V. ENVIRONMENTAL IMPACT ANALYSIS
E. GEOLOGY/SOILS

INTRODUCTION

The following section is based on the findings and conclusions of the project specific geotechnical site investigation reports prepared by the Project Applicant's geotechnical consultant, Gold Coast Geoservices, Inc. (GCGS Inc). The purpose of these studies was to determine and evaluate the nature, distribution, and engineering properties of the earth materials and site geology, so that the reviewing geologist and geotechnical engineer could identify potential geotechnical hazards on the site, and could provide suitable mitigation measures, as well as recommendations for site preparations and foundation design criteria during the planning stages of the planned development. The reports identified below include the original Geotechnical Engineering Report and a series of supplemental studies responding to comments raised by the City's consulting Geologist.

- Engineering Geological and Geotechnical Engineering Report, Proposed Malibu-La Paz Ranch, LLC, Civic Center Way, City of Malibu California, Gold Coast GeoServices, Inc., November 22, 1999, File No. GC99-71243.
- Response to Geologic and Geotechnical Engineering Review Letter for Parcel B, Malibu-La Paz Ranch, LLC, 3700 La Paz Lane, City of Malibu, by Bing Yen and Associates, dated March 20, 2000, (BYA No. 49.17691.0001), Gold Coast Geoservices, Inc., November 9, 2000, File No. GC99-71243.
- Response to Geologic and Geotechnical Engineering Review Letter By the City of Malibu for 3700 La Paz Lane, Parcels A and B, City of Malibu, Appendix VI, Gold Coast Geoservices Inc., December 12, 2001, File No. GC99-71243.
- Response to Geologic and Geotechnical Engineering Review Letter By the City of Malibu for 3700 La Paz Lane, Parcel A, City of Malibu, by Bing Yen and Associates, dated August 29, 2001, (BYA No. 49.17691.0001), Gold Coast Geoservices Inc., February 7, 2002, File No. GC99-71243.
- Response to Geologic and Geotechnical Engineering Review Letter, Proposed Malibu-La Paz Ranch, LLC, Civic Center Way, 3700 La Paz Lane, Parcel B, City of Malibu, by Bing Yen and Associates, dated April 11, 2002, (BYA No. 49.17691.0001), Gold Coast Geoservices Inc., July 25, 2003, File No. GC99-71243.
- Response to Geologic and Geotechnical Engineering Review Letter, Proposed Malibu-La Paz Ranch, LLC, Civic Center Way, 3700 La Paz Lane, Parcel A, City of Malibu, by Bing Yen and Associates, dated April 11, 2002, (BYA No. 49.17691.0001), Gold Coast Geoservices Inc., July 28, 2003, File No. GC99-71243.

- Response to Geologic and Geotechnical Engineering Review Letter, Proposed Malibu-La Paz Ranch, LLC, Parcel A, Civic Center Way, 3700 La Paz Lane, City of Malibu, by Bing Yen and Associates, dated December 4, 2003, (BYA No. 49.17691.0001), Gold Coast Geoservices Inc., May 24, 2004, File No. GC99-71243.
- Response to Geologic and Geotechnical Engineering Review Letter, Proposed Malibu-La Paz Ranch, LLC, Parcels A and B, 3700 La Paz Lane, City of Malibu, by Fugro West, Inc., dated March 2, 2006 (Fugro Project No. 3399.001).
- Report of findings from supplemental geologic and geotechnical engineering investigation and analysis of postulated ancient landslide at the north side of Parcel B, in response to Geologic and Geotechnical Engineering Review for Preferred Project #2, Proposed Malibu-La Paz Ranch, LLC, Parcel B, 3700 La Paz Lane, City of Malibu, Gold Coast Geoservices, Inc,. September 14, 2004 (File No. GC99-71243).
- Supplemental geologic and geotechnical engineering analysis of hillside at the north side of Parcel B, in response to Geologic and Geotechnical Engineering Review for Preferred Project #2, Proposed Malibu-La Paz Ranch, LLC, Parcel B, 3700 La Paz Lane, City of Malibu, Gold Coast Geoservices, Inc,. September 21, 2004 (File No. GC99-71243).
- Response to Geotechnical Review Sheet for Preferred Project #2, Planning Stage review Sheet, Proposed Malibu-La Paz Ranch, LLC, Parcel B, 3700 La Paz Lane, City of Malibu, Gold Coast Geoservices, Inc,. October 25, 2004 (File No. GC99-71243).
- Response to Geologic and Geotechnical Engineering Review Letter, Proposed Malibu-La Paz Ranch, LLC, Parcels A and B, 3700 La Paz Lane, City of Malibu, by Fugro West, Inc., dated March 2, 2006 (Fugro Project No. 3399.001), Gold Coast Geoservices, Inc,. April 3, 2006 (File No. GC99-71243).
- Draft Response to Hydrogeology Review – La Paz Wastewater Project, Response to Comments, Planning #PPC 00-006, Lombardo Associates, Inc., June 3, 2008.

REGIONAL AND ENVIRONMENTAL SETTING

Project Site Description

The Project Site is located on a 15.2-acre undeveloped lot within the Civic Center area of the City of Malibu. The Project Site is situated within the flood plain of the Malibu Creek, which is approximately one-fourth mile east of the Project Site. The topography of the Project Site varies from gentle southerly slopes to flat terrain, with moderately steep hillside terrain to the north. The Project Site is bordered by low-density residential housing to the north, undeveloped land along the east, Civic Center Way to the south and the Malibu Civic Center facilities to the west. ~~The site has not been previously developed~~

~~and is currently utilized as a storage yard for a commercial nursery located within the central portion of the site.~~

Drainage/Flooding

Drainage on the project site occurs through topographically controlled sheetflow runoff from the north towards the south-southeast portions of the site. No indications of concentrated flows, such as gullies or excessive erosion, were observed on or adjacent to the property during site investigations conducted by ~~Gold Coast Geoservices~~GCGS Inc. No groundwater seeps or springs were observed. Hydrology and water quality issues are discussed in further detail in Section V.F, Hydrology/Water Quality.

Geology/Soils

The geology and soils of the Civic Center area are characterized by alluvial, fluvial (floodplain), colluvial and estuarine sediments of late Pleistocene to recent time, which overlie bedrock material. The alluvial and fluvial sediments within Malibu Creek reportedly attain a thickness of about 100 feet or more (Birkeland, 1972). The earth materials encountered on the subject property, as reported by GCGS, are described below. The Geology Plot plan, identifying the geologic features present on and beneath the project site and identifying investigation borings, water wells, and fault exploration trenches, is presented in Figure V.E-1 on page V.E-4. Approximate depths and more detailed descriptions of soil borings and trench logs are provided in Appendix E.[1]

The findings at the locations of numerous exploratory excavations on the site indicate that the property is underlain by native soil (alluvium, colluvium, and terrace deposits) and bedrock deposits to the maximum depth of exploration to about 60 feet. No artificial fill material was encountered in the exploratory excavations, and no areas of suspected filling were observed, although this finding does not preclude the possibility that fill materials may be present within the property. Geologic cross sections for Sections A-A', B-B', C-C', and E-E' are presented in Figures V.E-2 through V.E-5, on pages V.E-5 through V.E-8, respectively.

Alluvium (Qal and Qfp)

The alluviual and flood plain deposits encountered in the exploratory excavations are composed of lenses and layers of silty sand, gravelly sand, silty clay and clayey silt. The so-named "Civic Center

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[1] *Appendix E includes the Geotechnical/Geologic and Geotechnical Engineering Report and subsequent updates responding to the City of Malibu Geotechnical ~~Peer~~ Review. Due to the volume and complexity of compiling these reports as an appendix to the EIR, these materials are incorporated by reference and will be made available for public review at the City Planning Department.*

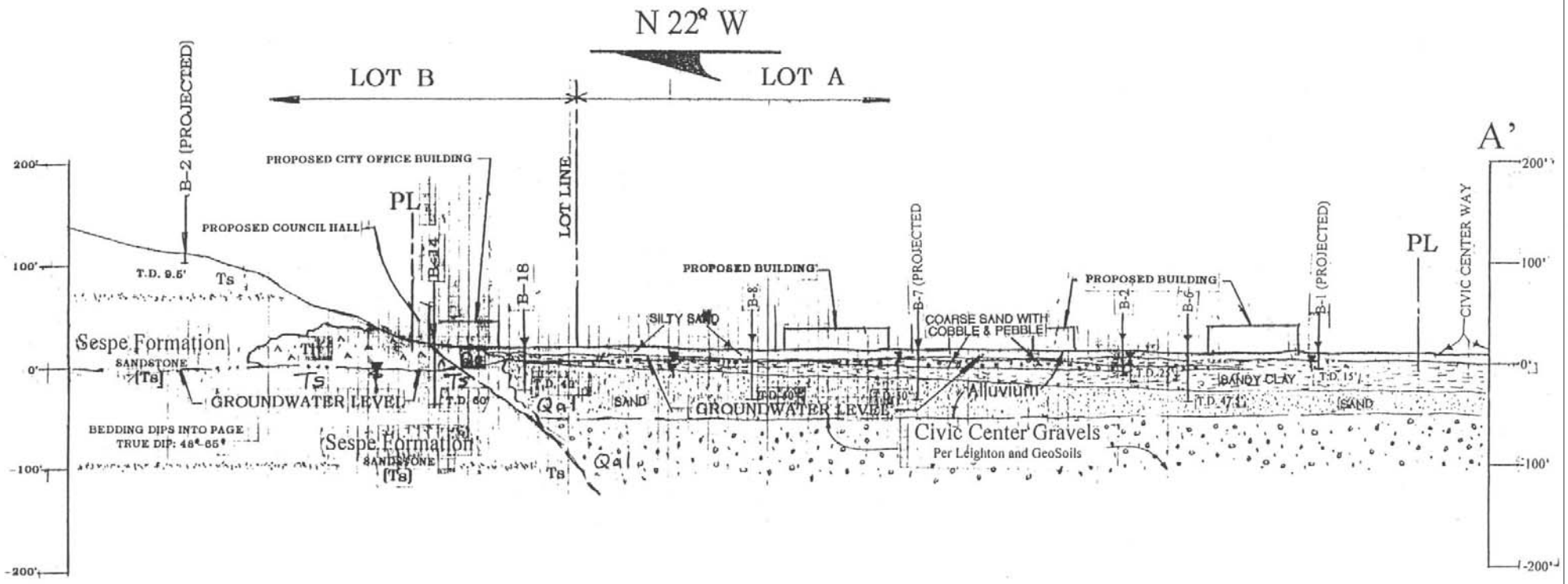
LEGEND

Af	ARTIFICIAL FILL (PER LEIGHTON & ASSOCIATES 1994)
Afc	COMPACTED FILL
Qls	LANDSLIDE (PER LEIGHTON & ASSOCIATES 1994)
Qcol	COLLUVIUM
Qal	ALLUVIUM
Ti	INTRUSIVE VOLCANICS
Ts	SESPE FORMATION
Tt	TOPANGA FORMATION
T_{11}	STRIKE AND DIP OF BEDDING
T_{12}	APPROXIMATE STRIKE AND DIP OF BEDDING
T_{13}	STRIKE AND DIP OF JOINT
T_{14}	STRIKE AND DIP OF SHEAR
A — A'	LINE OF GEOLOGIC CROSS-SECTION (BY GOLD COAST GEOSERVICE)
	LIMITS OF LANDSLIDE
	GEOLOGIC CONTACT
	BURIED TRACE OF MALIBU COAST FAULT (PER DIBBLEE, 1993, YERKES & CAMPBELL, 1971) APPROXIMATE LOCATION
A — A'	LINE OF GEOLOGIC CROSS-SECTION (BY R.S.A. DECEMBER 1987)
B-9	APPROXIMATE BORING LOCATION (BY GOLD COAST GEOSERVICES) (B-1 TO B-5 = HOLLOW STEM AUGER; B-6 TO B-9 = MUD ROTARY)
B-10	APPROXIMATE BORING LOCATION (BY GOLD COAST GEOSERVICES) (B-10 TO B-19 = BUCKET AUGER)
CPT-7	APPROXIMATE LOCATION OF CONE PENETROMETER SOUNDING (BY GOLD COAST GEOSERVICES)
ST-1	LOCATION OF SEISMIC TRENCH (BY GEOSOILS, INC. 1988)
T-1	APPROXIMATE LOCATION OF EXPLORATORY TRENCH (BY GEOSOILS, INC. 1988)
T-2	APPROXIMATE LOCATION OF EXPLORATORY TRENCH (BY GEOSOILS, INC. NOVEMBER 1988)
B8	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY GEOSOILS, INC. 1988)
C20	APPROXIMATE LOCATION OF EXPLORATORY TRENCH (BY LEROY CRANDALL & ASSOCIATES, 1979)
C22	APPROXIMATE LOCATION OF EXPLORATORY BORING (BYLEROY CRANDALL & ASSOCIATES. C= 1979 L-2 = 1959, L2(69) = 1969)
FE-2	APPROXIMATE LOCATION OF EXPLORATORY BORING (FOUNDATION ENGINEERING CO. 1971)
SD-2	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY PACIFIC SOILS ENGINEERING CO., 1971)
B2	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY GEOCONCEPTS, INC. 1999)
TP-2	APPROXIMATE TEST PIT LOCATION (BY GEOCONCEPTS, INC. 1999)
LB-2	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY LEIGHTON & ASSOCIATES, INC. 1994)
LT-2	APPROXIMATE LOCATION OF EXPLORATORY TRENCH (BY LEIGHTON & ASSOCIATES, INC. 1994)
2316-C	EXISTING WATER WELL
B-1	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY R.S.A. 1986)
NB-1	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY R.S.A. JULY 1987)
AB-1	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY R.S.A. DECEMBER 1987)
T1	APPROXIMATE LOCATION OF EXPLORATORY TRENCH (BY R.S.A. 1986)
T1(87)	APPROXIMATE LOCATION OF EXPLORATORY TRENCH (BY R.S.A. 1987)
B-12	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY GCI, 1988)
LB-2	APPROXIMATE LOCATION OF CONE PENETROMETER SOUNDING (BY LEIGHTON & ASSOCIATES, INC. 1994)
B-2	APPROXIMATE LOCATION OF CONE PENETROMETER SOUNDING (BY GEOSOILS, INC. 1988)
B-1	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY LEIGHTON & ASSOCIATES, INC. 1992)
B-2	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY D.L. RIGGLE 1985)
TP-1	APPROXIMATE LOCATION OF EXPLORATORY TEST PIT (BY D.L. RIGGLE 1985)
TH2	APPROXIMATE LOCATION OF PERCOLATION TEST HOLE (BY D.L. RIGGLE, 1985)
B-2	APPROXIMATE LOCATION OF EXPLORATORY BORING (BY GEO SYSTEMS, INC. 1988)
ST	APPROXIMATE LOCATION OF EXPLORATORY SEISMIC TRENCH (BY GEO SYSTEMS, INC. 1988) W - WEST, E - EAST
FT-1	APPROXIMATE LOCATION OF EXPLORATORY FAULT TRENCH (BY GOLD COAST GEOSERVICE, INC. 2001)

Souce: Gold Coast Geoservices, Inc., October 1999.

