REPORT OF FAULT SURFACE RUPTURE HAZARD EVALUATION
PROPOSED WALDORF-ASTORIA LUXURY HOTEL AND CONFERENCE CENTER

9876 WILSHIRE BOULEVARD
BEVERLY HILLS, CALIFORNIA

Prepared for:

OASIS WEST REALTY, LLC

Beverly Hills, California

July 23, 2014

Project 4953-12-0141

July 23, 2014

Mr. Kent Warden
Senior Vice President
Oasis West Realty, LLC
9860 Wilshire Boulevard

Subject: **LETTER OF TRANSMITTAL**
Report of Fault Surface Rupture Hazard Evaluation
Proposed Waldorf-Astoria Luxury Hotel and Conference Center
9876 Wilshire Boulevard
Beverly Hills, California
AMEC Project 4953-12-0141

Dear Mr. Warden:

We are pleased to submit the results of our fault surface rupture hazard evaluation for the proposed Waldorf-Astoria Luxury Hotel and Conference Center to be constructed at 9876 Wilshire Boulevard, Beverly Hills, California. This report was prepared to expand upon the description of our fault surface rupture hazard evaluation included in our geotechnical report for the property dated May 9, 2014, project no. 4953-14-0441. This report was requested by the City of Beverly Hills Plan Review.

It has been a pleasure to be of professional service to you. Please contact us if you have any questions or if we can be of further assistance.

Sincerely,

AMEC Environment & Infrastructure, Inc.

PROFESSIONAL GEOLOGIST
ROSALIND MUNRO
NO. 1269
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Rosalind Munro
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Reviewed by:

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CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Paul Elliott
Principal Engineering Geologist

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PROPOSED WALDORF-ASTORIA LUXURY HOTEL AND CONFERENCE CENTER

9876 WILSHIRE BOULEVARD
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Prepared for:

OASIS WEST REALTY, LLC

Beverly Hills, California

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Los Angeles, California

July 23, 2014

Project 4953-12-0141

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1.0 INTRODUCTION

This report presents the results of our fault surface rupture hazard evaluation for the proposed Waldorf-Astoria Luxury Hotel and Conference Center located at 9876 Wilshire Boulevard in Beverly Hills, California. The location of the site is shown on Figure 1, Vicinity Map. The location of the proposed development, existing buildings, and our exploration borings are shown on Figure 2, Boring Location Map. This report has been prepared to supplement our geotechnical investigation report for the Waldorf-Astoria and Conference Center site dated May 9, 2014 (AMEC, 2014), as requested by the City of Beverly Hills.

Our professional services were performed according to the standard of practice for geological investigations that satisfy provisions of the Alquist-Priolo Act using that degree of care and skill ordinarily exercised, under similar circumstances, by reputable geotechnical consultants practicing in this or similar localities.

2.0 FINDINGS

The site is located in the northwestern Los Angeles Basin, near the southern edge of the Santa Monica Mountains. The Los Angeles Basin is a northwest-trending coastal-alluvial plain that consists of sequences of terrigenous and marine sediments that deposited within a deep structural depression (Yerkes et al., 1965). Regionally, the site is located within the northern Peninsular Ranges geomorphic province, typified by narrow northwest trending mountain ranges separated by wide sediment-filled basins of varying thickness. The basins tend to host northwest-trending dextral faults and folds, such as the Newport Inglewood fault zone. The northwestern Peninsular Ranges region is bounded by west-southwest-trending oblique-slip sinistral reverse faults, such as the nearby Santa Monica fault and the Hollywood fault. The site sits at an elevation of approximately 270 feet above mean sea level.

We have reviewed maps and reports by the California Geological Survey (CGS), previously the California Division of Mines and Geology (CDMG), the Unites States Geological Survey (USGS), and the California Division of Oil and Gas relative to faulting in the area. We have also reviewed maps and reports by additional scientific researchers and consultants. The reports and maps reviewed are included in Section 4.0.

Based on the reviewed documents and physical investigation, there is no evidence of active faulting at the Waldorf-Astoria and Conference Center site.

Of the reviewed documents, the CGS and USGS publications show the closest known active faults are the West Beverly Hills Lineament, located approximately 700 feet to the west, the Santa Monica fault, located approximately 975 feet to the west, and the Hollywood fault, located approximately 1.6 miles to the north. The closest Alquist-Priolo Earthquake Fault Zone is for the Hollywood fault zone, located 2.7 miles to the northeast (CGS, 2014.) A recent fault surface rupture hazard investigation report for the property at 9900 Wilshire Boulevard (Geocon West, Inc., 2014) interpreted active faulting no closer than 850 feet to the northwest of the Waldorf-Astoria and Conference Center site.

We have reviewed historic topographic maps of the area (USGS, 1934 and 1966.) There is no geomorphic evidence of faulting at the Waldorf-Astoria and Conference Center site.

We also have physically explored the Waldorf-Astoria and Conference Center site by the drilling and logging of 4 borings 75 feet in depth. We also reviewed 2 nearby borings 105 and 199 feet in depth drilled in 2011 (Parsons, 2011.) The locations of the borings are shown on Figure 2. The logs of the borings are included in the Appendix.

The site is underlain in the near-surface by alluvial fan deposits mapped as Holocene and Pleistocene. These deposits consist of clay, silt, silty sand, clayey sand, sand, and gravel. Groundwater was encountered in our borings at the site at depths between 26 and 29.5 feet below the ground surface. There does not appear to be a groundwater barrier across the site, the presence of which could be indicative of a fault. This further supports the conclusion that there is no active faulting at the Waldorf-Astoria and Conference Center site.

3.0 CONCLUSION

Based on the geologic data available, which includes our onsite borings, there are no known active or potentially active faults beneath or projecting towards the Waldorf-Astoria and Conference Center site. The site is not within a currently established Alquist-Priolo Earthquake Fault Zone for surface fault rupture hazards. The closest Alquist-Priolo Earthquake Fault Zone is for the Hollywood fault, located approximately 2.6 miles to the northeast (CGS, 2014). The closest interpreted active faults are over 850 feet to the northwest of the site. The potential for surface rupture at the site due to fault plane displacement propagating to the surface during the design life of the structure is considered to be low.

