalt
				0 --		4-inch Asphalt, No Base
				1 --		FILL: Sandy Clay, dark brown, moist, stiff
				2 --		
2.5	19	17.9	106.9			
				3 --	CL	ALLUVIUM: Sandy Clay, dark brown, moist, stiff
				4 --		
5	9	13.3	SPT	5 --	SM/ML	Silty Sand to Sandy Silt, dark brown, moist, medium dense, stiff, fine grained
				6 --		
				7 --		
7.5	15	9.3	107.1			
				8 --	SM	Silty Sand, dark brown, moist, medium dense, fine grained
				9 --		
10	10	11.9	SPT	10 --		
				11 --		
				12 --		
12.5	21	20.3	100.0			
				13 --	CL/SC	Sandy Clay to Clayey Sand, dark brown, moist, stiff, medium dense, fine grained
				14 --		
15	12	15.5	SPT	15 --	SC	Clayey Sand, dark brown, moist, medium dense, fine grained
				16 --		
				17 --		
17.5	22	17.3	109.2			
				18 --		
				19 --		
20	22	20.0	SPT	20 --	CL	Sandy Clay, dark brown, moist, stiff
				21 --		
				22 --		
22.5	19	26.7	98.7		SC/CL	Clayey Sand to Sandy Clay, dark brown, moist, medium dense or stiff, fine grained
				23 --		
				24 --		
25	13	26.8	SPT	25 --		

BORING LOG NUMBER 4

Latham & Watkins, LLP

File No. 21266

ae

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				26		
				27		
27.5	28	21.2	85.4			
				28	CL/SC	Sandy Clay to Clayey Sand, moist, stiff or medium dense, fine grained
				29		
30	22	21.3	SPT	30		
				31		
				32		
32.5	36	21.5	105.0			
				33		
				34		
35	21	19.1	SPT	35		
				36		
				37		
37.5	72	34.9	85.5			
				38		BEDROCK: Siltstone to Claystone, dark grayish brown, moist, moderately hard
				39		
40	33	36.1	SPT	40		
				41		
				42		
42.5	50/5"	33.6	87.3			
				43		hard
				44		
45	69	33.8	SPT	45		
						Claystone, moderately hard to hard
				46		
				47		
47.5	75	34.2	87.5			
				48		Siltstone
				49		
50	63	35.8	SPT	50		

BORING LOG NUMBER 4

Latham & Watkins, LLP

File No. 21266

ae

Sample Depth ft.	Blows per ft.	Moisture content %	Dry Density p.c.f.	Depth in feet	USCS Class.	Description
				-		
				51 --		
				-		
				52 --		
52.5	82	27.1	97.8	-		
				53 --		Claystone
				-		
				54 --		
				-		
55	52	33.4	SPT	55 --		
				-		
				56 --		
				-		
				57 --		
57.5	86	25.7	95.9	-		
				58 --		
				-		
				59 --		
				-		Siltstone, gray to dark gray
60	68	34.4	SPT	60 --		
				-		Total Depth 60 feet
				61 --		Water at 21.5 feet
				-		Fill to 3 feet
				62 --		
				-		NOTE: The stratification lines represent the approximate
				63 --		boundary between earth types; the transition may be gradual.
				-		
				64 --		Used 8-inch diameter Hollow-Stem Auger
				-		140-lb. Automatic Hammer, 30-inch drop
				65 --		Modified California Sampler used unless otherwise noted
				-		
				66 --		SPT=Standard Penetration Test
				-		
				67 --		
				-		
				68 --		
				-		
				69 --		
				-		
				70 --		
				-		
				71 --		
				-		
				72 --		
				-		
				73 --		
				-		
				74 --		
				-		
				75 --		
				-		

BORING LOGS BY MAURSETH, HOWE, LOCKWOOD & ASSOCIATES

(7 PAGES)