CHRISTOPHER A. JOSEPH & ASSOCIATES
Environmental Planning and Research

Figure V.E-1
Plot Plan



Source: Gold Coast Geoservices, Inc., October 1999.

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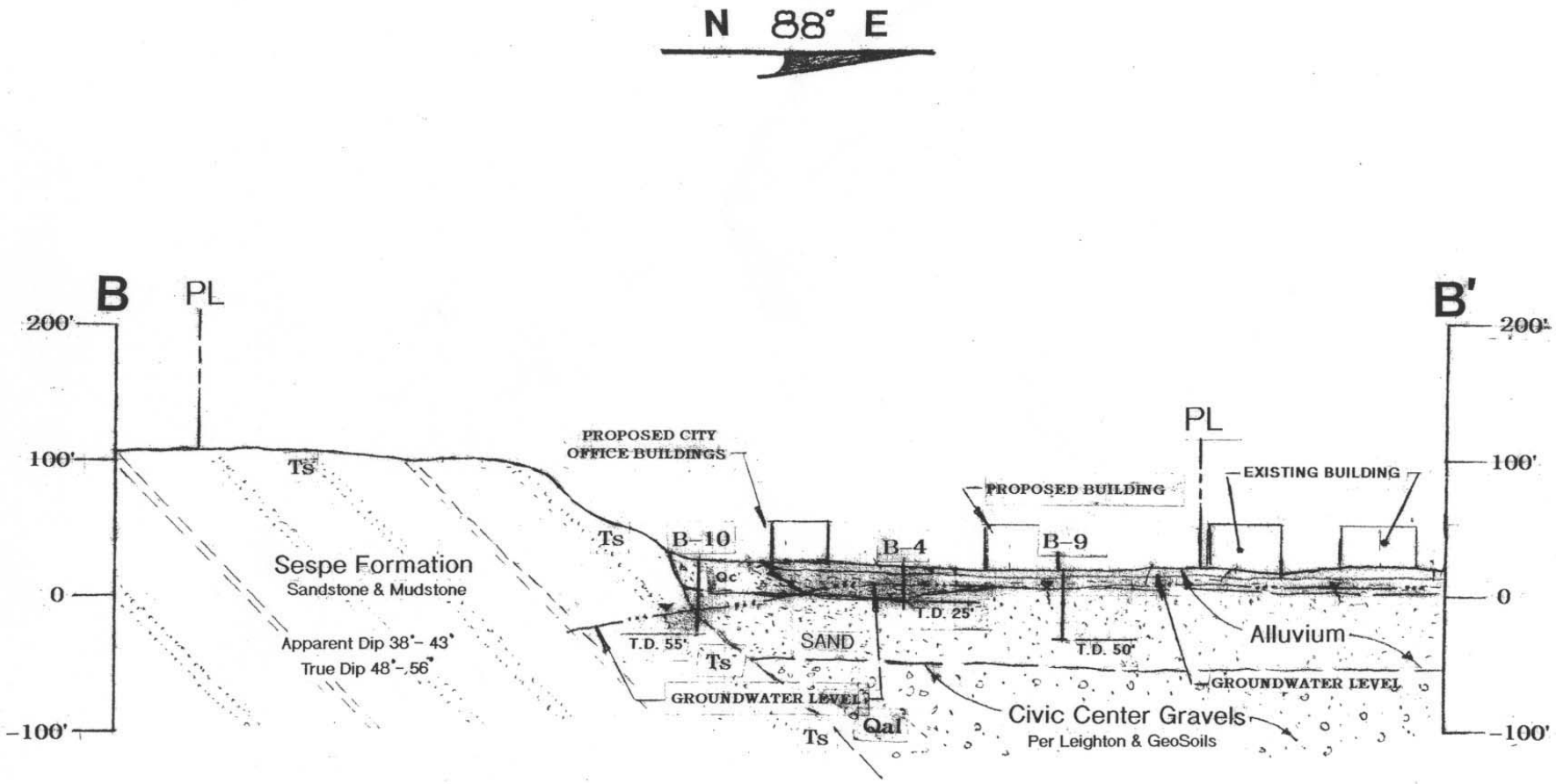
Environmental Planning and Research

Figure V.E-2
Geologic Cross-Section A-A'



Source: Gold Coast Geoservices, Inc., October 17, 2000.

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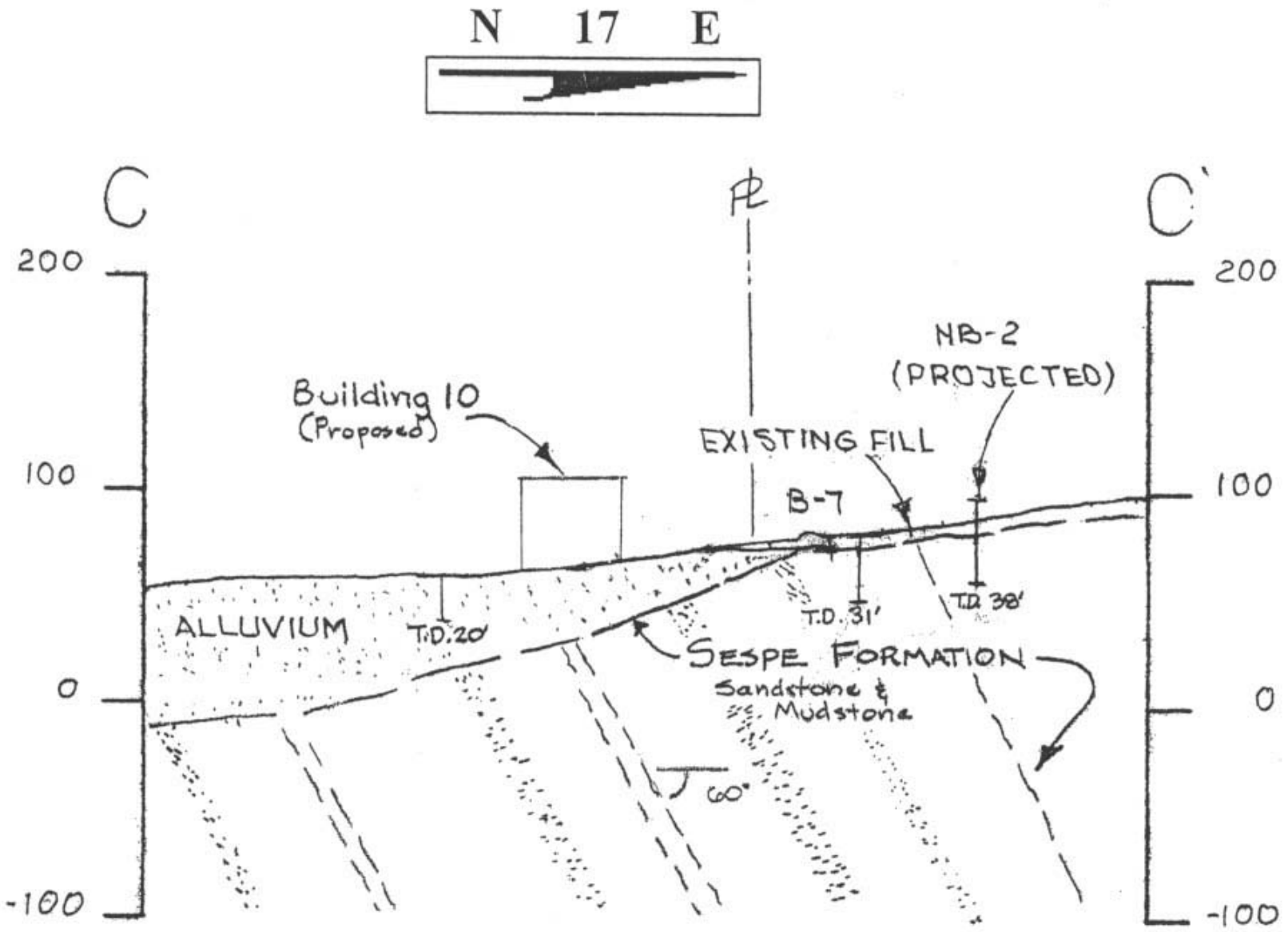
Figure V.E-3
Geologic Cross-Section B-B'



Source: Gold Coast Geoservices, Inc., December 11, 2001.

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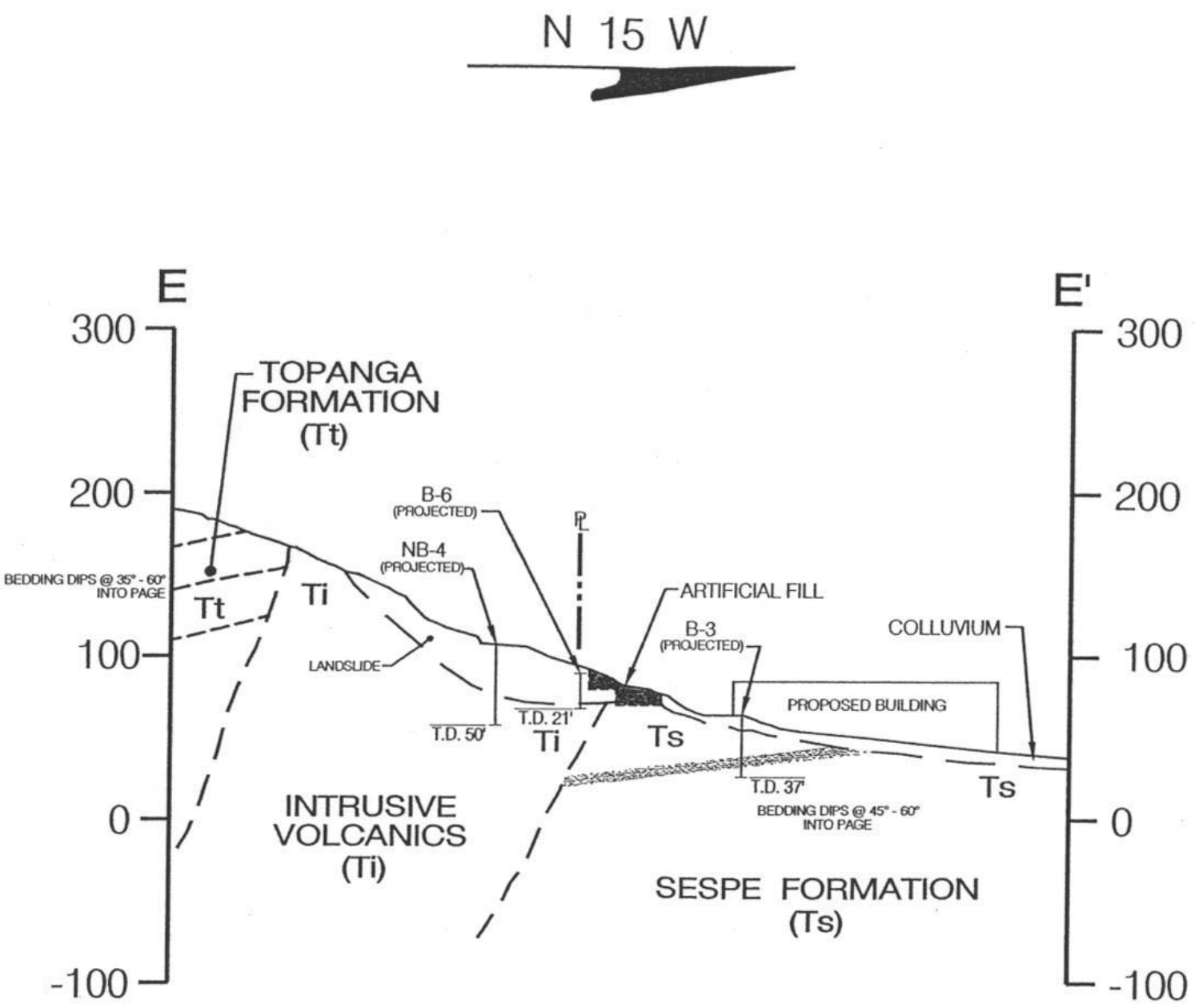
Environmental Planning and Research

Figure V.E-4
Geologic Cross-Section C-C'



Source: Gold Coast Geoservices, Inc., July 7, 2003.