4.0 BIBLIOGRAPHY

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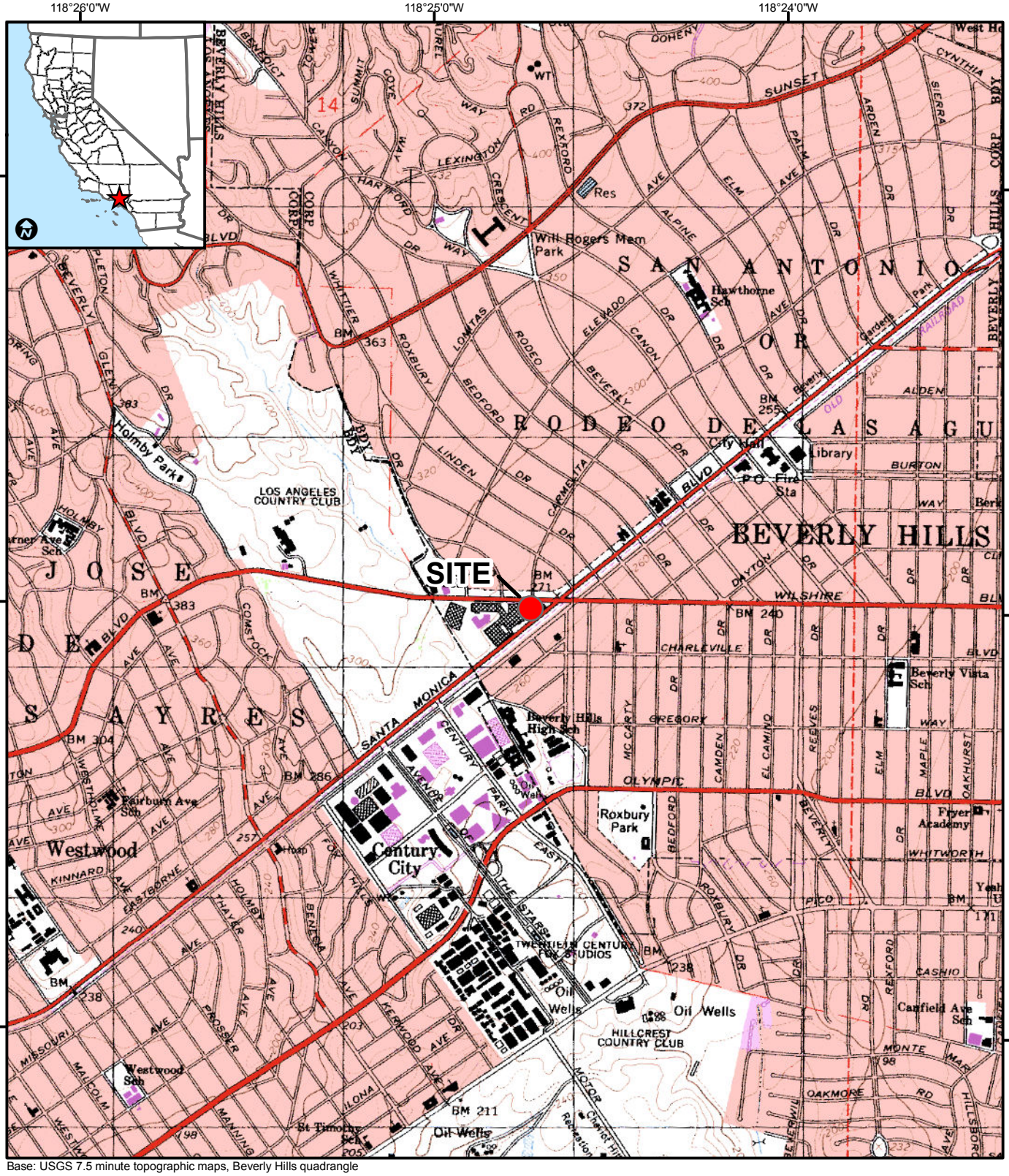
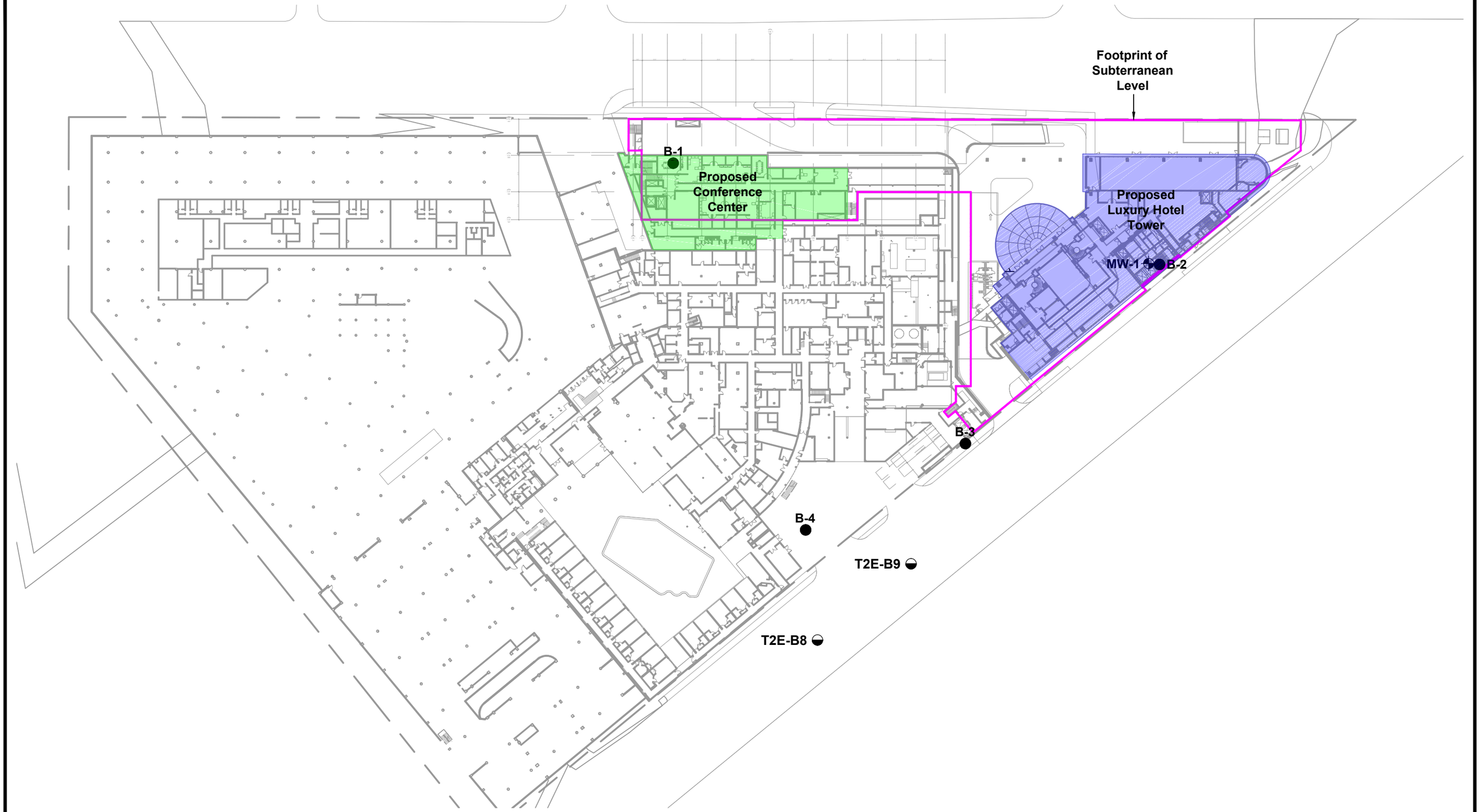
FIGURES



amec	PROPOSED WALDORF-ASTORIA HOTEL 9876 Wilshire Boulevard Beverly Hills, California 90210
AMEC Environment & Infrastructure, Inc. 6001 Rickenbacker Road Los Angeles, California 90040 Tel: 323.889.5300 Fax: 323.721.6700	LAT: 34.0666 LON: -118.4116 SCALE: 1:24,000 DRAWN: PER CHECK: RM DATE: 04-29-14
VICINITY MAP	FIGURE: 1 PROJECT: 4953-14-0441

G:\4953 Geotech\2014\140441 Beverly Hilton Revitalization\GIS\140441 Figure 1 Vicinity Map.mxd



LEGEND

- MW-1 ⊕ GROUNDWATER MONITORING WELL (4953-14-0441)
- B-4 ● PRIOR INVESTIGATION (4953-06-0771)
- T2E-B9 ◒ PRIOR PARSONS INVESTIGATION (OCTOBER 14, 2011)
- └ BORING LOCATION AND NUMBER

0 40' 80' 160'

SCALE: 1" = 80'

AMEC
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6001 Rickenbacker Road, Los Angeles, CA 90040
Phone (323) 889-5300 Fax (323) 721-6700

PROPOSED WALDORF-ASTORIA HOTEL & CONFERENCE CENTER
9876 Wilshire Boulevard
Beverly Hills, California 90210

PREPARED BY:	VMN
SCALE:	1" = 80'
DRAWN:	RM
CHKD:	LT
PM:	PJE
DATE:	7/18/2014

PLOT PLAN

FIGURE NO. **2**

PROJECT NO. 4953-12-0141

Path: P:\4953 Geotech\2012-proj\120141 Beverly Hilton\CAD\DWG\4953-12-0141_Fig-2_PlotPlan.dwg [B-17x11]
Date: July 23, 2014 - 11:13am By: vo.nguyen

APPENDIX

BORING 1

DATE DRILLED: May 8, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 270**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
			17.1	108	7		GC	3" Thick Asphalt Concrete over 4" Base Course FILL - GRAVEL with CLAY - moist, dark brown, fine, some coarse sand
								Ceramic fragment (2" in size)
265	5		18.3	97	5			Thin layer of fine to coarse sand
							SM	SILTY SAND - loose, moist, light brown, fine to coarse
			12.1	102	4			
260	10	6					ML	CLAYEY SILT - medium stiff, moist, brown, fine sand, trace slate gravel, slightly porous
							CL	SILTY CLAY - very stiff, moist, light brown
			20.7	105	13			
255	15	23						
							ML	SANDY SILT - stiff, moist, light brown, fine sand, some clay
250	20		25.1	95	8			
		11						Sample not recovered
								Layer of Silty Sand
245	25		13.6	105	8			Alternating with Clayey Silt
		30					SW-SM	WELL GRADED SAND with SILT - medium dense, moist, brown, slate gravel
240	30		--	--	15		CL	SILTY CLAY - very stiff, wet, brown, fine sand
235	35	4						Becomes soft
			20.5	106	9		SM	SILTY SAND - medium dense, wet, light brown, fine sand, few slate gravel, some clay
	40							

* Number of blows required to drive the Crandall sampler 12 inches using a 300 pounds hammer falling 30 inches.