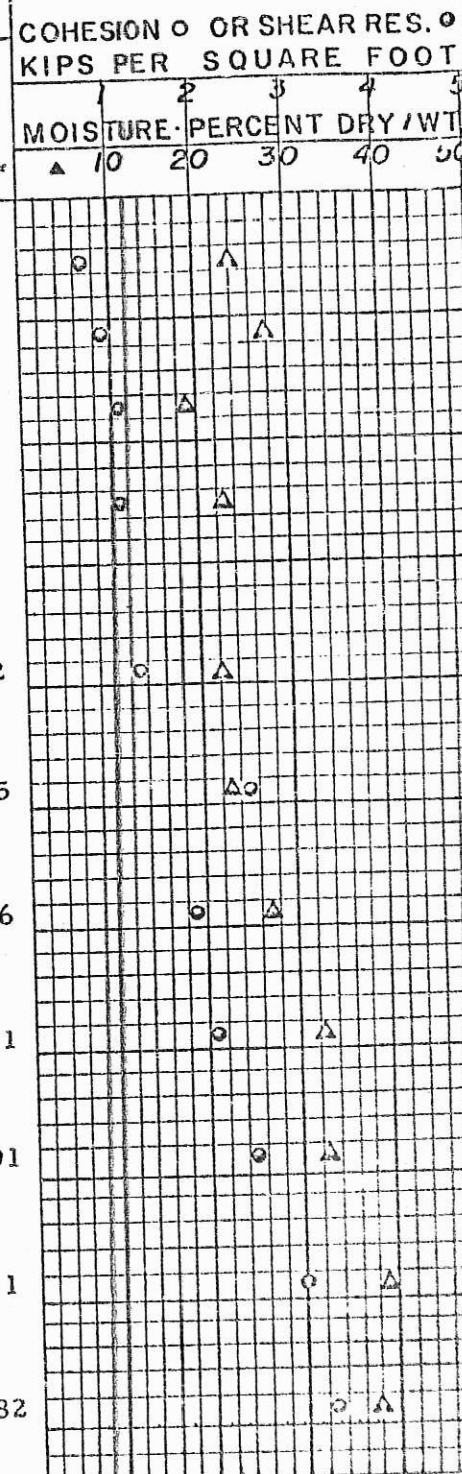
LOG OF BORING NO 1

DATE DRILLED: 12/15/70

EQUIPMENT USED: Rotary

ELEV. OF SURFACE: 830

Depth in Feet	Samples	* Blows Per Foot	DESCRIPTION OF SOILS — CLASSIFICATION	Color	Moisture	Consistency	Dry Unit Weight lb. per cu. ft.
	☐	2	CLAY, sandy, silty, porous	dark brown gray	very moist	mod. soft	96
5	☐	3	very silty				93
	☐	4	SAND, fine, silty and clayey	yellow brown	moist to very moist	mod comp to	101
10							96
	☐	4			GWS		
15			siltier		sat.	comp.	
	☐	4					102
20							
			CLAY, very silty	light brown	very moist	stiff	105
25	☐	18					
			silty, sl. sandy				96
30	☐	11					
			SILTSTONE, clayey (SHALE) lime-cemented weathered	brown white	wet	firm	91
35	☐	30					
			clean sand streaks	light yellow			91
40		22					
			SILTSTONE, clayey (SHALE)	gray brown		very firm	81
45	☐	18					
		19					82
50			(continued)				



* Driving Energy 0.12 ft.-kips

Warner Ranch Fashion Center, Woodland Hills, California

PLATE NO. B

MAURSETH HOWE LOCKWOOD & ASSOC.

FILE NO. 5669-

LOG OF BORING NO 1 (Continued)

DATE DRILLED: 12/15/70
EQUIPMENT USED: Rotary
ELEV. OF SURFACE: 830

Depth in Feet	Samples	Blows Per Foot	DESCRIPTION OF SOILS — CLASSIFICATION	Color	Moisture	Consistency	Unit Dry Weight lb. per cu. ft.
			SILTSTONE, clayey (SHALE)	gray brown	wet	firm	
55		20					77
60		28					84
			End of Boring @ 60'				
			BORING NO. 2 Elev. 834				
		*	CLAY, silty, sandy	dark brown gray	wet	mod. soft	
		<1					95
5		<1				mod. stiff	102
			sandy, silty	yellow brown			
10		<1	SAND, fine, clayey, silty			mod. comp.	103
15		1				to	95
			caving; sand pockets		GWS	mod. loose	
20		<1			sat.		93
			very clayey			comp.	
25		4					101
			End of Boring @ 25'				

COHESION ○ OR SHEAR RES. ○ KIPS PER SQUARE FOOT: 1 2 3 4 5
MOISTURE - PERCENT DRY WT. ▲: 10 20 30 40 50

* Driving Energy 1.65 ft.-kips

Warner Ranch Fashion Center, Woodland Hills, California

PLATE NO. C

MAURSETH HOWE LOCKWOOD & ASSOC.