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Environmental Planning and Research

Figure V.E-5
Geologic Cross-Section E-E'

Gravel" that occurs at a depth of about 50 feet (based upon the 1989 study by GeoSoils, Inc.) was not encountered during the GCGS, Inc. investigation.

Colluvium (Qcol) and Terrace Deposits (Qt)

Earth materials classified as colluvium (slopewash and gravity deposits), and Quaternary terrace deposits were encountered along the northern side of the site in the vicinity of Borings B-10 and B-12 (See Figure V.E-1). The colluvium and terrace deposit material is comprised of sandy clay to clayey sand which was found to be medium dense to dense.

Bedrock (Sespe Formation, Tsp)

The colluvium and terrace deposits on the northerly side of the property is underlain at shallow depths by sedimentary bedrock assigned to nonmarine or terrestrial Sespe Formation of the Oligocene geologic epoch (approximately 30 million years ago). The bedrock encountered in the exploratory excavations is composed of dark brown and to reddish brown clayey siltstone to the depth of exploration. Boring Log B-13 characterizes the Sespe Formation between 16 feet to 28 feet below grade as tan white sandstone with trace orange oxidation stains, coarse grained with occasional pebbles, arkosic, poorly cemented, but very dense, easily friable, probably somewhat permeable, slightly moist, generally very massive, with non-discernable bedding.

Faulting

The Project Site is situated at the south base of the Santa Monica Mountains of the Transverse Ranges Geomorphic Province. The Santa Monica Mountains and the Transverse Ranges are characterized by east-west trending fault systems. Although the project site is not located within a designated Alquist-Priolo Special Studies Zone[2], several geologic maps showing faults through the Malibu area have been previously prepared by federal, State, and local consulting geologists. The known fault systems that are nearest to the subject site are the Malibu Coast fault and the Ancapa Dume-Santa Monica fault. The Malibu Coast fault was mapped by the U.S. Geological Survey projecting through the southern half of the site (Yerkes and Campbell, 1980), directly underlying proposed Buildings 1 and 2. (See Figure V-E-1 on page V.E-5). However, GCGS Inc. did not identify any geographic features such as closed depressions, scarps, etc., to indicate the location of the Malibu Coast fault through the Civic Center/Malibu Creek floodplain area. As such, GCGS Inc. believes that the location of the Malibu Coast fault through the area as mapped by the U.S.G.S. was postulated and not based on an actual subsurface fault investigation to precisely locate the fault.

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[2] *California Department of Conservation, Division of Mines and Geology, Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region, DMG CD 2000-003, 2000.*

In addition to GCGS Inc.'s site-specific investigation, a 1989 subsurface fault exploration study on the subject property by GeoSoils, Inc., did not disclose any subsurface information to precisely locate the fault, and concluded that the Malibu Coast fault is not located within the property, but may be located further north or south of the site; or that if it underlies the site it is pre-Holocene in age (buried by the alluvium within Malibu Creek). This investigation included excavation and logging of fault trenches, and cone penetrometer soundings for determination of soil stratigraphy. The locations of the fault trenches by GeoSoils, Inc., are shown on the Project Geologic Plot Plan depicted in Figure V.E-1. No indications of statigraphic displacement were observed in the fault trenches, and the cone penetrometer test soundings indicated that the pre-Holocene gravel at the base of the alluvium is not displaced.

In addition, it should be noted that a independent fault investigation was carried out on the adjoining property to the east by GeoConcepts, Inc. (1999) and no evidence of faulting was encountered from their subsurface investigation. GeoConcepts, Inc. also reiterated the findings from GeoSoils that the Malibu Coast Fault is not located on the property.

Seismicity

In addition to the Malibu Coast fault, several fault systems that are capable of producing major earthquakes are located within 50 miles of the property. Major earthquakes along any of these fault systems could cause moderate to strong shaking to occur within the project area. Estimated seismic design coefficients and a design response spectrum for the project were determined utilizing the UBCSEIS computer software program (version 1.00) by Thomas Blake (1997), Computer Services and Software (See Appendix E). Based on the "design response Spectrum" graphical plot generated from UBCSEIS, a horizontal acceleration of about 1.2g's is anticipated for structures having a period of between 0.2 to 1.3 seconds during the design earthquake of magnitude 6.7 on the nearby Malibu Coast fault. This design response acceleration is intended for the design of structures and represents the estimated seismic-design force on a structure having a certain frequency or period of vibration and damping. It is not intended for use in deterministic analyses for ground phenomena.

Groundwater

Groundwater encountered as "perched water" was encountered at relatively shallow depths varying from 8 to 29 feet across the property (See Figure IV.E-6 on page IV.E-12). The top of the groundwater surface slopes northward across the property, ranging from 8 feet mean sea level in the southern limits of the project site to approximately 34 feet msl in the northernmost areas of the project site. The groundwater level beneath Parcel A ranges from about 8 feet above mean sea level (msl) at the southern most portion of the site (at Civic Center Way) to about 15 feet deep in the northern limits of the proposed boundary for this Parcel. The groundwater level underlying Parcel C is approximately 16 feet above msl in the general location of the proposed City Hall. The groundwater level under Parcel B ranges from approximately 13 feet msl at the southern limits of this proposed parcel boundary to

approximately 34 feet in the northern limits. Ground water elevations beneath the project site are identified and delineated in Figure V.E-6 on page V.E-11.

Liquefaction

The CDMG Seismic Hazard Map of the Malibu Beach Quadrangle (2001) indicates the entire Civic Center area is susceptible to liquefaction. Liquefaction is the process by which water-saturated sediment loses its strength and fails during strong ground shaking, generally associated with moderate to great earthquakes. When the ground liquefies, sandy materials saturated with water can behave like a liquid, instead of like solid ground. Liquefaction can cause ground displacement and ground failure such as lateral spreads (essentially landslides on nearly flat ground next to rivers, harbors, and drainage channels) and flows. Sediments that are most prone to liquefy are typically geologically young (less than 1,000 years old), saturated fine-grained sands of low in-place density.

A detailed assessment of liquefaction potential at the property was performed by GCGS Inc. using the LIQUEFY2 computer program by Thomas F. Blake. The LIQUEFY2 computer program utilizes the method of analysis by Seed and others (1985). The factor of safety of a particular soil layer against liquefaction is defined as the ratio of the cyclic stress required to cause liquefaction to the earthquake – induced cyclic stress ratio, and is also dependent upon the estimated peak ground acceleration determined for the site. It is noted that the estimated ground motions using uncertainty from standard deviation on the ground-motion attenuation function will yield significantly different results and will result in a lower factor of safety than that determined from the GCGS, Inc., analysis. The analysis identified localized soil layers having factors of safety less than 1.25.

Based on the qualitative method of analysis by Ishihara, ground manifestation hazard resulting from liquefaction, such as sand boils and ground fissures, is very low to low for the majority of the site, due to the relatively thin layer of liquefiable soils (H_2) in relation to the thickness of the confining crust of non-liquefiable soils (H_1). Surface manifestation hazard is designated as high within the area of CPT-4, and moderate within the area of CPT-1 and CPT-5. The "Surface Manifestation Hazard Assessment Map", included within Plate 3 of Appendix E, delineates the various levels of surface manifestation hazards present on the site. The geotechnical recommendations presented in the Engineering and Geologic Geotechnical Reports by GCGS Inc. remain applicable for areas as delineated as having very low to low surface manifestation risk. The mitigation recommendations presented below are provided for the moderate and high hazard areas (see Plate 1.3, in Appendix E).

Seismically induced Settlement Due to Liquefaction and Dry Sand Settlement

The greatest potential hazard due to liquefaction at the Project Site is ground settlement. Seismically induced ground settlement analysis was performed using the soils and groundwater data obtained during site investigation, and in consideration of data presented in previous reports by others. Total settlement resulting from "dry sand" settlement and liquefiable sediments were estimated using the methods of

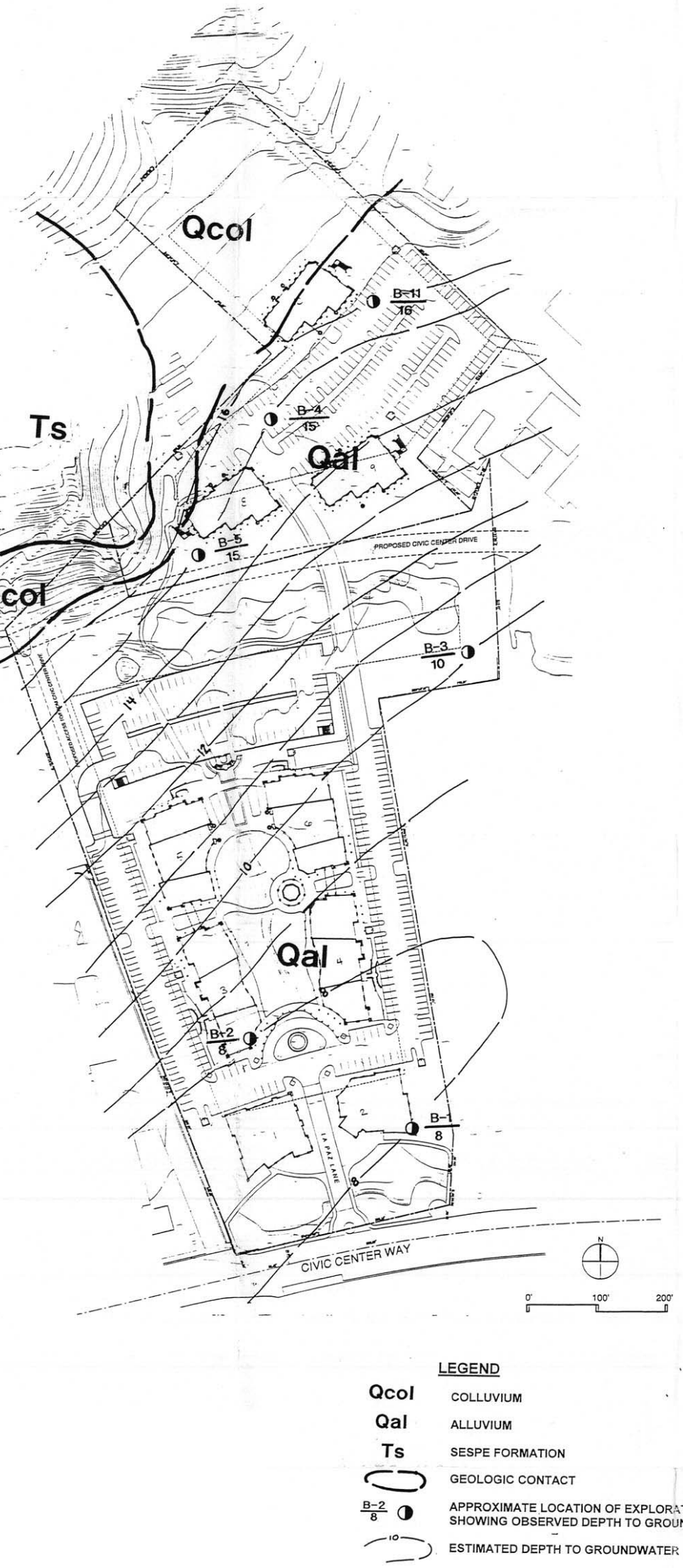
PROJECT DATA

	TOTAL LOT AREA:	684,450 S.F.		
1)	LANDSCAPE AREA REQUIRED: (40% x LOT)	270,380 S.F.	LANDSCAPE AREA PROVIDED:	273,380 S.F.
2)	OPEN SPACE AREA REQUIRED (25% x LOT)	170,862 S.F.	OPEN SPACE PROVIDED	170,862 S.F.
3)	ALLOWABLE IMPERMEABLE AREA (35% x LOT)	239,207 S.F.	ACTUAL IMPERMEABLE AREA:	239,207 S.F.
4)	MAX. GROSS FLOOR AREA: F.A.R. = 20% LOT AREA * ALLOWABLE INCREASE TO .20 FOR ADDED WETLANDS	126,690 S.F.	TOTAL GROSS FLOOR AREA:	126,000 S.F.
	PARKING REQUIRED (SEE BELOW)	555	PARKING PROVIDED	555

BLDG. #	RETAIL	GND.FLR. OFFICE	2ND FLR OFFICE	TOTAL
1	10,500 SF			10,500 SF
2	10,500 SF			10,500 SF
3	12,000 SF			12,000 SF
4	7,000 SF		4,200 SF	11,200 SF
5	8,000 SF		6,000 SF	14,000 SF
6	12,000 SF			12,000 SF
7	600 SF			600 SF
8	12,000			12000
9	600			600
10	15,000			15,000
11		9,200		9,200
12		9,200		9,200
13		9,200		9,200

(88,200 SF RETAIL) 441SPACES (37,800 SF OFFICE) 114 SPACES 126,000 S.F.

PARKING SPACES: 555 REQUIRED



Source: Gold Coast Geoservices, Inc., November 1999.

CHRISTOPHER A. JOSEPH & ASSOCIATES
Environmental Planning and Research

Figure V.E-6
Estimated Groundwater Levels

analysis described by Tokimatsu and Seed (1987) and Seed and others (1985), respectively. Estimated peak horizontal site accelerations for use in the settlement analyses were determined from the EQFAULT computer program by Thomas F. Blake. Peak Site accelerations of 0.92g generated during a M7.2 earthquake on the nearby Santa Monica Mountains thrust fault was determined for the site.