** Elevations are based on site context plan dated April 11, 2006

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: VB
Checked By:

Beverly Hilton Hotel
Los Angeles, California

MACTEC

LOG OF BORING
Project: 4953-06-0771 Figure: A-1.1a

BORING 1 (Continued)

DATE DRILLED: May 8, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 270**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
		3						Becomes very loose
			27.6	92	5			Becomes brown Alternating layers of sandy silt, becomes loose
225	45						SW-SM	WELL GRADED SAND with SILT - medium dense, wet, brownish gray, some slate gravel
		18					GW	WELL GRADED GRAVEL with SAND - very dense, wet, brownish gray, fine sand
220	50		9.5	126	46			
							SM	SILTY SAND - medium dense, wet, brownish gray, fine to medium, few small gravel
		28						
215	55						CL	SANDY CLAY - very stiff, wet, reddish brown, fine sand
			19.3	108	28		CL	SILTY CLAY - hard, wet, reddish brown, some gray, very fine sand
210	60							
		50/5"					GW	WELL GRADED GRAVEL with SAND - very dense, wet, brownish gray Difficult drilling due to gravel
205	65							
							SW	WELL-GRADED SAND - very dense, wet, brown, fine to coarse, slate gravel
200	70		14.6	111	56			
							GW	WELL GRADED GRAVEL - very dense, wet, light brown
195	75	83/11"						END OF BORING AT 75½ FEET
	80							NOTES: Water measured at a depth of 29½ feet 15 minutes after completion of drilling. Boring backfilled with grout from bottom up.

Field Tech: AR
Prepared By: VB
Checked By:

Beverly Hilton Hotel
Los Angeles, California

MACTEC

LOG OF BORING
Project: 4953-06-0771 Figure: A-1.1b

B12SOIL CRANDALL(ELE) 60771.GPJ LAW CRAN.GDT 7/25/06

BORING 2

DATE DRILLED: May 10, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 269**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
							SM	3" Thick Asphalt Concrete over 3" Base Course FILL - SILTY SAND - moist, brown, fine to medium, some slate gravel
265	5		18.0	101	5		CL	CLAYEY SILT - medium stiff, moist, brown, fine sand, few gravel
			20.1	100	12		CL	SANDY CLAY - very stiff, moist, light to dark brown, fine, some coarse sand, few slate gravel
260	10	23						
255	15		17.0	106	8			Becomes stiff
		16					ML	CLAYEY SILT - very stiff, moist, light brown, some very fine sand, slightly porous
250	20		19.6	104	7			Alternating with layers of Sandy Silt, becomes stiff
		29					SW	WELL-GRADED SAND - medium dense, moist, brown, fine to coarse, some slate gravel
245	25		17.2	103	18			Layer of Sandy Silt, moist, light brown, some clay
		8					SM	SILTY SAND - loose, wet, brown, fine to coarse, few slate gravel
240	30		17.4	109	5			
235	35	10						Layer of fine sand
			19.1	109	62			Layer of fine to coarse sand with slate gravel
230	40							

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: VB
Checked By:

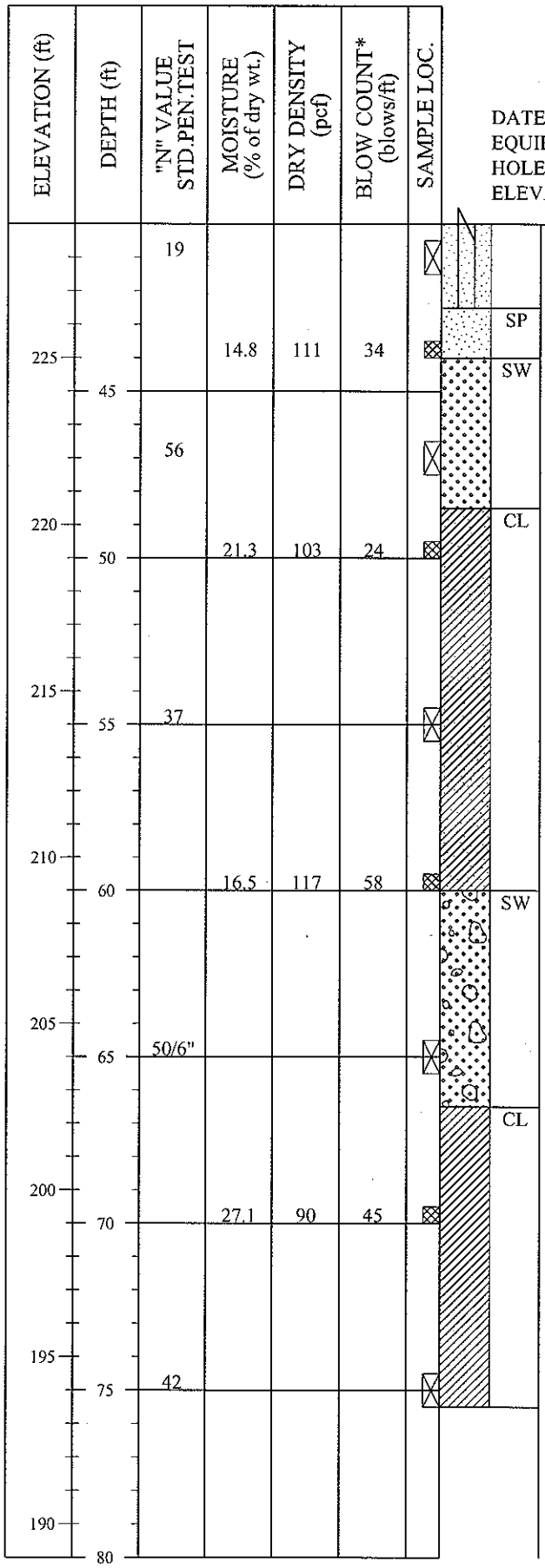
Beverly Hilton Hotel
Los Angeles, California

MACTEC

LOG OF BORING
Project: 4953-06-0771 Figure: A-1.2a

BORING 2 (Continued)

DATE DRILLED: May 10, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 269**



Fewer gravel

POORLY GRADED SAND - dense, wet, light brown, fine to medium

WELL-GRADED SAND - very dense, wet, light brownish gray, finee to coarse, some gravel

SANDY CLAY - hard, wet, brown and gray, fine sand, few gravel

Becomes dark reddish brown

WELL GRADED SAND with GRAVEL - very dense, wet, brownish gray, some clay

SILTY CLAY - hard, wet, dark reddish brown, some very fine sand

END OF BORING AT 75½ FEET

NOTES: Water measured at a depth of 27 feet 15 minutes after completion of drilling. Methane gas probes installed at 13, 18 and 28 feet below ground surface for methane study. Boring backfilled with grout from bottom up.

Field Tech: AR
Prepared By: VB
Checked By:

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

B12SOIL CRANDALL(ELE) 60771.GPJ LAW_CRAN.GDT 7/25/06

Beverly Hilton Hotel
Los Angeles, California

MACTEC

LOG OF BORING
Project: 4953-06-0771 Figure: A-1.2b

BORING 3

DATE DRILLED: May 9, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 268**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
								4" Thick Asphalt Concrete over 6" Base Course
265			9.6	100	10		SM	FILL - SILTY SAND - moist, light brown, fine to medium, some coarse
	5		15.0	110	8		CL	SILTY CLAY - stiff, moist, dark brown, some fine sand
260			19.8	106	14			Becomes very stiff
	10		17.6	104	12			Becomes light brown
255							SM	SILTY SAND - medium dense, moist, brown, fine to medium sand gravel, layers of clay
	15		13.4	104	18			
250								
	20		15.5	105	16			Thin layers of silt
245								Alternating with layers of Silt
	25		22.2	101	6			Becomes very loose
						▼	ML	SILT - medium stiff, wet, brown
240								
	30		30.3	92	4			
235								Layer of Poorly Graded Sand, some gravel
	35		23.0	98	34		CL	CLAYEY SILT - wet, brown, some very fine sand
230							SM	SILTY SAND - medium dense, wet, brown, some fine sand, alternating with layers of Sandy Silt
	40		23.8	100	9			

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: VB
Checked By:

Beverly Hilton Hotel
Los Angeles, California

MACTEC

LOG OF BORING
Project: 4953-06-0771 Figure: A-1.3a

BORING 3 (Continued)

DATE DRILLED: May 9, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 268**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	
225	45		11.6	111	71		GW — WELL-GRADED GRAVEL with SAND - very dense, wet, brownish gray, mostly gravel (2" in size), fine to medium sand
220	50		20.5	108	28		CL — SANDY CLAY - hard, wet, brownish gray, fine sand Thin layer of Clayey Sand, some sloughing
215	55		18.4	110	36		
210	60		11.4	122	83		SW — WELL-GRADED SAND with GRAVEL - very dense, wet, brownish gray, mostly gravel (2" in size), fine to medium sand
205	65		16.4	107	35		CL — SANDY CLAY - hard, wet, brown to dark reddish
200	70		16.9	119	50		Thin layer of gravel
195	75		--	--	78		END OF BORING AT 75 FEET
190	80						

NOTES: Water measured at a depth of 26 feet 20 minutes after completion of drilling. Boring backfilled with grout from bottom up.