FILE NO. 5669-

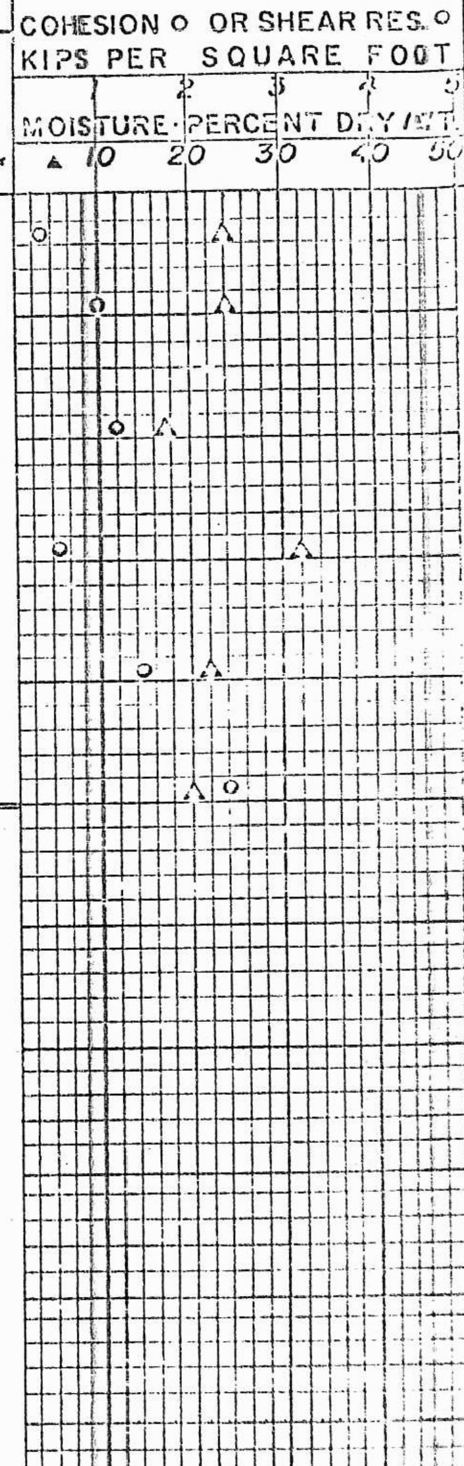
LOG OF BORING NO 3

DATE DRILLED: 12/28/70

EQUIPMENT USED: Bucket Auger

ELEV. OF SURFACE: 829

Depth in Feet	Samples	* Blows Per Foot	DESCRIPTION OF SOILS — CLASSIFICATION	Color	Moisture	Consistency	Unit Dry Weight lb. per cu. ft.
		∠1	CLAY, sandy, silty	dark brown gray	wet	mod. soft	95
5		∠1				mod. stiff	99
			very sandy				
10		2	SAND, fine, silty clay pockets	yellow brown	moist	mod. comp.	101
15		∠1	CLAY, silty, occas. rock chips	brown gray	wet	soft	89
					GWS		
20		∠1	sandy, silty	brown	very moist	mod. stiff to stiff	105
25		2					108
			End of Boring @ 25'				



* Driving Energy 1.65 ft.-kips

Warner Ranch Fashion Center, Woodland Hills, California

PLATE NO. D

MAURSETH HOWE LOCKWOOD & ASSOC.