Landslide Hazards

GCGS Inc.'s geotechnical investigation findings concluded that ancient or recent landslides were not observed on the subject property and that previously published geologic maps of the area prepared by the U.S. Geologic Survey and by T.W. Dibblee, Jr. do not indicate the presence of landslides on or in the immediate vicinity of the project site. GCGS noted, however, that previous studies by another geotechnical consulting firm (GeoSoils Inc., 1989) mapped what was described as two ancient landslide areas located on or near the northerly sides of the property; one located directly north of the proposed City Hall on Parcel C and the other directly north-northeast of the northerly portion of Parcel B.

An exploratory boring (B-10) (in proximity to the proposed City Hall building footprint, see Figure V.E-1) was drilled by Gold Coast Geoservices Inc., in the area of the inferred "western landslide", for primary purpose of evaluating the landslide issue. Geologic Cross section A-A', provided in Figure V.E-2 on page V.E-5, is aligned through the area in question, and additional Geologic Cross Section B-B', provided in Figure V.E-3 on page V.E-6, was prepared to provide further information pertaining to the subsurface geologic conditions. Based on reconnaissance to observe geomorphic features, subsurface data from exploratory Boring #B-10, and from observations and mapping of exposed bedrock on the hillside area, GCGS Inc. concludes that no "western landslide" exists. As such, the postulated location of this landslide feature has been removed from the Plot Plan (as depicted in Figure V.E-1) as evidence suggests that this previously mapped landslide feature does not exist.

The second landslide feature identified by GeoSoils (1989) is located northeast and east of the subject property on the adjacent parcel at 3657 Cross Creek Road. Geologic studies for that parcel performed between 1986-1988 by Robert Stone and Associates, Inc. (RSA), determined that the landslide mass is buttressed by the overlying alluvial and flood plain deposits, and the ancient landslide mass was concluded to be grossly stable. Several structures including a single-family residence and guest house were subsequently constructed with permits issued by the County of Los Angeles. Nevertheless, due to the presence of previous geotechnical investigations and logs of prior excavations (i.e., RSA (1987), GeoSoils (1989), Leighton & Associates (1994)), indicating and inferring a landslide feature was present, additional analyses regarding this feature was requested by the City's Consulting Geologist.

After performing subsequent subsurface geologic exploration and analysis, it is GCGS Inc.'s interpretation that the ascending hillside is underlain by Topanga Formation sandstone, which is intruded by volcanic rocks and associated complex high angle faulting along its transitional contact with the underlying Sespe Formation. A wedge-shaped deposit of colluvium is present at the north side of Parcel B, thickening from north to south at the transition from the south front of the Santa Monica

Mountains (occurring at the north side of Parcel B) into the Malibu Creek Floodplain. The colluvium becomes interfingered with alluvium within the Malibu Creek floodplain. Based on test borings, it is GCGS Inc.'s finding that the north side of Parcel B is not situated at the toe area of an ancient landslide. However, they have shown on the Geologic Map (See Figure V.E-1) the approximate limit of the ancient landslide as previously postulated by RSA, and have shown on Geologic Cross Section E(2)-E(2)' the landslide designation by RSA for material underlying off-site property up-slope from Parcel B (See Figure V.E-7).

Although GCGS Inc.'s geologic logging of borings did not find evidence for the existence of a continuous slide plane, they nonetheless performed a conservative slope stability analysis by evaluating the factor of safety against slope failure. The most critical circular failure surface was manually plotted onto Geologic Cross Section E(2)-E(2)', included as Plate 2.2SC in Figure V.E-7 on page V.E-14. The most critical translational failure surface and specified surface, as determined and described in the GCGS September 14, 2004 report, were manually plotted onto Geologic Cross Section E(2)-E(2)' included as Plate 2.2ST in Figure V.E-8 on page V.E-15. The slope stability analysis indicates that the ascending hillside at the northerly side of Parcel B has adequate safety factor against deep-seated slope failure along circular and translational failure surfaces, exceeding the minimum static safety factor of 1.5, and exceeding the minimum psuedo-static safety factor of 1.1. As the lowest factor of safety was found to exceed the minimum acceptable factor of safety pursuant to City Ordinance, potential hazards associated with landslides is therefore determined to be less than significant.

ENVIRONMENTAL IMPACTS

Thresholds of Significance

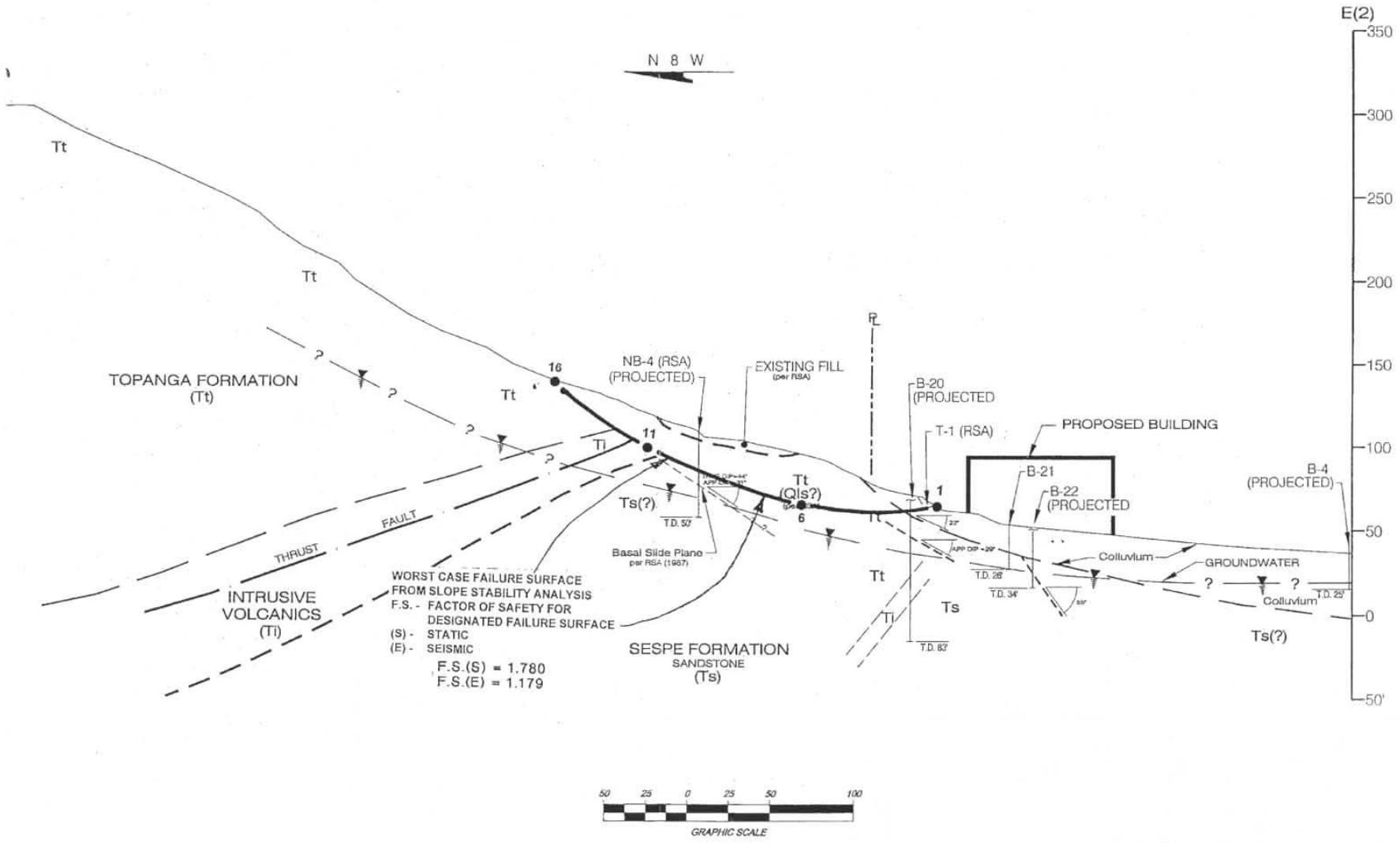
The City of Malibu General Plan EIR considers the geologic impacts created by the proposed projects as being significant if implementation would result in:

- Substantial exposure of people or property to geologic hazards such as earthquakes, landslides, mud slides, ground failure, or similar hazards;

- Any residential development or public building (including police/sheriff station, fire station, hospital or medical facility, school, library, city, and/or county and/or state office, or other public facility) located within an Alquist-Priolo Special Studies Zone or within a known active fault zone;

- Unstable earth conditions that have the potential to affect directly life, property, or major public facilities; and

Wind or water-associated erosion that results in substantial increased unstable soils and/or slopes and/or substantial increased siltation of downstream water courses.



Source: Gold Coast Geoservices, Inc., May 19, 2004.

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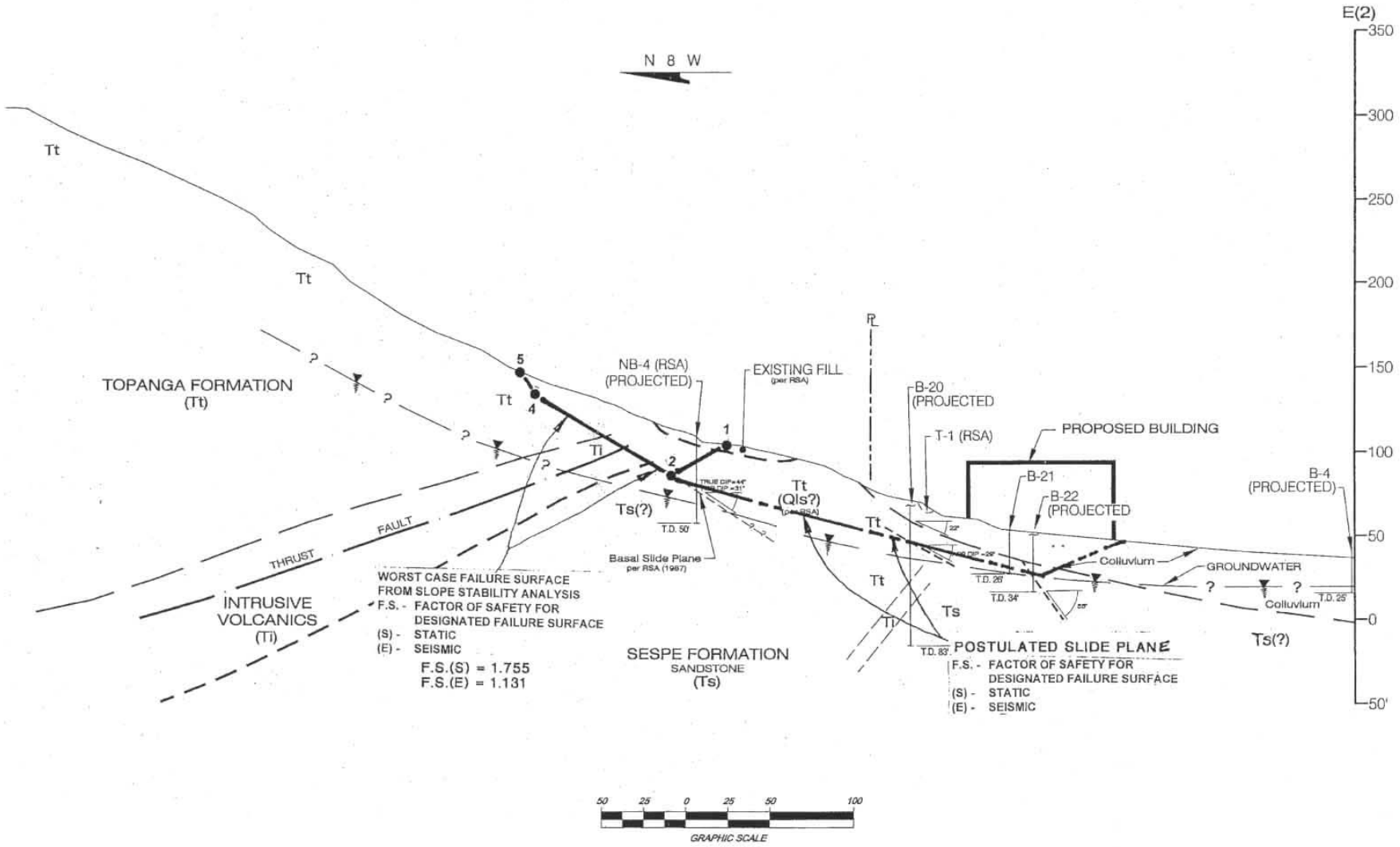
Figure V.E-7
Geologic Cross-Section E(2)-E(2)' Plate 2.2SC



Source: Gold Coast Geoservices, Inc., May 19, 2004.

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Figure V.E-8
Geologic Cross-Section E(2)-E(2)' Plate 2.2ST

Additionally, the CEQA Guidelines (Appendix G) identifies the following criteria for determining whether a project's impacts are considered to have a significant effect on the environment when it would:

- Expose people or structures to potential adverse effects, including the risk of loss, injury, or death involving:
- Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. (Refer to Division of Mines and Geology Special Publication 42.)
- Strong seismic ground shaking.
- Seismic-related ground failure, including liquefaction.
- Landslides.