Field Tech: AR
Prepared By: VB
Checked By:

B12SOIL CRANDALL(ELE) 60771.GPJ LAW CRAN.GDT 7/25/06

Beverly Hilton Hotel
Los Angeles, California

MACTEC

LOG OF BORING

Project: 4953-06-0771 Figure: A-1.3b

BORING 4

DATE DRILLED: May 9, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 279**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.		
275	5		17.7	107	16		ML	3" Thick Asphalt Concrete, No Base Course FILL - CLAYEY SILT - moist, brown, fine sand, some medium, few gravel
			19.0	104	22		CL	SILTY CLAY - very stiff, moist, brown, some very fine sand, slightly porous
270	10	30					SM	SILTY SAND - medium dense, moist, brown, little slate gravel
265	15		13.3	95	10			Alternating with layers of Silt, light brown
260	20	12	14.8	113	11			Few gravel
255	25	16					GW	WELL-GRADED GRAVEL - medium dense, moist, light brown
250	30	23	25.0	98	6		SM	SILTY SAND - moist, brown, fine to medium Becomes wet Few gravel
245	35		18.2	106	24		SW	WELL-GRADED SAND - medium dense, wet, light brownish gray, fine to medium, some gravel
240	40	22	16.8	117	35			Alternating with layers of Silty Sand, fine, dense

(CONTINUED ON FOLLOWING FIGURE)

Field Tech: AR
Prepared By: VB
Checked By:

Beverly Hilton Hotel
Los Angeles, California

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LOG OF BORING
Project: 4953-06-0771 Figure: A-1.4a

BORING 4 (Continued)

DATE DRILLED: May 9, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 279**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	"N" VALUE STD.PEN.TEST	MOISTURE (% of dry wt.)	DRY DENSITY (pcf)	BLOW COUNT* (blows/ft)	SAMPLE LOC.	
							CL — SANDY SILTY CLAY - very stiff, wet, light gray, some fine sand, trace slate gravel
		20					
235	45		19.0	109	38		Becomes hard Fewer gravel
		37					
230	50		20.8	103	32		Becomes gray and brown
225		33					Thin layer of fine to coarse sand, some gravel
220	60		18.2	109	32		Thin layer of fine to coarse sand, some gravel
215	65	35					Becomes reddish dark brown
210	70		14.8	115	62		
205	75	59					END OF BORING AT 75½
200	80						

NOTES: Hand augered upper 5 feet. Water measured at a depth of 29½ feet 15 minutes after completion of drilling. Methane gas probes installed at 14, 19 and 29 feet below ground surface. Boring backfilled with grout from bottom up.

Field Tech: AR
Prepared By: VB
Checked By:

B12SOIL_CRANDALL(ELE) 60771.GPJ LAW_CRAN.GDT 7/25/06

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Los Angeles, California

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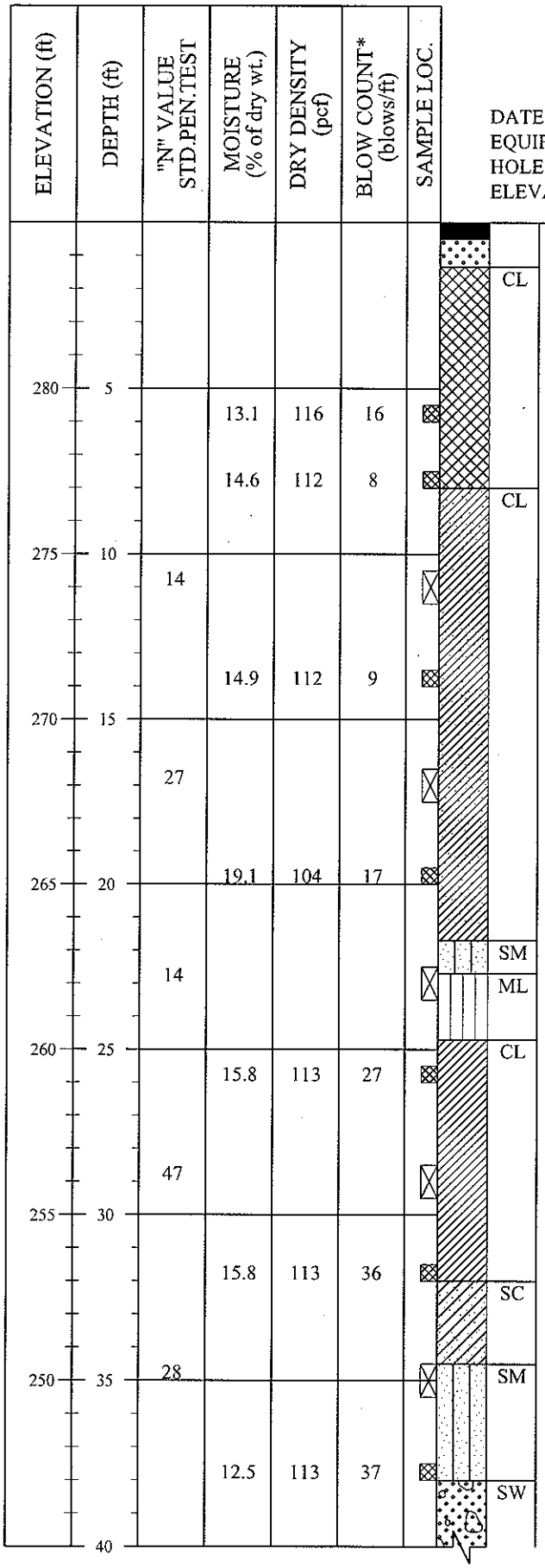
LOG OF BORING
Project: 4953-06-0771 Figure: A-1.4b

BORING 5

DATE DRILLED: May 11, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 285**

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.



	6" Thick Layer of Concrete over 10" Base Course
CL	FILL - CLAYEY SILT - moist, dark gray and black, slight organic odor
	Becomes dark brown, few slate gravel
CL	SANDY CLAY - stiff, moist, brown, fine to medium sand, trace gravel
	fewer sand and gravel, slightly porous
	Becomes very stiff
SM	SILTY SAND - moist, brown, fine to medium
ML	CLAYEY SILT - stiff, moist, brown, some fine sand
CL	SANDY CLAY - hard, moist, brown, fine to coarse sand
SC	CLAYEY SAND - wet, brown, fine to medium, some coarse
SM	SILTY SAND - medium dense, wet, brown, fine to medium, occasional coarse
	Becomes dense
SW	WELL-GRADED SAND with GRAVEL - dense, wet, brown, mostly slate gravel, some silt

Field Tech: AR
Prepared By: VB
Checked By:

(CONTINUED ON FOLLOWING FIGURE)