FILE NO. 5669-

0350010233

LOG OF BORING NO 4

DATE DRILLED: 12/29/70

EQUIPMENT USED: Bucket Auger

ELEV. OF SURFACE: 835

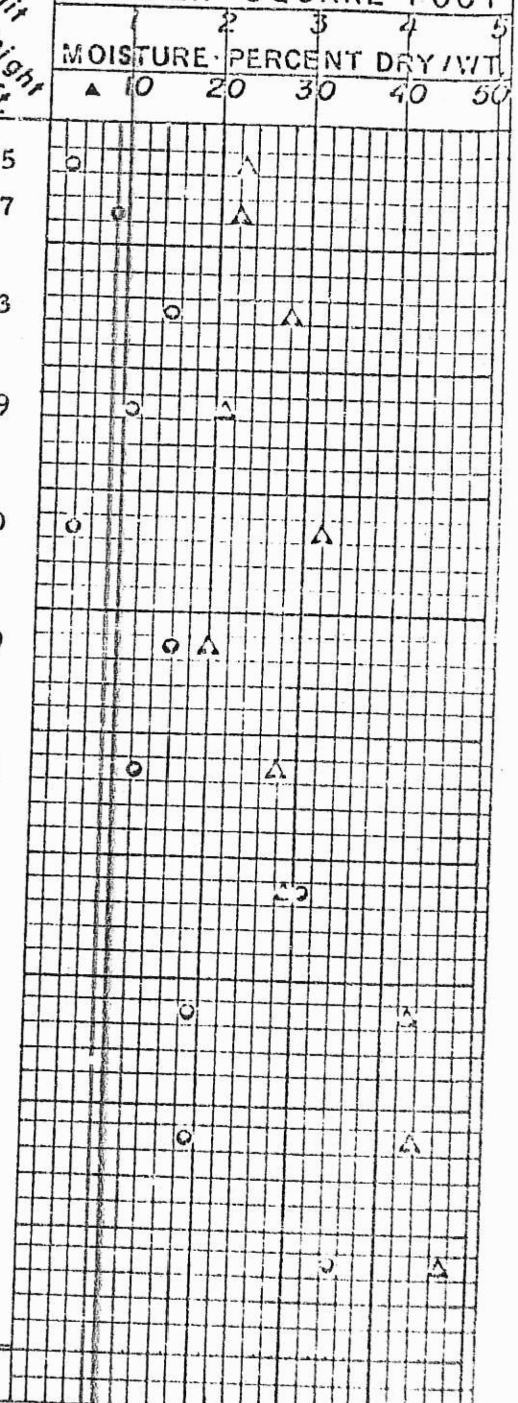
Samples * Blows Per Foot	DESCRIPTION OF SOILS — CLASSIFICATION	Color	Moisture	Consistency	Dry Unit Weight lb. per cu. ft.
∠1	CLAY, silty, sandy	dark brown gray	wet	mod. soft to mod. firm	95
∠1					97
∠1				mod. stiff	93
	sandy, silty	yellow brown			
∠1	SAND, fine, clayey silty			mod. comp.	99
∠1	CLAY, silty, sandy		GWS	soft	90
6	silty, sand pockets		moist	stiff	109
10	SAND, fine, clayey, silty; siltstone fragments (caving)		sat.	mod. comp	94
13	fine to coarse rock chips (caving)				90
11	SILTSTONE, clayey (SHALE)	olive		firm	76
15					76
11				very firm	74

End of Boring @ 50'

Depth in Feet: 5, 10, 15, 20, 25, 30, 35, 40, 45, 50

COHESION ○ OR SHEAR RES. ○ KIPS PER SQUARE FOOT

MOISTURE · PERCENT DRY / WT. ▲



* Driving Energy 1.65 ft.-kips Below 25' 0.85 ft.-kips

Warner Ranch Fashion Center, Woodland Hills, California

MAURSETH HOWE LOCKWOOD & ASSOC.