- Result in substantial soil erosion or the loss of topsoil.
- Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse.
- Be located on expansive soil, as defined in Table 18A-1-B of the California Building Code (2001), creating substantial risks to life and property.
- Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

Project Impacts

Grading/Excavation

As stated in Section II, Project Description, construction of the Proposed Project would involve approximately 43,920 cubic yards (cy) of cut and 22,831 cy of fill.[3] Preliminary grading estimates for Parcel A indicate the development would necessitate approximately 23,099 cy of cut and 14,509 cy of fill, including 2,647 cy of cut as remedial grading. The grading plan for Parcel B would involve approximately 12,064 cy of cut and 5,397 cy of fill, including 771 cy of fill as remedial grading. The

[3] *Jensen Design and Survey Inc., March 23, 2006 (see Tale II-2 in Section II on page II-26 of this DEIR).*

grading plan for Parcel C would involve approximately 8,757 cy of cut and 2,925 cy of fill, with no remedial grading. The proposed preliminary grading plan identifies four subterranean parking structures will be constructed. One below grade structure is proposed on each Parcel, with two structures under Parcel A. The proposed subterranean parking structures will require shoring and temporary dewatering during the construction process.

The conceptual grading plan sections for the Proposed Project are illustrated in Figure V.E.9 on page V.E-18. Remedial grading is required in order to mitigate the potential geologic hazards of ground settlement and flood hazard on Parcels A and B. The remedial grading to mitigate ground settlement hazard includes removal and re-compaction of earth extending to a depth of at least six (6) feet below the original ground surface elevation, wherever driveway aisles and at-grade parking areas are proposed, and within the proposed building areas for Buildings 10 and 11. Remedial grading is also required to a depth of at least 24 inches below the subterranean parking garage concrete slab elevations. Remedial grading is required along the west-southwest side of buildings 8 and 9 to raise the area above the flood level, and to construct all proposed drainage retention ponds or basins. The areas of raw cut and fill and remedial grading earthwork estimates are identified in Figures V.E-10 through V.E-19.

Geotechnical Hazards

The geotechnical Engineering Reports for Parcels A and B have been reviewed from a geotechnical perspective and approved ~~in concept~~ by the City's consulting Geologist. (See Appendix E, Geotechnical Review Sheet dated July 5, 2006). The geotechnical hazards known to be present on the project site have been identified and appropriate design-build recommendations and conditions have been imposed to ensure the project is constructed in accordance with acceptable geotechnical engineering standards. It should be noted that certain conditions require supplemental analysis that must be completed and approved prior to building plan check approval demonstrating specific performance standards are feasible from a development perspective. Based upon the findings of the geotechnical investigation, supplemental response reports, and subsequent conditions imposed through the remarks noted on the City's approval-in-concept for said reports, the site is considered suitable for the planned development.

~~It is assumed that t~~The Project Applicant ~~and site developers~~ will be required to comply with all existing local, City, County, State and federal laws, regulations, codes, and statutes applicable to the geology, soils seismicity, and proposed ~~septic~~ wastewater management system, conditions outlined in the Project Geotechnical Engineering and Investigation Reports, and subsequent comments and conditions of the approval in concept granted by the City for each Parcel. The compliance and adherence to project design measures mentioned herein will reduce potentially significant geotechnical impacts to less-than-significant levels.

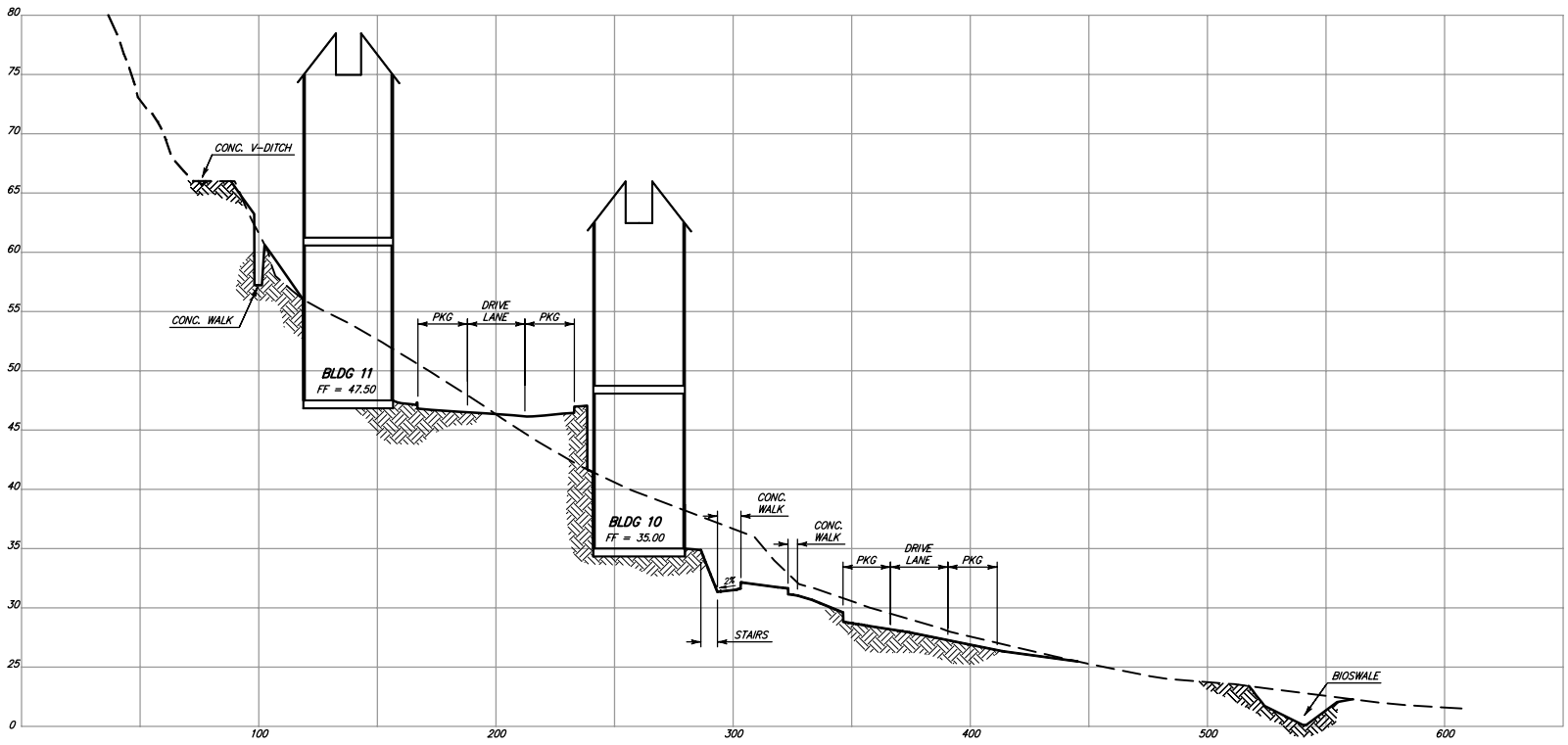
Groundshaking-Seismicity

Ground shaking resulting from a moderate to major earthquake (magnitude 6.0 or greater) can be expected during the life span of the proposed development. Property owners and the general public should be aware that any structure in the southern California region is subject to potentially significant damage as a result of a moderate or major earthquake. Compared to the existing undeveloped state of the project site, the Proposed Project will attract a greater number of individuals to the project on a daily basis. In this regard, the project will increase the potential for human health hazards or destruction of property to occur on the project site during a sizable seismic event. The risks associated with seismic activity are unavoidable and inherent to any location throughout the southern California region. It should be noted that present building codes and construction practices are intended to minimize structural damage to buildings and loss of life as a result of a moderate or major earthquake. While it is impossible to totally prevent structural damage to buildings and loss of life as a result of seismic events, adherence to all applicable building codes and regulations and site-specific engineering specifications can reduce such impacts to less than significant levels.

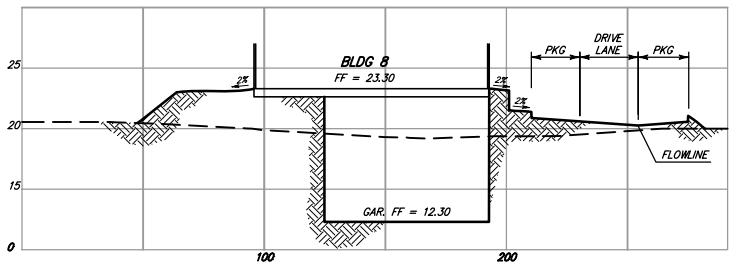
Potential adverse impacts from ground rupture can be accounted for with appropriate setbacks and geotechnical engineering techniques to accommodate several inches of movement. Surface rupture potential is considered low to moderate, and the impacts would be reduced to less than significant levels.

Secondary Effects of the Proposed ~~Septic~~ Wastewater Management System Management Plan (WMSMP)

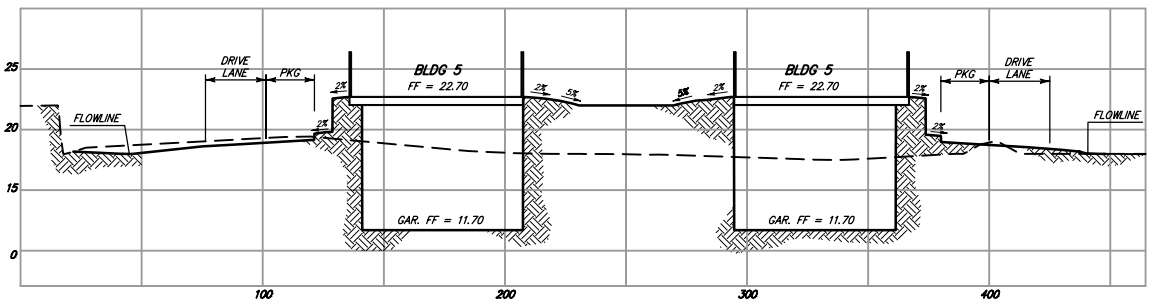
The Proposed Project includes an on-site wastewater treatment system (OWTS) as a part of the WMSMP to treat the sewerage for Parcels A, B and C on-site. 100% of the ~~W~~wastewater effluent, treated to a tertiary quality, will ultimately be reused for landscape irrigation and toilet flushing purposes. Thus, the proposed design of the wastewater system would result in a net zero discharge to groundwater. However, should the system operate outside of its specifications, "off-specification" wastewater would be diverted to the subsurface drip irrigation system for up to 20 days. ~~pumped into a series of leach fields zones positioned throughout the Project Site and used for irrigating on site landscaped areas~~ (See Section V.I.4, Wastewater). ~~Conventional septic system leach lines are generally feasible in areas of the property having groundwater levels deeper than about 15 feet, such as along the northerly side of the site. However, because~~ gGroundwater occurs at relatively shallow depths (varying from 8 to 29 feet across the property)~~, an alternative on site water treatment system is proposed using a series of leach lines under the proposed surface parking areas.~~ Due to the relatively shallow groundwater table in the project vicinity, the effects of effluent from the proposed on-site wastewater treatment system could result in "groundwater mounding", which may cause existing septic systems to fail. Groundwater mounding could adversely alter the characteristics of the soil, thus affecting the liquefaction potential of the soil beneath the proposed structures.