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Los Angeles, California

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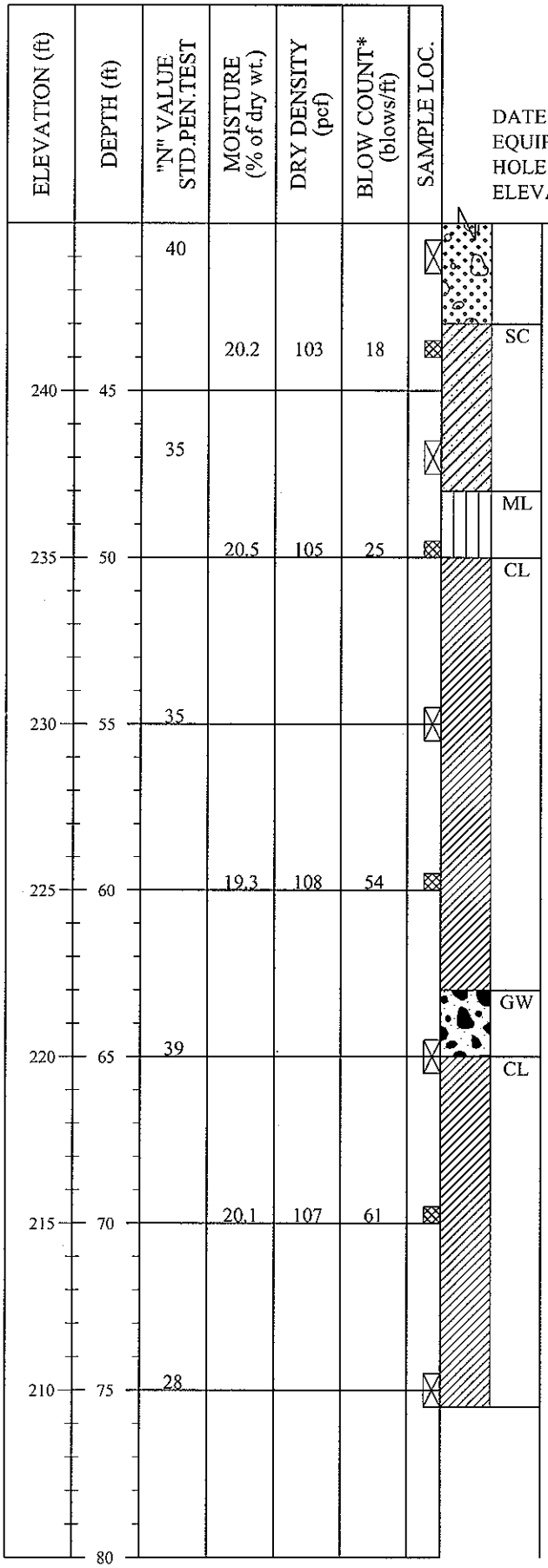
LOG OF BORING
Project: 4953-06-0771 Figure: A-1.5a

BORING 5 (Continued)

DATE DRILLED: May 11, 2006
EQUIPMENT USED: Rotary Wash
HOLE DIAMETER (in.): 5
ELEVATION: 285**



SC — CLAYEY SAND - medium dense, wet, medium brown, fine to coarse, trace gravel, some clay lenses

Becomes dense

ML — SANDY SILT - hard, wet, brown, fine sand

CL — SILTY CLAY - hard, wet, reddish brown

Some small gravel

GW — WELL-GRADED SAND with GRAVEL - dense, wet, brown

CL — SILTY CLAY - hard, wet, reddish brown

Becomes very stiff

END OF BORING AT 75½ FEET

NOTES: Water measured at a depth of 42 feet 15 minutes after completion of drilling. Methane gas probes installed at 25, 30 and 40 feet below ground surface. Boring backfilled with grout from bottom up.

Field Tech: AR
Prepared By: VB
Checked By:

THIS RECORD IS A REASONABLE INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

B12SOIL CRANDALL(ELE) 60771.GPJ LAW CRAN.GDT 7/25/06

Beverly Hilton Hotel
Los Angeles, California

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LOG OF BORING
Project: 4953-06-0771 Figure: A-1.5b

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Martini Drilling / CME 75		T2E-B8
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/11	8 inches	269 feet

GROUNDWATER READINGS
Encountered at 34.6 feet during drilling

THIS RECORD IS AN INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
							18 inches of asphaltic concrete Hand augered to 5 feet
265	5					SM	**FILL [Af]** Clayey to Sandy Silt, dark brown (10YR 3/3) NOTE: Jsm = Santa Monica Slate Tm = Modelo formation See end of log for more detailed descriptions of clasts
						ML	**YOUNGER/OLDER ALLUVIAL FAN DEPOSITS [Qf/Qfo]** Clayey to Sandy Silt, trace coarse sand and fine gravel (Jsm and Tm); dark brown (10YR 3/3); appears very moist and medium stiff; lower contact is gradational
		1	1	100			
260	10					CL/ ML	Silty Clay and Clayey Silt, trace coarse sand and fine gravel (Jsm and Tm); very dark grayish brown (10YR 3/2); appears moist and very stiff; lower contact is gradational At 8.8 to 12.8': Trace calcium carbonate filaments and fine nodules up to 1/8 inch
		1	2	90		ML	**ESTUARINE DEPOSITS [Qe]** Clayey to Sandy Silt, rare (<1%) coarse sand (Jsm and Tm); brown (7.5YR 4/3); appears moist and very stiff; well sorted; trace very fine (<1/32 inch) calcium carbonate filaments; lower contact is gradational
255	15						
		1	3	90		SM/ ML	Silty Sand and Sandy Silt, very fine grained; rare (<1%) coarse sand (Jsm and Tm); yellowish brown (10YR 5/4); appears moist and stiff/dense; well sorted; lower contact is narrowly gradational
250	20					SM	Silty Sand with Gravel, fine grained, clasts 20 to 40%, up to ¾ inch, mainly subangular

(CONTINUED ON FOLLOWING FIGURE)

Geologist: ME/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B8a

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Martini Drilling / CME 75		**T2E-B8 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/11	8 inches	269 feet

GROUNDWATER READINGS
Encountered at 34.6 feet during drilling

THIS RECORD IS AN INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.	
		2	4	96	SM	**Qe Continued** to subrounded slate (Jsm), some subangular granitic rock also observed; brown (7.5YR 4/4); appears moist and dense At 21.3 to 22.0' and 22.4 to 22.7': Grades to Silty Sand to Sandy Silt, very fine grained, trace coarse sand and fine gravel (Jsm and Tm); well sorted
245	25	2	5	96	GM	**FLUVIAL DEPOSITS [Qofl]** Silty Gravel, clasts (50 to 70%), up to 1½ inches, mainly subangular to subrounded slate (Jsm) with some granitic rock, sandstone (Tm) and shale (Tm); matrix is fine to coarse silty sand; brown (10YR 5/3); appears damp and dense; upper contact is sharp, lower contact is gradational
240	30	2	6	90	SP-SM GM	At 27.9 to 29.0': Poorly Graded Sand with Gravel and Silt, fine grained; clasts 15 to 25%, up to 1 inch; mainly subangular to subangular slate (Jsm) with some granitic rock, sandstone (Tm) and shale (Tm); brown (10YR 5/3); appears damp to dense; upper contact is sharp, lower contact is gradational At 30.0 to 31.7': Gravel becomes coarser, maximum size 2½ inches At 32.4': Becomes wet
235	35	3	7	84		▽ Groundwater encountered during drilling
230	40					

(CONTINUED ON FOLLOWING FIGURE)

Geologist: ME/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B8b

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Martini Drilling / CME 75		**T2E-B8 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/11	8 inches	269 feet

GROUNDWATER READINGS
Encountered at 34.6 feet during drilling

THIS RECORD IS AN INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		3	8	100		GM	**Qfofl Continued** Silty Gravel as above
225	45	3	9	96		CL/ML	**ESTUARINE DEPOSITS - FINE GRAINED [Qef]** Clayey Silt and Silty Clay, variable fine sand, trace coarse sand and fine gravel (Jsm and Tm); mottled, grayish brown (10YR 5/2) to strong brown (7.5YR 4/4); appears very moist and stiff to very stiff; occasional scattered manganese oxide flecks and staining; lower contact is gradational
						ML	Clayey to Sandy Silt, trace coarse sand (Jsm and Tm), strongly mottled, gray (2.5Y 5/1) to reddish brown (2.5YR 4/3); appears wet and stiff; variable manganese oxide staining and flecks (0 to 15%); lower contact occurs between runs
220	50	4	10	100		CL	Clay and Silty Clay, trace coarse sand and fine gravel (Jsm and Tm); brown (7.5 YR 4/3) with variable dark gray (2.5Y 4/1) mottling; appears moist and very stiff to hard; some vertically oriented dark gray mottled zones; lower contact is sharp At 52.1 to 52.4': Becomes dark gray (2.5Y 4/1) At 53.7 to 54.0': Gravel increases to 20 to 25%, up to ¾ inch At 55.2 to 55.5': Becomes wet and soft
215	55					GM	Silty Gravel, clasts, 50 to 60%, up to 1½ inches; mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); matrix is fine to coarse silty sand, color is variable, generally dark brown (7.5YR 3/4); appears wet and dense; lower contact is sharp
		4	11	96		CL/ML	Silty Clay and Clayey Silt, trace coarse sand (Jsm and Tm); brown (7.5YR 4/4); appears very moist to wet and soft to stiff; occasional manganese oxide flecks; lower contact occurs between runs At 57.6 to 57.8', 58.3 to 58.6', and 59.3 to 59.5': Fine Silty Sand beds
210	60						