PLATE NO. E

FILE NO. 5669-E

05500100234

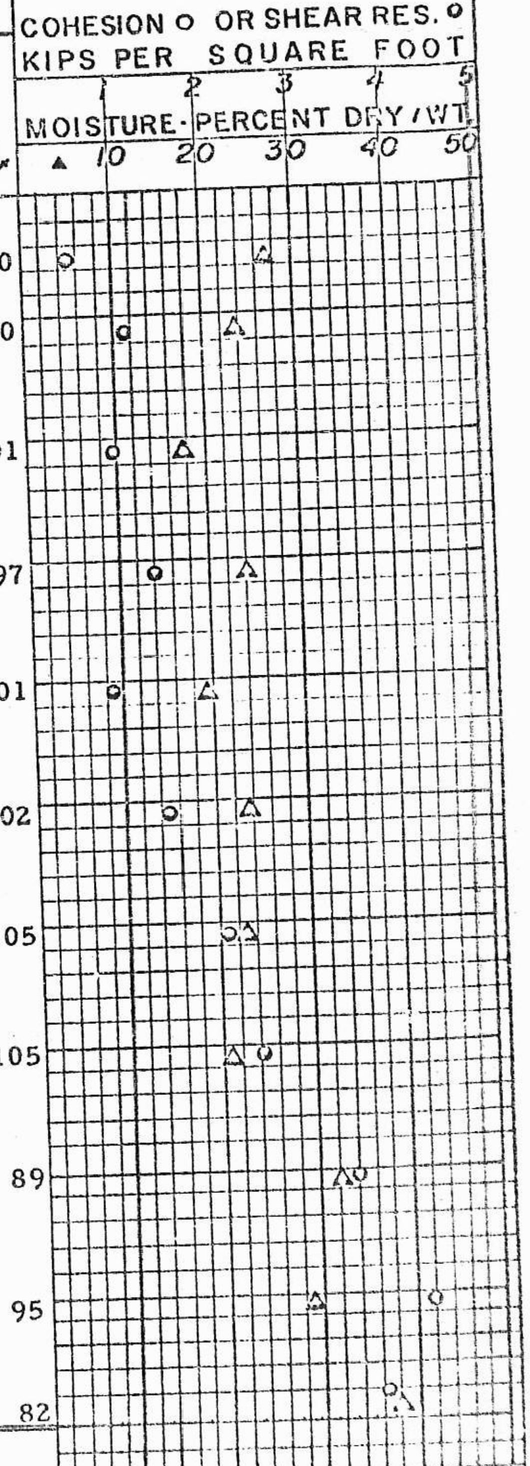
LOG OF BORING NO 5

DATE DRILLED: 12/15/70

EQUIPMENT USED: Rotary

ELEV. OF SURFACE: 829

Depth in Feet	Samples	*Blows Per Foot	DESCRIPTION OF SOILS — CLASSIFICATION	Color	Moisture	Consistency	Dry Unit Weight lb. per cu. ft.
		22	CLAY very silty, porous	dark brown	wet	mod. soft	90
5		5	silty	brown		mod. stiff	100
10		4	SAND, fine, silty, clayey	yellow brown	moist	comp.	101
15		14	sl. silty, scattered shale chips		wet GWS	mod. comp	97
20		5	fine to coarse clean	light brown	sat.		101
25		11	fine, silty		to	comp.	102
30		12	clayey, silty		wet		105
35		21	fine, sl. silty small gravel				105
40		19	SILTSTONE, clayey (SHALE)	olive gray		very firm	89
45		28					95
50		20					82
			End of Boring @ 50'				



* Driving Energy - 0.12 ft.-kips

Warner Ranch Fashion Center, Woodland Hills, California

MAURSETH HOWE LOCKWOOD & ASSOC.