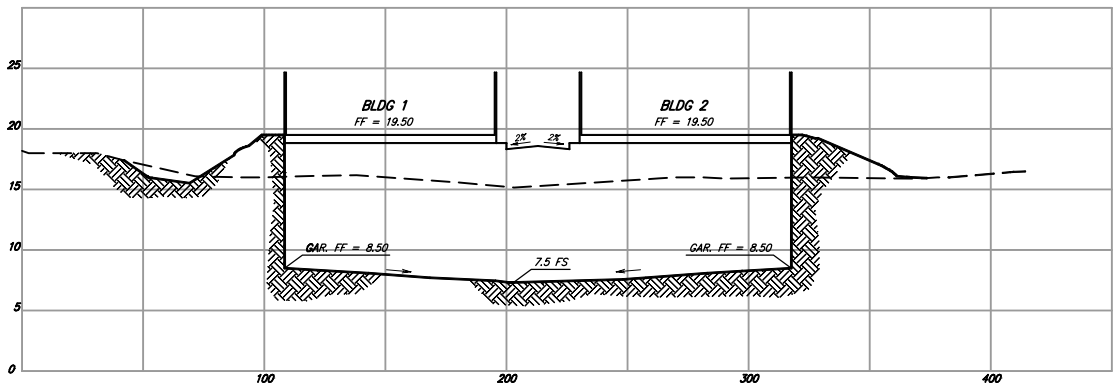
A — SECTION – PARCEL B



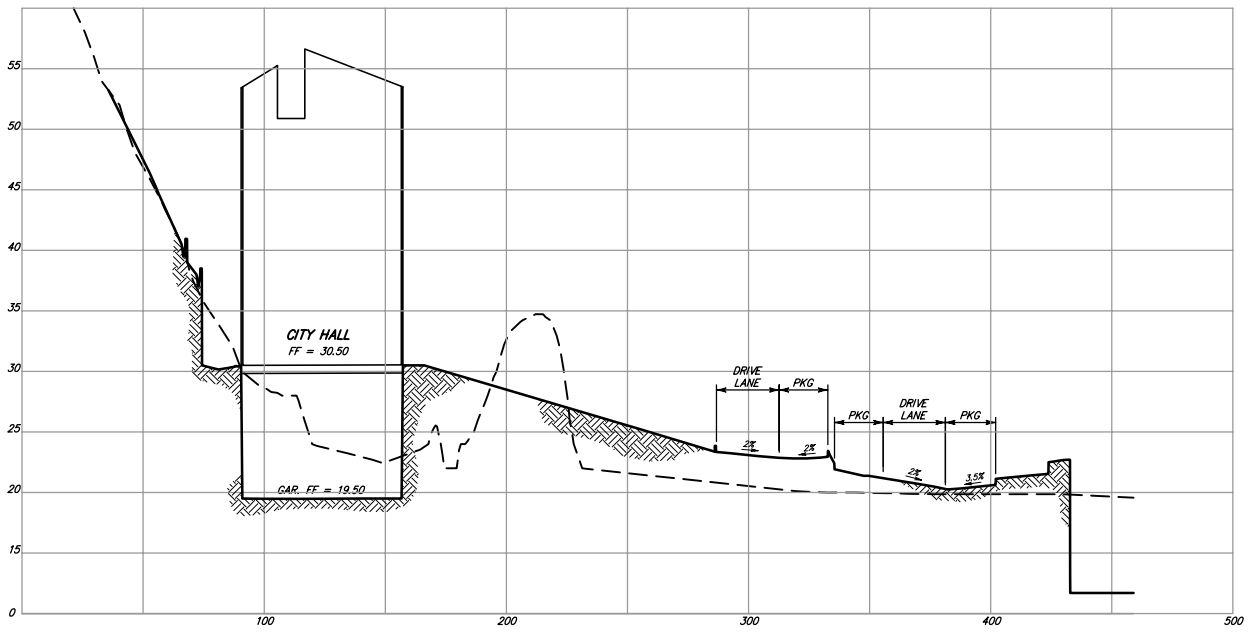
B — SECTION – PARCEL B



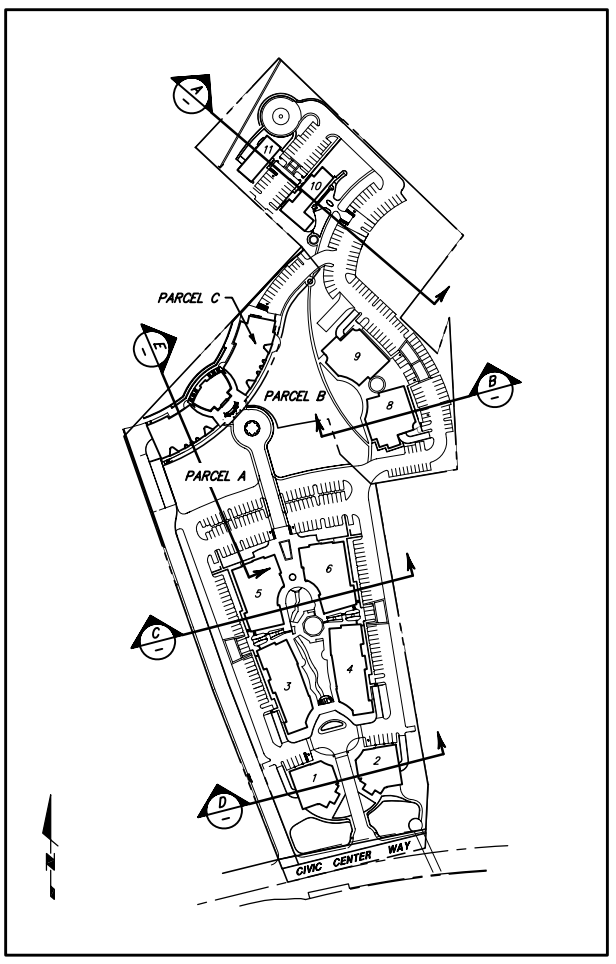
C — SECTION – PARCEL A



D — SECTION – PARCEL A



E — SECTION – PARCEL C & A



SECTION KEY MAP
NOT TO SCALE

LEGEND

EXISTING SURFACE

PROPOSED SURFACE

Source: Jensen Design & Survey, Inc., September 19, 2006.

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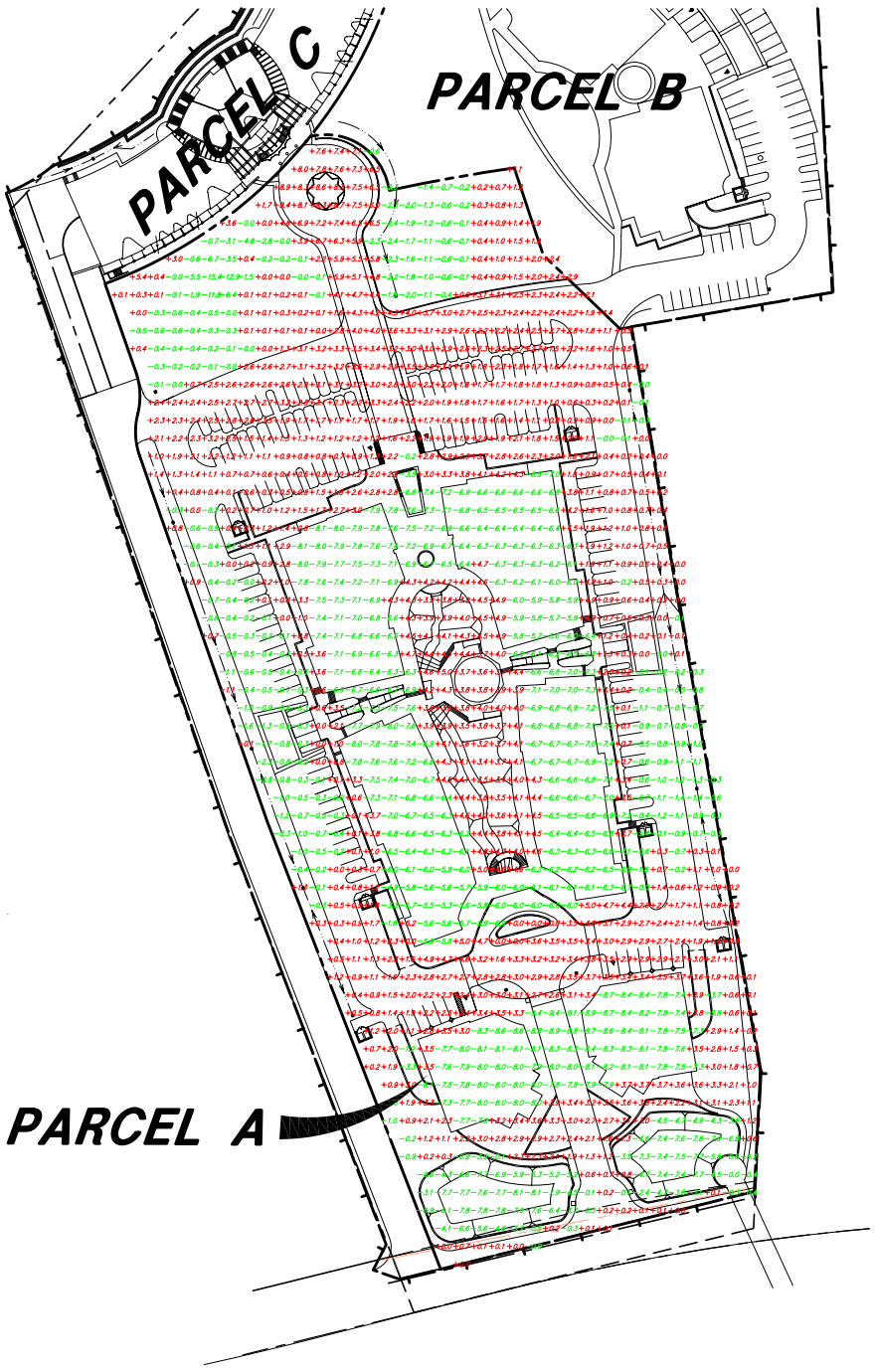
Environmental Planning and Research

Figure V.E-9
Conceptual Grading Plan Sections

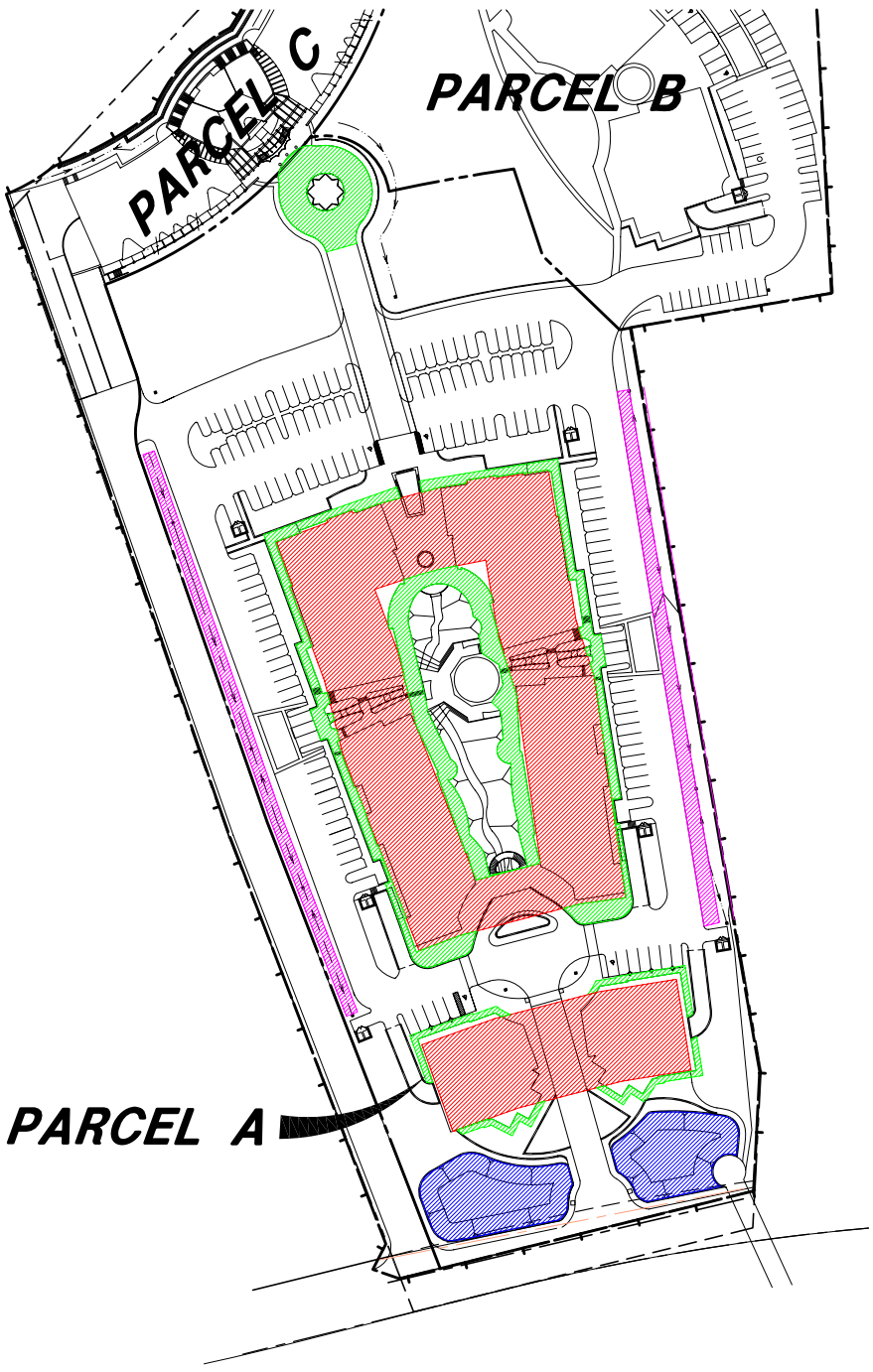
EARTHWORK SUMMARY EXHIBIT- PREFERRED PARCEL A



RAW CUT & FILL

60' 30' 0' 60' 120'
GRAPHIC SCALE: 1"=60'

Earthwork Quantities				
Parcel A				
Cut (cy)			**Fill (cy)**	
Total	23,099		Total	14,509
-Exempt (Parking Garages)	19,169		-Exempt (Hardscape Adjacent to Bldgs for FD Access)	3,952
-Exempt BMP Implementation	260			
-Remedial (Retention Ponds)	2,647			
=Discretionary	**1,023**		**=Discretionary**	**10,557**
Area of Parcel A (ac)	**7.17**			
Volume Allowed (=1,000 cy/ac)	**7,170**			
Total Volume Moved (Cut + Fill)	**11,580**			