(CONTINUED ON FOLLOWING FIGURE)

Geologist: ME/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B8c

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Martini Drilling / CME 75		**T2E-B8 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/11	8 inches	269 feet

GROUNDWATER READINGS
Encountered at 34.6 feet during drilling

THIS RECORD IS AN INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
						GM	**Qe Continued** At 60.0 to 60.7': Silty Gravel clasts 70%+, up to ¾ inch, appears clast-supported, mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); appears wet and dense, lower contact is sharp At 60.7 to 62.0': Silty Clay and Clayey Silt as above
		4	12	40		CL/ML	At 62.0 to 65.0': No recovery
205	65						
		5	13	100		CL/ML	**OLDER ALLUVIAL FAN DEPOSITS [Qfo]** Silty Clay and Clayey Silt, variable fine to coarse sand and fine gravel; clasts, 2 to 15%, up to ½ inch, mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); brown (7.5 YR 4/4), with occasional grayish brown (10YR 5/2) mottling; appears moist to very moist and very stiff; lower contact is gradational
200	70						
		5	14	100		ML	Clayey to Sandy Silt, variable coarse sand and fine gravel, clasts 5 to 25%, up to ¾ inch, mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); brown (7.5YR 4/4) with dark grayish brown (2.5Y 4/2) mottling; appears very moist and very stiff; lower contact is gradational At 73.6 to 78.5': Gravel increases to 20 to 35%; color becomes strong brown (7.5YR 4/6) to yellowish red (5YR 4/3); appears very moist and very stiff
195	75						
		5	15	100		GC	Clayey Gravel, clasts 50 to 60.4% up to 1 inch, mainly suangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); matrix is fine to coarse clayey sand; brown (7.5YR 4/4); appears wet and dense
190	80						

(CONTINUED ON FOLLOWING FIGURE)

Geologist: ME/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

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Los Angeles, California

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B8d

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Martini Drilling / CME 75		**T2E-B8 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/11	8 inches	269 feet

GROUNDWATER READINGS
Encountered at 34.6 feet during drilling

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
						GC	**Qfo Continued**
		6	16	100		CL/ML	**ESTUARINE DEPOSITS [Qe]** Clayey Silt and Silty Clay, variable fine sand, trace coarse sand (Jsm and Tm); brown (7.5YR 4/3) with grayish brown (2.5Y 5/2) mottling; appears moist and very stiff to hard; lower contact is narrowly gradational
						CL	Clay, trace coarse sand (Jsm and Tm); mottled, dark reddish brown (5YR 3/4) to dark gray (7.5YR 4/1); appears moist and hard; lower contact is gradational
185	85						
						CL/ML	Silty Clay and Clayey Silt, rare (<1%) coarse sand (Jsm and Tm); dark brown (7.5YR 3/4); appears moist and very stiff; lower contact is narrowly gradational
		6	17	100		ML	Clayey to Sandy Silt, variable coarse sand, trace fine gravel (Jsm and Tm); brown (7.5YR 4/4); appears very moist and very stiff; well sorted; occasionally grades to Silty Clay; occasional fine silty, clayey sand pockets; lower contact is narrowly gradational
180	90						
		6	18	96			At 92.2 to 93.6': Gravel increases to 10 to 30%, up to ½ inch, mainly subangular to subrounded slate (Jsm), shale (Tm)and sandstone (Tm); gradational transition to unit below
175	95					GM	**OLDER FLUVIAL DEPOSITS [Qofl]** Silty Gravel, clasts 50 to 60%, up to 1 inch, mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); matrix is fine to coarse silty sand; color is variable, generally brown (10YR 4/3); appears wet and dense
		7	19	72		SM	At 96.1 to 98.7': Grades to Silty Sand with Gravel, fine to coarse grained, clasts 20 to 40%, up to 1 inch
170	100						At 98.6 to 100.0': No recovery

(CONTINUED ON FOLLOWING FIGURE)

Geologist: ME/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

THIS RECORD IS AN INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

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Los Angeles, California

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B8e

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Martini Drilling / CME 75		**T2E-B8 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/11	8 inches	269 feet
GROUNDWATER READINGS		
Encountered at 34.6 feet during drilling		

THIS RECORD IS AN INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.			
165	105	N/A	20	0				**Qfo/Qfo$_n$ Continued** At 100.0 to 105.0': Recovered only slough
								END OF BORING AT 105 FEET NOTES: Boring backfilled with cement/bentonite grout from bottom up and patched. -Munsell colors listed in order of predominance (most predominant color first). -Where observed, contacts and bedding appear subhorizontal unless otherwise noted. -Non-recovery intervals are assumed to occur at the bottom of run unless otherwise noted. -Santa Monica Slate (Jsm) clasts are generally very dark gray, subangular to subrounded slate unless otherwise noted. Modelo Formation (Tm) clasts are generally white to pale yellow to tan, subangular to subrounded shale and sandstone unless otherwise noted. -The term "clasts" herein describes gravel-size rock fragments (larger than ¼ inch). -Beds are generally massive unless otherwise noted.
160	110							
155	115							
150	120							

Geologist: ME/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

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Los Angeles, California

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B8f

METRO SOIL CORE. S:\70131 GEOTECH\GINTW\FAULT_INVESTIGATION_WSE_LIBRARY AMEC OCTOBER2011 (2).GLB
G:\PROJECT_DIRECTORIES\4953\2010\101561_METRO_WESTSIDE_EXTENSION\6.2.3.2 FAULT HAZARD INVESTIGATION\3.2 ALL FIELD NOTES\GINT LOGS\101561-TRANSECT 2E.GPJ 10/14/11

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		T2E-B9
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet

GROUNDWATER READINGS
Encountered at 38 feet.

THIS RECORD IS AN INTERPRETATION OF SUBSURFACE CONDITIONS AT THE EXPLORATION LOCATION. LATITUDE AND LONGITUDE OF BORING LOCATION SHOWN ON LOGS ARE APPROXIMATE. SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND AT OTHER TIMES MAY DIFFER. INTERFACES BETWEEN STRATA ARE APPROXIMATE. TRANSITIONS BETWEEN STRATA MAY BE GRADUAL.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
							11 inches of asphaltic concrete over 3 inches of base
						SM/ ML	**FILL [Af]** Silty Sand and Sandy Silt, very fine grained, trace coarse sand and fine gravel (Jsm and Tm) NOTE: Jsm = Santa Monica Slate Tm = Modelo formation See end of log for more detailed descriptions of clasts
265	5	1	1	42		ML	**YOUNGER / OLDER ALLUVIAL FAN DEPOSITS [Qf/Qfo]** Clayey Silt, variable fine sand, trace coarse sand and fine gravel (Jsm and Tm); very dark grayish brown (10YR 3/2); appears moist At 6.1 to 9.0': No recovery
260	10	1	2	100		CL	Clay and Silty Clay, trace coarse sand (Jsm and Tm); very dark grayish brown (10YR 3/2); appears moist and very stiff to hard; lower contact is gradational At 11.7 to 12.6': Trace calcium carbonate filaments and uncemented nodules up to 1/8 inch
						ML	**ESTUARINE DEPOSITS [Qe]** Clayey to Sandy Silt; dark yellowish brown (10YR 4/6); appears damp to moist and very stiff to hard; faint brown (10YR 4/3) laminations, rare (<1%) coarse sand and fine gravel (Jsm and Tm); well sorted; lower contact is gradational
255	15	1	3	30			At 15.5 to 19.0': No recovery
	20					SM	At 19.0 to 20.0': Silty Sand with Gravel, fine to coarse grained, clasts 20 to 30% up to 1 inch, mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); dark yellowish brown (10YR 4/4); appears moist and dense

(CONTINUED ON FOLLOWING FIGURE)

Geologist: LH/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

MTA Westside Subway Extension
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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9a

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet
GROUNDWATER READINGS		
Encountered at 38 feet.		