PLATE NO. F

FILE NO. 5669-

LOG OF BORING NO 6

DATE DRILLED: 12/29/70

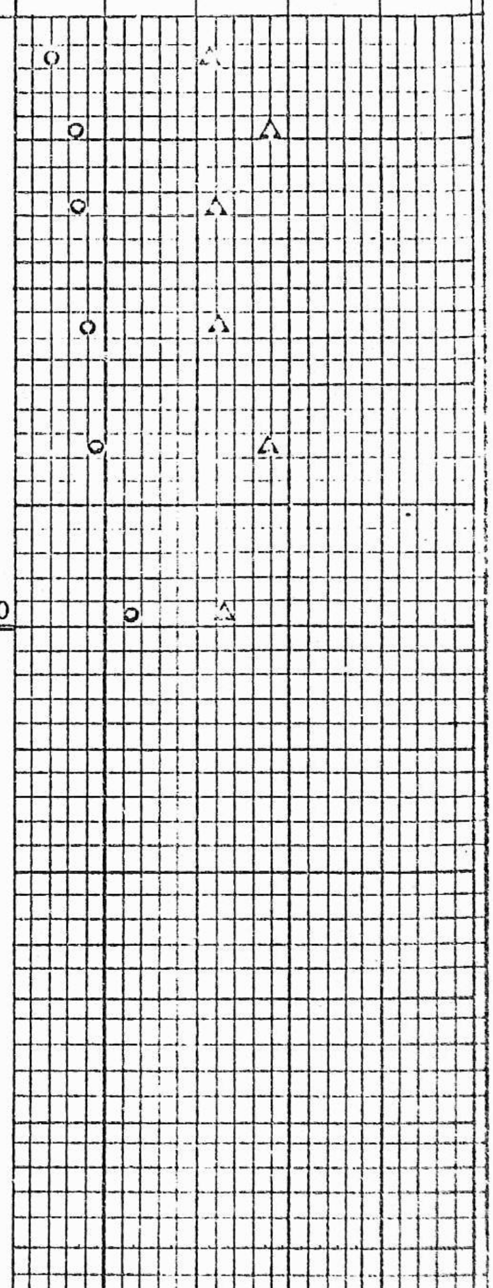
EQUIPMENT USED: Bucket Auger

ELEV. OF SURFACE: 831

Depth in Feet	Samples	*Blows Per Foot	DESCRIPTION OF SOILS — CLASSIFICATION	Color	Moisture	Consistency	Dry Unit Weight lb. per cu. ft.
		<1	CLAY, silty, sandy	dark	very moist	mod. soft	94
5		<1				mod.	95
			very sandy, silty	yellow brown	to	firm	
		<1					98
					wet		
10			SAND, fine, clayey,			mod.	
		<1	silty			loose	97
15			caving	light brown		to	
		<1		gray	GWS		94
20						mod. comp.	
25		<1					100
			End of Boring @ 25'				

COHESION o OR SHEAR RES. o KIPS PER SQUARE FOOT: 1, 2, 3, 4, 5

MOISTURE · PERCENT DRY/WT ▲: 10, 20, 30, 40, 50



* Driving Energy 1.65 ft.-kips

Warner Ranch Fashion Center, Woodland Hills, California

PLATE NO. G

MAURSETH HOWE LOCKWOOD & ASSOC.

FILE NO. 5669-F

LOG OF BORING NO 7

DATE DRILLED: 12/28/70

EQUIPMENT USED: Bucket Auger

ELEV. OF SURFACE: 831

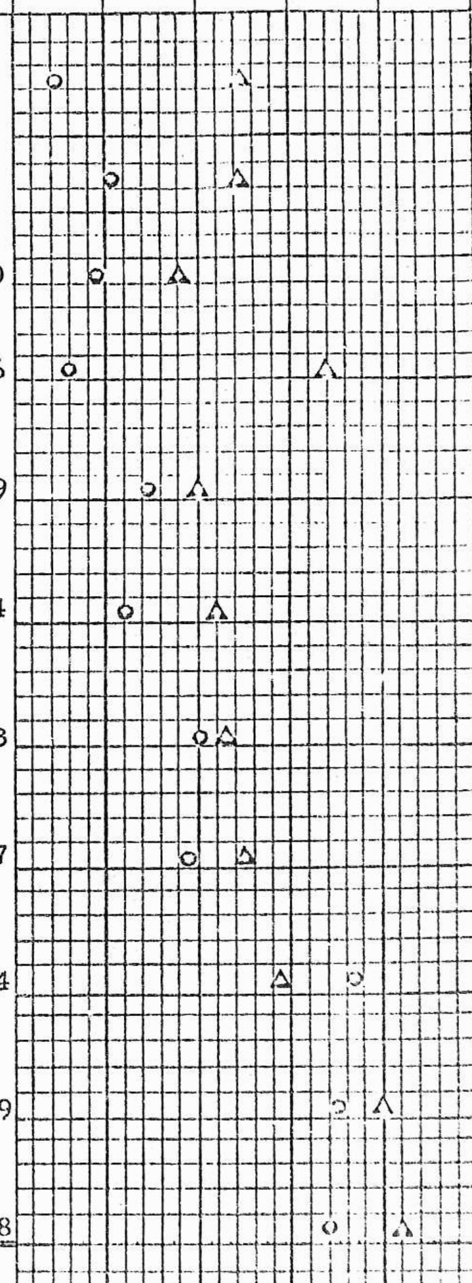
Depth in Feet	Samples	*Blows Per Foot	DESCRIPTION OF SOILS — CLASSIFICATION	Color	Moisture	Consistency	Dry Unit Weight lb. per cu. ft.
			CLAY, silty, sandy	dark brown gray	wet	mod. soft	
	▫	∠1					96
5				yellow brown		mod stiff	
	▫	∠1					96
			sandy, silty				
10	▫	∠1	SAND, fine, clayey		moist	mod. comp	100
15		∠1	CLAY, sandy, silty	light brown	sat.	soft	86
					GWS	mod. stiff	
20	▫	∠2					109
			SAND, fine, very clayey scattered rock chips	yellow brown	wet	comp	
25	▫	20					104
30	▫	24	fine to medium slightly silty				103
35	▫	8	fine, clean scattered rock chips				97
40	▫	25	SILTSTONE, clayey (SHALE)	olive gray		very firm	94
45	▫	22					79
50	▫	20					78
			End of Boring @ 50'				