EXEMPT AREAS

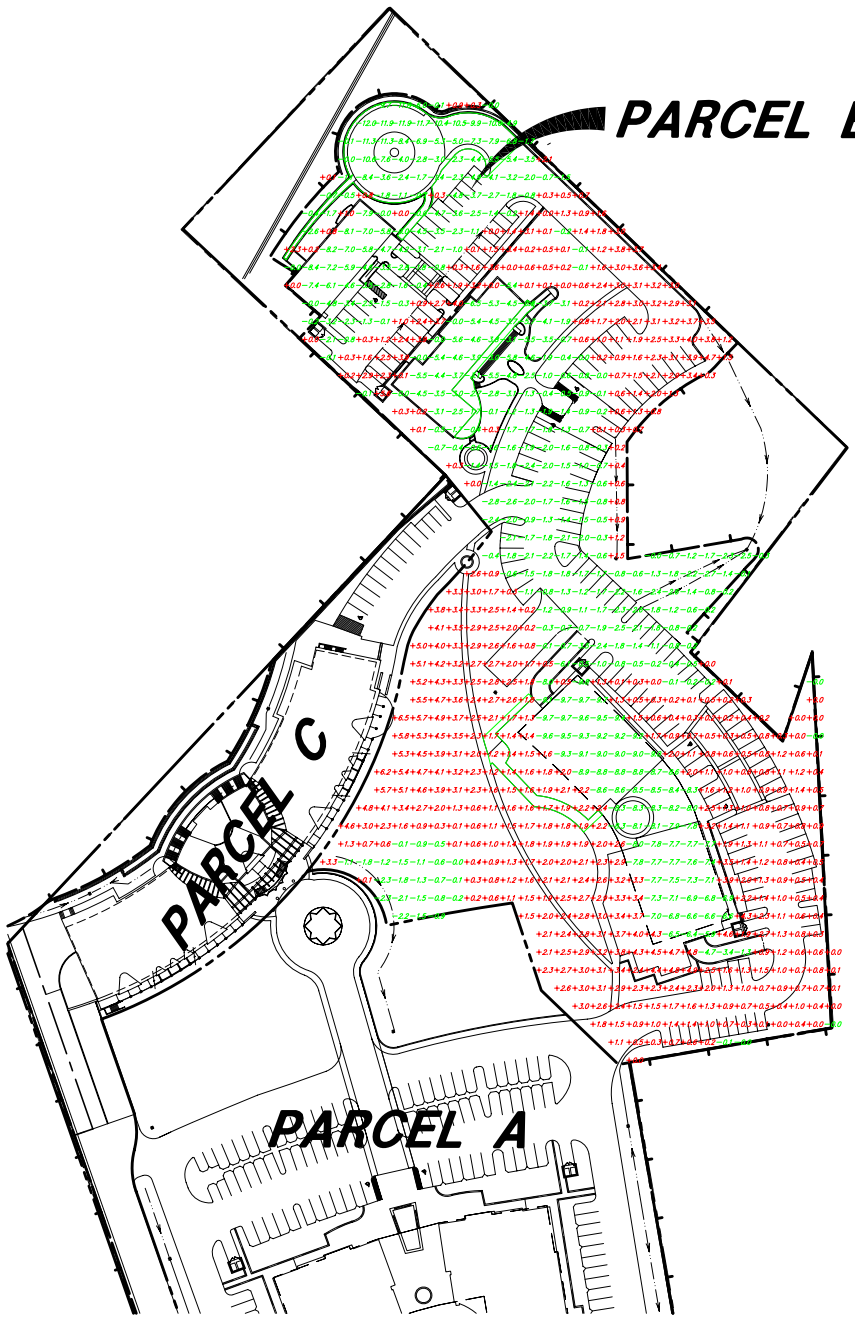
60' 30' 0' 60' 120'
GRAPHIC SCALE: 1"=60'

LEGEND

- PROPERTY BOUNDARY
- LIMITS OF GRADING
- RAW CUT
- RAW FILL
- EXEMPT PARKING GARAGE
- EXEMPT FD ACCESS
- EXEMPT BMP IMPLEMENTATION
- REMEDIAL RETENTION PONDS

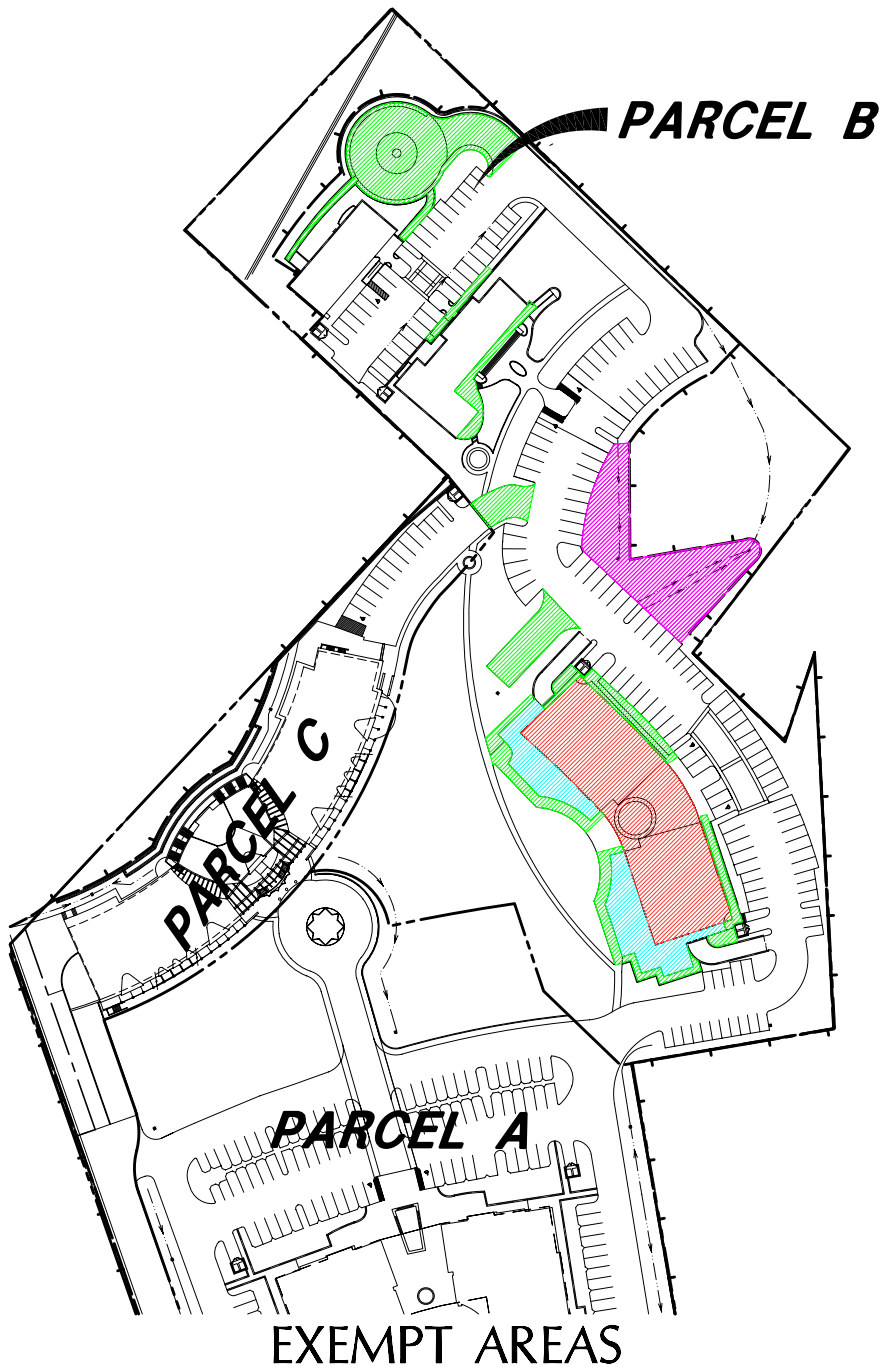
Source: Jensen Design & Survey, Inc., September 19, 2006.

EARTHWORK SUMMARY EXHIBIT- PREFERRED PARCEL B



RAW CUT & FILL

60' 30' 0' 60' 120'
GRAPHIC SCALE: 1"=60'



EXEMPT AREAS

60' 30' 0' 60' 120'
GRAPHIC SCALE: 1"=60'

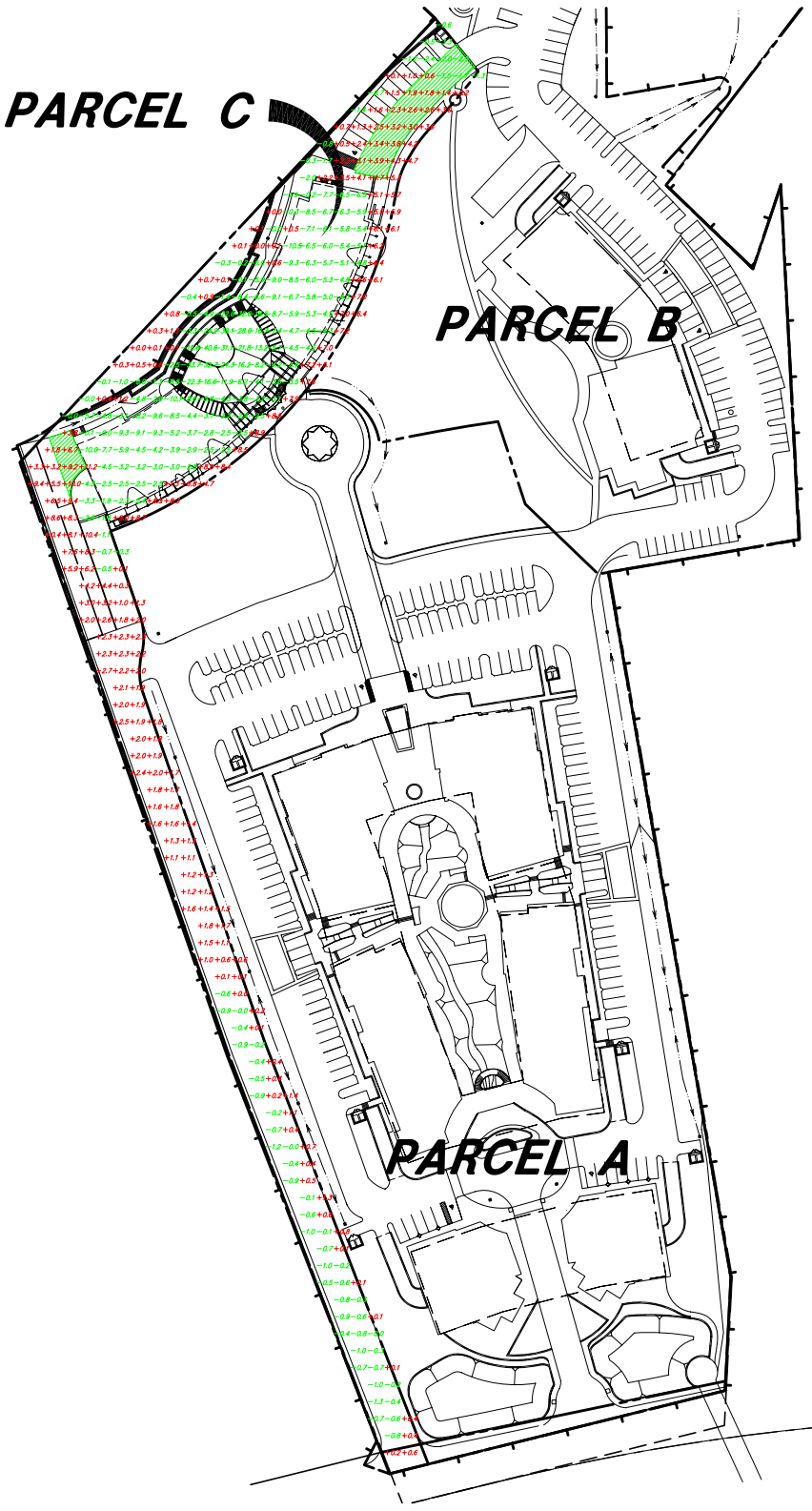
Earthwork Quantities				
Parcel B				
Cut (cy)			**Fill (cy)**	
Total	12,064		Total	5,397
-Exempt (Parking Garages)	4,963		-Exempt (Hardscape Adjacent to Bldgs for FD Access)	1,096
-Exempt (Fire Dept. Turnaround)	1,307		-Remedial (Fill to elevate Pad above Floodplain)	771
-Exempt BMP Implementation	240			
=Discretionary	**5,554**		**=Discretionary**	**3,530**
Area of Parcel A (ac)	**5.71**			
Volume Allowed (=1,000 cy/ac)	**5,710**			
Total Volume Moved (Cut + Fill)	**9,084**			

LEGEND

- PROPERTY BOUNDARY
- LIMITS OF GRADING
- RAW CUT
- RAW FILL
- EXEMPT PARKING GARAGE
- EXEMPT FD ACCESS
- EXEMPT BMP IMPLEMENTATION
- FILL TO ELEVATE PAD ABOVE FLOODPLAIN

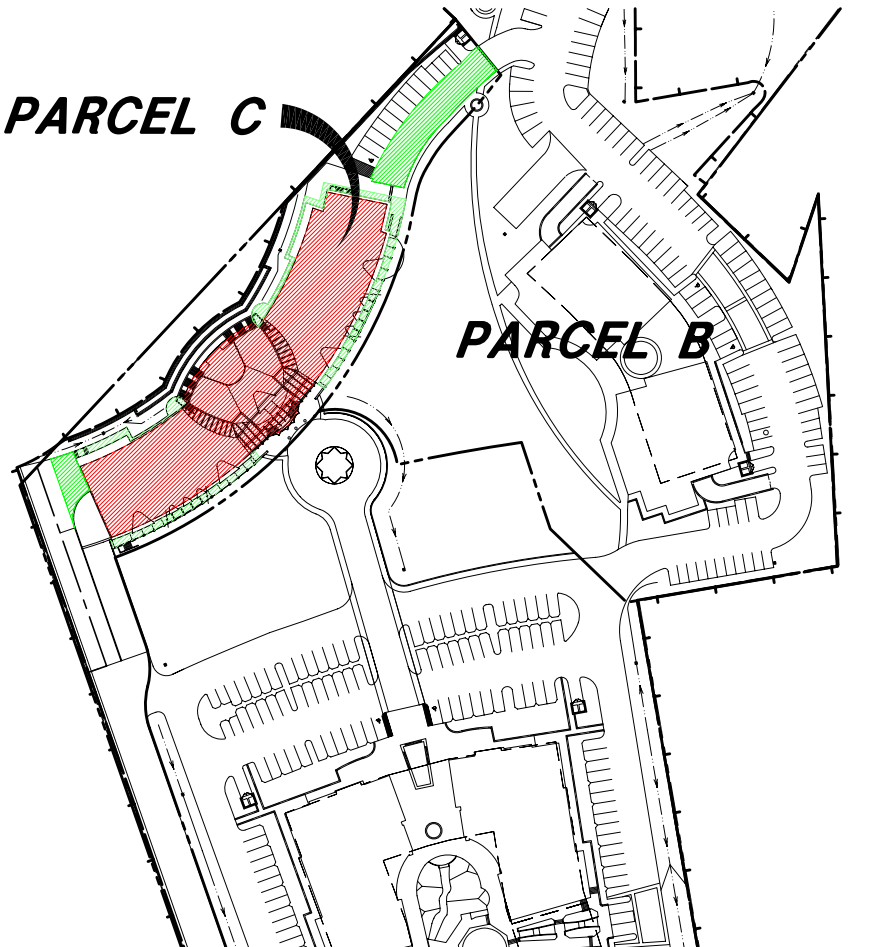
Source: Jensen Design & Survey, Inc., September 19, 2006.