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		1	4	100			**Qe Continued** At 20.0 to 21.5': No recovery
		1	5	16		ML	Clayey to Sandy Silt as above At 22.3 to 24.0': No recovery
245	25	2	6	100			At 24.5' to 27.7': Predominantly Sandy Silt, trace to some clay
		2	7	80			At 26.5 to 31.5': Becomes very moist and medium stiff
240	30	2	8	100			At 29.5 to 31.5': Color becomes dark brown (10YR 3/3)
		2	9	48		CL	Silty Clay, rare (<1%) coarse sand and fine gravel (Jsm and Tm); dark grayish brown (10YR 4/2); appears very moist to wet and soft; variable manganese oxide staining; lower contact occurs between runs At 32.7 to 34.0': No Recovery
235	35	2	10	72			At 35.2 to 35.8': Color becomes dark gray (2.5Y 4/1), slightly micaceous
		2	11	36		SM-SC CL	**OLDER ALLUVIAL FAN DEPOSITS [Qfo]** Clayey, Silty Sand, fine grained; dark grayish brown (10YR 4/2); appears wet and medium dense At 36.9 to 37.4': Silty Clay with Sand, sand decreases with depth; dark grayish brown (10YR 4/2); appears wet and soft At 37.4 to 39.0': No recovery
	40					SP	Poorly Graded Sand, fine to medium grained; color variable, generally very dark grayish brown (2.5Y 3/2); appears wet and dense; coarse sand content increasing with depth; lower contact is gradational

(CONTINUED ON FOLLOWING FIGURE)

Geologist: LH/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9b

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet

GROUNDWATER READINGS
Encountered at 38 feet.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		2	12	100		SP	**Qfo Continued**
						CL/ML	Silty Clay, variable fine sand, trace coarse sand (Jsm and Tm), dark gray (10YR 4/1), appears wet and soft; poorly sorted
		2	13	56			At 42.7 to 42.9': Becomes gravelly, clasts 30 to 40%, up to 1½ inches, mainly subangular slate (Jsm) At 42.9 to 44.0': No recovery
						GM	Silty Gravel, clast 60 to 70%, up to 1 inch, mainly slate (Jsm), matrix is fine silty sand, very dark grayish brown (10YR 3/2), appears wet and dense, lower contact is sharp, erosional
225	45					CL/ML	**ESTUARINE DEPOSITS - FINE GRAINED [Qef]** Clay to Silty Clay, variable fine sand, trace coarse sand and fine gravel (Jsm and Tm); strongly mottled, grayish brown (10YR 5/2) to strong brown (7.5YR 5/6), appears very moist and stiff; occasional sandy silt pockets; lower contact is narrowly gradational
		3	14	40			At 46.0 to 49.0': No recovery
							At 49.0 to 52.0': Becomes mottled, grayish brown (10YR 5/2) to reddish brown (5YR 4/4); occasional manganese oxide flecks and staining
220	50						
		3	15	100		CL/CH	Clay, mottled, brown (7.5YR 4/4) to dark grayish brown (10YR 4/2); appears moist and very stiff to hard; variable (2 to 15%) manganese oxide flecks and staining
							At 54.5 to 55.5': Occasional reddish brown (5YR 4/4), mottling
215	55						
		3	16	100			
							At 59.0 to 61.9': Appears very moist to wet and soft to medium stiff; variable fine to coarse sand
	60						

(CONTINUED ON FOLLOWING FIGURE)

Geologist: LH/MF
Prepared/Date: WL/PK 10/14/2011
Checked/Date: MW/MF 10/14/2011

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DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet
GROUNDWATER READINGS		
Encountered at 38 feet.		

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ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		4	17	60		CL/ CH	**Qef Continued** **ESTUARINE DEPOSITS [Qe]** Clay; mottled, brown (7.5YR 4/4) to dark grayish brown (10YR 4/2); appears moist and very stiff to hard; occasional gravelly or sandy beds as noted above; lower contact is gradational At 61.1 to 61.9': Becomes gravelly, clasts 25 to 35%, up to 1-inch, mainly subrounded slate (Jsm), shale (Tm) and sandstone (Tm) At 61.9 to 62.3': Some oxidized, strong brown (7.5YR 4/6) silt laminations At 62.0 to 64.0': No recovery
205	65						At 64.0 to 64.8': Appears wet and medium stiff At 64.8 to 65.3': Grades to Sandy Clay
		4	18	80		CL	Silty Clay and Sandy Clay, variable fine to coarse sand, trace fine gravel (Jsm and Tm); color variable; very dark grayish brown (10YR 3/2); occasional dark reddish brown (5YR 3/4) mottling; appears wet and soft to medium stiff, lower contact occurs between runs At 67.9 to 68.1': Becomes very moist and very stiff At 68.0 to 69.0': No recovery
200	70	4	19	100		SC	**OLDER ALLUVIAL FAN DEPOSITS [Qfo]** Clayey Sand with gravel, fine to coarse grained, clasts 15 to 20%, up to ¾ inch; mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); color variable; appears wet and dense At 69.9 to 70.3': Silty Clay, dark reddish brown (5YR 3/3); appears wet and soft
						CL/ ML	Clayey Silt and Silty Clay, variable fine to coarse sand and gravel, clasts 5 to 20%, up to ¾ inch, mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); brown (7.5YR 4/4); appears very moist and very stiff; poorly sorted; occasional less gravelly (2-5%) beds; occasional dark reddish brown (5YR 3/4) mottling, lower contact is narrowly gradational At 71.5 to 73.0': Appears wet and soft to medium stiff
195	75	5	20	100			At 74.0 to 77.7': Becomes brown (7.5YR 4/4); appears very moist to wet and medium stiff At 77.7 to 80.2': Becomes reddish brown (5YR 4/4); appears very moist to wet and stiff
	80						

(CONTINUED ON FOLLOWING FIGURE)

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9d

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet

GROUNDWATER READINGS
Encountered at 38 feet.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		5	21	100		CL/ML	**Qfo Continued** At 80.2 to 83.0': Becomes reddish brown (5YR 4/4) to dark grayish brown (10YR 4/2) mottles; appears very moist to wet and medium stiff to stiff At 83.0 to 83.8': Gravel increases to 25 to 30%
185	85	5	22	100		CL/ML	**ESTUARINE DEPOSITS [Qe]** Silty Clay and Clayey Silt, variable fine sand, trace coarse sand and fine gravel (Jsm and Tm); brown (7.5YR 4/4) with occasional grayish brown (2.5Y 5/2) mottling; appears very moist and very stiff; lower contact is narrowly gradational At 85.4 to 85.0': Gravel increases to 5 to 10% At 86.3 to 89.0':Trace manganese oxide flecks At 86.5 to 86.3': Some grayish brown laminations
180	90	6	23	64		CL/CH	Clay, rare (<1%) coarse sand (Jsm and Tm); brown (7.5YR 4/4); appears moist and very stiff to hard; variable varve-like bedding; lower contact occurs between runs
						ML	At 91.8 to 92.2': Grades to Clayey to Sandy Silt, trace coarse sand and fine gravel (Jsm and Tm) At 92.2 to 94.0': No recovery
175	95	6	24	38		CL/CH	At 94.0 to 95.1': Sandy Silt, variable clay, trace coarse sand and fine gravel (Jsm and Tm); brown (7.5YR 4/4); appears very moist and stiff; micaceous At 95.9 to 99.0': No recovery
	100					CL	**OLDER ALLUVIAL FAN DEPOSITS [Qfo]** Clay and Silty Clay, variable fine to coarse sand; brown (7.5YR 5/4); appears very moist to wet and medium stiff; poorly sorted; occasional clayey silt and sandy silt

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(CONTINUED ON FOLLOWING FIGURE)

Geologist: LH/MF
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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9e

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet

GROUNDWATER READINGS
Encountered at 38 feet.

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ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		6	25	70		CL	beds; **Qfo Continued** occasional strong brown (7.5YR 4/6) or grayish brown (10YR 5/2) mottling At 101.1 to 102.2': Trace manganese oxide flecks
						CL	Sandy Clay with Gravel, clasts, 20 to 30%, up to 2 inches, mainly subangular to subrounded slate (Jsm), shale (Tm) and sandstone (Tm); mottled, color variable; appears wet and medium stiff; lower contact is aharp At 125.0 to 104.0': No recovery
165	105	7	26	24			At 104.7 to 105.2': Clay; mottled, light brownish gray (10YR 6/2); appears very moist and stiff; trace manganese oxide flecks At 105.2 to 109': No recovery
160	110	7	27	80		CL/ CH	**ESTUARINE DEPOSITS - FINE GRAINED [Qef]** Clay, strongly mottled, grayish brown (2.5Y 5/2) to strong brown (7.5YR 4/6), occasional reddish brown (5YR 4/4) mottles; appears moist and stiff to very stiff; lower contact is gradational At 110.5 to 111.2': Prominant varve-like bedding
						CL	At 111.2 to 112.2': Clay described above alternates with Sandy Silt beds; slightly micaceous; appears very moist and medium stiff to stiff
						CL/ CH	At 113.0 to 114.0': No recovery
155	115	7	28	38			At 115.0 to 115.8': Distinct laminations defined by color At 115.8 to 115.9': Clayey Sand bed, fine to coarse grained At 115.9 to 119.0': No recovery
	120					ML	At 119.0 to 119.5': Sandy Silt to Clayey Silt interbeds At 119.8 to 120.2': Distinct laminations defined by color

(CONTINUED ON FOLLOWING FIGURE)

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9f

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet

GROUNDWATER READINGS
Encountered at 38 feet.