COHESION o OR SHEAR RES. o KIPS PER SQUARE FOOT

1 2 3 4 5

MOISTURE · PERCENT DRY WT.

▲ 10 20 30 40 50



* Driving Energy - 1.65 ft.-kips Below 25' 0.85 ft.-kips

Warner Ranch Fashion Center, Woodland Hills, California

PLATE NO. H

MAURSETH HOWE LOCKWOOD & ASSOC.

FILE NO. 5669-B

CITY OF LOS ANGELES

CALIFORNIA

ERIC GARCETTI
MAYOR

DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

FRANK BUSH
GENERAL MANAGER

OSAMA YOUNAN, P.E.
EXECUTIVE OFFICER

SOILS REPORT APPROVAL LETTER

November 1, 2016

LOG # 95263 & 95264 & 95265
SOILS/GEOLOGY FILE - 2
LIQ

Westfield, LLC.
355 S. Grand Ave.
Los Angeles, CA 90071

TRACT:	23959 // PM 2519
LOT(S):	2, FR 4 // FR A, FR B
LOCATION:	6100 N. Topanga Canyon Blvd., 21801 W. Oxnard St. // 6101 N. Owensmouth Ave., 21800 W. Erwin St.

PROPOSED VESTING TENTATIVE TRACT: 74587, 74588, 74589

CURRENT REFERENCE REPORT/LETTER(S)	REPORT No.	DATE(S) OF DOCUMENT	PREPARED BY
Soils Report	21266	10/05/2016	Geotechnologies, Inc.
Oversized Doc(s).	``	``	``

The Grading Division of the Department of Building and Safety has reviewed the referenced report that provides preliminary Geotechnical engineering investigation for the purpose of satisfying the requirements for filing a Vesting Tentative Tract Map with the Department of City Planning.

The site is proposed to be developed with a mixed-use development. The proposed structures consist of residential, office, hospitality, parking and retail space, as well as an entertainment and sports complex. Multiple subterranean levels (up to 5 levels) are proposed.

The earth materials at the subsurface exploration locations consist of up to 5 feet of uncertified fill underlain by clay, silt and sand.

The site is located in a designated liquefaction hazard zone as shown on the Seismic Hazard Zones map issued by the State of California. The Liquefaction study included as a part of the report demonstrates that the site soils are subject to liquefaction. The earthquake induced total and differential settlements are calculated to be 1.15 and 0.77 inches, respectively. However, these settlement magnitudes are considered by the Department to be within acceptable levels for properly designed foundations. The requirements of the 2014 City of Los Angeles Building Code have been satisfied.

The referenced report is acceptable, provided the following conditions are complied with during site development:

(Note: Numbers in parenthesis ( ) refer to applicable sections of the 2014 City of LA Building Code. P/BC numbers refer the applicable Information Bulletin. Information Bulletins can be accessed on the internet at LADBS.ORG.)

1. This approval is only applicable for the purpose of the filing of Vesting Tentative Tract Maps (VTT 74587, 74588, and 74589) with the Department of City Planning. No grading or building permits shall be issued based on the referenced report and this approval letter.

2. Prior to the issuance of grading or building permits, a comprehensive soils report suitable for the proposed development shall be submitted to the Grading Division of the Department of Building and Safety for review and approval.

YING LIU
Geotechnical Engineer I

YL/yl
Log No. 95263
213-482-0480

cc: Applicant
Geotechnologies, Inc., Project Consultant
VN District Office