EARTHWORK SUMMARY EXHIBIT- PREFERRED PARCEL C



RAW CUT & FILL

60' 30' 0' 60' 120'
GRAPHIC SCALE: 1"=60'



EXEMPT AREAS

60' 30' 0' 60' 120'
GRAPHIC SCALE: 1"=60'

Earthwork Quantities				
Parcel C				
Cut (cy)			**Fill (cy)**	
Total	8,757		Total	2,925
-Exempt (Parking Garages)	6,353		-Exempt (Fire Dept. Turnaround)	368
-Exempt (Fire Dept. Turnaround)	0		-Exempt (Hardscape Adjacent to Bldgs for FD Access)	180
=Discretionary	**2,404**		**=Discretionary**	**2,377**
Area of Parcel C (ac)	**2.29**			
Volume Allowed (=1,000 cy/ac)	**2,290**			
Total Volume Moved (Cut + Fill)	**4,781**			

LEGEND

- PROPERTY BOUNDARY
- LIMITS OF GRADING
- RAW CUT
- RAW FILL
- EXEMPT PARKING GARAGE
- EXEMPT FD ACCESS
- EXEMPT BMP IMPLEMENTATION

Source: Jensen Design & Survey, Inc., September 19, 2006.

Potential impacts to groundwater from the discharge of "off-spec" treated wastewater were analyzed in the WMSMP prepared by Lombardo and Associates, Inc (See Appendix L). The maximum sustained daily treated wastewater flow is estimated at 24,700 gpd. The estimated impact of this flow rate for a 20 day period at the southern boundary of the project where depth to groundwater is at its shallowest would be less than a foot.[4] The discharge scenarios described in Section 2.11 of the WMSMP were used for sensitivity analysis to demonstrate the systems robustness with respect to impacts to groundwater from "off-spec" discharges. The analysis indicates that the maximum groundwater rise from dispersal of the estimated average annual daily wastewater for up to 60 days would be less than 1 foot at and beyond the property boundary, and less than 3 feet within the property boundary beneath dispersal areas.[5] The estimated rise in groundwater levels from both scenarios (i.e., a 20 day and a 60 day discharge) would be lower than the estimated level of groundwater mounding anticipated for the project as previously proposed in the Draft EIR, for which impacts were determined to be less-than-significant. Therefore, as potential groundwater mounding from the proposed discharge of off-spec treated wastewater would be lower than the groundwater mounding anticipated from the project as proposed in the Draft EIR, groundwater mounding impacts would be less-than-significant.

Constructed wetlands and stormwater detention facilities will be lined, and therefore, will not communicate or recharge groundwater.[6]

The project site is not a groundwater recharge area. The addition of approximately 285,754 square feet of impervious area would result in a reduction in groundwater recharge. As a result, groundwater recharge would be reduced by an average of 976 gpd,[7] which would act to reduce the potential for groundwater mounding, as less water would be present within the soil area where mounding typically occurs. Thus, the proposed addition of impervious surface area would not contribute to groundwater mounding.

The project hydrologic consultant Fugro West Inc., and Ensitu Enginnering have demonstrated that the proposed OWTS will not result in a significant rise in groundwater levels across the site including the areas adjacent to the subterranean parking structures. It has been demonstrated from the studies presented by Fugro West Inc., and Ensitu Engineering that it is feasible to construct subsurface drip systems adjacent to the subterranean parking structures, provided the drip lines are located at least eight (8) feet away from the parking garage walls. As shown on Figures V.I-2 Wastewater Collection, Treatment, and Reuse System with Dispersal Areas Shown, and V.I-3 Wastewater Collection, Treatment, and Reuse System with Landscape and Irrigation Areas Shown, the irrigation areas would be offset 8 feet from both structures and property lines. ~~Based on~~The Draft EIR identified revised

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[4] *City of Malibu Hydrogeology Review Sheet (Comment #11), June 26, 2008 (See Appendix M).*

[5] *Ibid.*

[6] *City of Malibu Hydrogeology Review Sheet (Comment #6), June 26, 2008 (See Appendix M).*

[7] *Malibu La Paz Development Wastewater Management System Master Plan, Section 2.8, July 7, 2008.*

calculations for evapo-transpiration (ET) demands for the subsurface drip dispersal fields. Specifically, the average daily ET demands range was estimated to be from about 8,750 gpd in the winter to 21,150 gpd in the summer over the period from June 2004 to May 2005.[8] The ~~Assuming a~~ total average daily treated wastewater disposal rate was assumed to be ~~of~~ 9,200 gpd for the project, indicateing ~~s~~ that landscaped ET ~~will~~ would consume most of the treated wastewater. However, based upon an analysis of 15 years of daily evapotranspiration and rainfall data collected at Santa Monica by the California Irrigation Management Information System (www.CIMIS.water.ca.gov) and the landscaping area and landscaping palette described in the WMSMP, the wastewater effluent would be totally used for irrigation purposes, thus enabling a no net discharge from the OWTS. To achieve the evapotranspiration rates identified in the WMMP, the landscape plan for the Proposed Project has been revised (see Biology Referral Review Sheet dated 6-21-08 in Appendix M). The final landscape plan and irrigation system shall also be in substantial conformance with the plant palate, landscaping layout and irrigation design requirements identified in section 2.2.6 Irrigation Water Demand of the approved Wastewater Management Master Plan dated July 1, 2008. An effluent storage tank would be used for seasonal periods when treated wastewater generation is greater than reuse requirements.[9] ~~it is estimated that for a period of approximately 38 days throughout the year rainfall would exceed all of the landscape ET requirements. In addition, there will be 3 months (December through February), during which the average daily amount of treated effluent to be disposed of exceeds the ET demands by about 450 gpd. A 50,000 gallon storage tank is proposed to provide storage for the 450 gpd overflow during winter months (approximately 40,000 gallons). Once filled, the 50,000 storage tank could not be drained until March when ET demands of about 13,600 gpd exceed the average daily amount of treated effluent by 4,400 gpd.~~ As discussed above, the potential impacts from the discharge of off-spec treated wastewater would not be significant.

Subterranean Garage Levels

The proposed subterranean parking structures will be constructed above the groundwater level across the site. The groundwater level in the area of the southernmost buildings in Parcel A occurs within a foot or less below the proposed floor elevation of the parking structure, and high groundwater conditions occur across the entire site, so that the walls and flooring of all proposed parking structures shall be effectively waterproofed. The specific water proofing system to be used shall be approved by the project engineering geologist and project soils engineer. Based upon the finding that the groundwater levels across the site will not rise due to the planned development and from the usage of

[8] *Peter M. Leffler, C.Hg., Senior Hydrogeologist, Fugro West Inc., April 10, 2006 (Project No. 3374.001)*

[9] *La Paz Development Wastewater Management System Master Plan, Executive Summary, July 7, 2008.*

the proposed OWTS, coupled with the fact that the subterranean structures will be waterproofed during construction, the subterranean parking structures will not require "permanent dewatering facilities."[10]

In addition to waterproofing, Gold Coast Geoservices Inc., recommends that the parking garage walls be provided with sub-drain pipes consisting of 6-inch diameter PVC pipe embedded in ¾-inch rock at the base of the walls, to collect possible groundwater buildup at the back of the walls. The sub-drainage pipes shall be connected to a sump system in the parking structure flooring from where water can be collected and pumped to the storm drain. The sump system may also be used to collect and pump water from the floor of the structure, in the unlikely emergency event of flooding of the parking structures.[11] With implementation of the geotechnical recommendations identified herein (see mitigation measures below), geotechnical impacts would be less than significant.

CUMULATIVE IMPACTS

Cumulative development in the area would increase the overall population for exposure to seismic hazards by increasing the number of people residing, shopping, recreating, and working in an area that is prone to earthquake hazards and associated secondary effects (liquefaction, landslides, rock slides, etc.). While there are off-site landslide and rock slide hazards present in the project vicinity, none are located onsite. In accordance with Chapter 18.4(D) of the City's Local Coastal Plan- Local Implementation Plan (LCP-LIP) the proposed OWTS shall be evaluated for cumulative impacts upon groundwater levels. A cumulative impact analysis shall be submitted and approved by City Geotechnical staff and the City Environmental Health Administrator~~Specialist~~. With adherence to applicable local, State and federal regulations, buildings codes and acceptable engineering practices, geologic hazards could be reduced to less than significant levels. Following implementation of all performance based geotechnical mitigation measures (see below), no adverse cumulative impacts would occur with respect to geotechnical safety.

MITIGATION MEASURES

1. The proposed project shall be constructed in accordance with the geotechnical engineering recommendations as presented in the Engineering Geological and Geotechnical Engineering Reports (and subsequent Responses to City Comments), for the Proposed Malibu-La Paz Ranch, LLC, Civic Center Way, City of Malibu California, by Gold Coast GeoServices, Inc.

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[10] *Gold Coast Geoservices, Inc., File No. GC99-71243, April 3, 2006.*

[11] *Ibid.*

2. All uncertified fill material placed within the fault trenches shall be removed and replaced as 90 percent compacted fill during the planned site preparations and rough grading.

3. Temporary dewatering and discharge activities shall be monitored by the dewatering contractor and conducted in strict accordance with the Los Angeles Regional Water Quality Control Board's Order No. R4-2003-0111 (Waste Discharge Requirements for Discharges of Groundwater from Construction and Project Dewatering to Surface Waters in Coastal Watersheds of Los Angeles and Ventura Counties (General Permit No. CAG994004).

4. As recommended by the Project Geotechnical Engineer, all structures located within the "moderate and high" risk surface manifestation hazard areas shall be provided with a minimum 10-foot thick 90% compacted fill blanket It is recommended that the compacted fill blanket be reinforced with *Tensar BX1200* geogrid or equivalent placed at two-foot vertical intervals up to two feet below the planned finish rough grade pad. Recommendations addressing over-excavation, installation of geogrid and backfilling of these areas shall be provided during the plan check approval process that addresses temporary stability of construction excavations and bottoms.

5. The structural engineer shall provide a letter along with supporting information, prior to plan check approval, indicating that the proposed buildings can tolerate the anticipated total and differential movements, or that site-specific geotechnical recommendations ~~mitigations~~ will be required.

6. The proposed structures should be constructed utilizing post-tensioned foundation systems and post-tensioned slabs-on-grade designed by the project structural engineer.

7. The Project Geotechnical Consultant shall provide appropriate geotechnical recommendations for restrained walls and include recommendations for damp-proofing or waterproofing and means for removing any water collected (e.g., sump pump), in accordance with the City's Geotechnical Guidelines.

8. Complete grading plans that include the existing and proposed grades, grading yardages, proposed subterranean parking, the limits and depths of removals under the structures and flatwork areas, and grading cross-sections ~~shall be~~have been submitted to City Geotechnical staff for review ~~during the grading plan check stage~~. Remedial grading to mitigate liquefaction and other geotechnical hazards must be clearly defined in grading yardages, and illustrated on the Plans. Such plans submitted during final plan check shall substantially reflect the concept plans in this EIR

9. The Applicant shall obtain final ~~feasibility~~ construction plan approval ~~(CDP)~~ for the proposed onsite wastewater treatment systems (OQWTS) ~~for Parcel A, Parcel B, and the City Hall Projects~~ from the City Environmental Health AdministratorSpecialist. ~~In accordance with Chapter 18.4(D) of the City's Local Coastal Plan- Local Implementation Plan (LCP LIP) the proposed OWTS shall be evaluated for cumulative impacts upon groundwater levels. A cumulative impact analysis shall be submitted and approved by City Geotechnical staff and the City Environmental Health Specialist. Copies of the proposed OWTS, as well as copies of the approved plans and designs of the systems from Ensitu Engineering shall be provided to the City Geologist.~~ Final approval of construction plans is subject to the conditions enumerated in the July 16, 2008~~October 4, 2006~~ Revised Conformance Review by the City's Environmental Health Administrator. The Environmental Health Administrator found that the ~~A~~OWTS is feasible and meets the City's requirements. The final design must be engineered to meet the effluent limits specified in waste discharge requirements (WDR)~~s~~, taking into account the Malibu Lagoon bacteria and nutrient total maximum daily load (TMDL) requirements of the Regional Water Quality Control Board (RWQCB) and the United States Environmental Protection Agency (US EPA).

LEVEL OF SIGNIFICANCE AFTER MITIGATION

As provided in the mitigation measures above, approval-in-concept was conditionally provided for Parcels A and B and C. As the proposed project cannot be constructed until said performance standards are demonstrated to an acceptable factor of safety, which will be demonstrated at the Building Plan-Check stage, impacts after mitigation would be reduced to less-than-significant levels.