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ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		8	29	34		ML	**OLDER ALLUVIAL FAN DEPOSITS [Qfo]** Clayey Silt with sand and gravel increasing with depth; mottled, grayish brown (2.5Y 5/2) to strong brown (7.5YR 4/6); appears moist and stiff At 120.7 to 124.0': No recovery
145	125	8	30	34		SW	Well Graded Sand, fine to coarse grained, trace fine gravel (Jsm and Tm); light brownish gray (2.5Y 6/2); appears wet and dense At 125.7 to 129.0': No recovery
140	130	8	31	0			At 129.0 to 134.0': Recovered only slough
135	135	8	32	60		SM-SC CL/CH	At 134 to 134.3': Clayey Silty Sand with Gravel, fine to coarse grained; clasts 20 to 30%, up to ½ inch, mainly subangular to subrounded slate (Jsm); brown (7.5YR 4/4); appears wet and dense; lower contact is sharp
						CL/CH	**ESTUARINE DEPOSITS -FINE GRAINED [Qe/Qef]** Clay, very dark grayish brown (10YR 3/2); appears very moist and very stiff; variable (5 to 20%) manganese oxide flecks; lower contact is narrowly gradational Clay, rare (<1%) coarse sand (Jsm and Tm); strongly mottled, very dark gray (10YR 3/1) to strong brown (7.5YR 4/6); appears moist and very stiff to hard; variable varve-like bedding; strong brown mottling occurs as coarse, irregular pockets and diffuse zones; trace manganese oxide flecks; lower contact is gradational At 137.0 to 139': No recovery
	140					CL	At 139 to 141.5': Color becomes dark gray (10YR 4/1) with strong brown (7.5YR 5/6) mottling; trace coarse sand and fine gravel (Jsm and Tm)

(CONTINUED ON FOLLOWING FIGURE)

Geologist: LH/MF
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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9g

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet
GROUNDWATER READINGS		
Encountered at 38 feet.		

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ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		8	33	74		CL	**Qef Continued** At 141.5 to 142.1': Increasing fine to coarse sand and fine gravel, clasts 5 to 10%, up to ½ inch (Jsm and Tm) At 142.3 to 142.7' and 144.0-145.4': Color becomes dark brown (7.5YR 3/2) with dark gray (10YR 4/1) mottling At 142.7 to 144.0': No recovery
125	145	8	34	100		CL/CH	Clay, very dark gray (10YR 3/1); appears very moist and very stiff; calcium carbonate occurs as irregular, steeply dipping stringers and pockets, total calcium carbonate about 10%; lower contact is gradational
						CL/CH	Clay and Silty Clay, rare (<1%) coarse sand (Jsm and Tm); dark brown (7.5YR 3/3); appears very moist and stiff to very stiff; trace calcium carbonate filaments and stringers
120	150	1	1	50		CL/CH	Top 12 inches of sample disturbed Clay, dark brown (7.5YR 3/2), appears wet and soft, lower contact is narrowly gradational
						SM	**OLDER ALLUVIAL FAN DEPOSITS [Qfo]** Silty Sand with Gravel, trace to some clay, clasts 15 to 20%%, up to 1 inch, mainly sandstone and shale (Tm) and slate (Jsm), subangular; dark yellowish brown (10YR 3/6) to (10YR 4/4); appears moist and dense; poorly sorted; lower contact occurs between runs At 151.5 to 154.0': No recovery
115	155	1	2	70		ML	Clayey Silt, variable fine to medium sand, trace gravel, occasional more gravelly beds; dark yellowish brown (10YR 4/4); appears very moist to wet and firm
						SM	At 155.8 to 156.2': Silty Sand, trace gravel
						ML	At 157.3': Trace calcium carbonate At 157.5 to 159.0': No recovery
	160						

(CONTINUED ON FOLLOWING FIGURE)

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9h

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet

GROUNDWATER READINGS
Encountered at 38 feet.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		1	3	94		ML	**Qe Continued** At 160.8': Sand layer (1½ inch thick) At 160.8 to 164.0': Gravel decreases, deposits generally finer At 162.4': Color change to dark brown (10YR 1/2); silt becomes sandy, very fine sand, trace clay; lower contact occurs between runs At 163.0': Trace calcium carbonate
105	165					ML	At 164.0 to 165.0': Clayey Silt; olive gray (5Y 4/2); appears moist and stiff, trace to some fine gravel, granitic rock, shale (Tm), sandstone (Tm), and slate (Jsm); poorly sorted **ESTUARINE DEPOSITS [Qe]** Sandy Silt, trace clay; dark grayish brown (2.5Y 4/2); well sorted
		2	4	80		ML	Clayey Silt; olive brown (2.5Y 4/3); indistinct laminations of oxidized siltier beds At 168.0 to 169.0': No recovery
100	170					SM-ML	At 169.5 to 171.7': Distinct wavy laminations and thin beds of oxidized, fine Silty Sand At 170.3': Decomposing wood fragment
		2	5	88		CL	At 172.5 to 172.8': Silty Clay bed, olive brown (2.5Y 4/3)
						ML	At 173.1 to 175.0': Becomes Sandy Silt with some Clay and trace fine gravel, lower contact occurs between runs
95	175	2	6	20			175.0 to 179.0': No recovery
	180					ML	**OLDER ALLUVIAL FAN / ESTUARINE DEPOSITS [Qfo/Qe]** Clayey Silt with Gravel, clasts 30 to 40%, up to 2 inches, mainly subangular slate (Jsm) and shale (Tm); lower contact is sharp

(CONTINUED ON FOLLOWING FIGURE)

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9i

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet
GROUNDWATER READINGS		
Encountered at 38 feet.		

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ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.		
		2	7	80		ML	**Qfo/Qe Continued** At 180.7': Silt bed (1/3 inch thick); dark reddish brown (5YR 2.5/2)
						ML	Clayey to Sandy Silt; olive brown (2.5Y 4/4); appears wet and firm to stiff, thin sand and clay interbeds; sandier beds are dark reddish brown (5YR 4/3); occasional beds with trace fine gravel
							At 183.0 to 184.0': No recovery
85	185	3	8	70			At 186.4': Coarse gravelly layer, mainly slate (Jsm) and shale (Tm)
						SP	At 187.1 to 187.5': Grades to fine Sand At 187.4': Sand becomes fine to coarse grained, lower contact occurs between runs At 187.5 to 189.0': No recovery
						ML	Clayey to Sandy Silt, coarsering downward to sand
80	190	3	9	88		CL	At 189.7 to 189.9': Appears very moist to wet and stiff to dense, lower contact is sharp, subhorizontal At 189.9 to 191.2': Clay; olive brown (2.5Y 4/3); appears very moist and stiff
						ML	Clayey Silt, olive brown (2.5Y 4/3), appears very moist and stiff; trace gravel (2%), mainly shale (Tm), sandstone (Tm), and slate (Jsm) At 191.2 to 191.7': Fracture infilled with calcium carbonate
						SP	
						SM	
75	195	3	10	42		SP	At 195.0 to 195.8': Poorly Graded Sand, some Clay and Silt, fine to medium grained, some coarse, trace gravels, fine shale (Tm), sandstone (Tm) and slate (Jsm)
						SM	At 195.8 to 196.1': Silty Sand, very fine grained; olive brown (2.5Y 4/4); appears very moist and dense At 196.1 to 199.0 No recovery
	200						END OF BORING AT 199 FEET
							NOTES:

(CONTINUED ON FOLLOWING FIGURE)

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LOG OF BORING

Project No.: 4953-10-1561 Figure: T2E-B9j

DRILLING COMPANY/DRILLING EQUIPMENT		BORING NO.
Jet Drilling / CME 75		**T2E-B9 (Continued)**
DRILLING METHOD	**BOREHOLE LOCATION**	
Hollow-Stem Auger	See Plate 3	
DATES DRILLED	**HOLE DIAMETER**	**GROUND EL.**
6/4/2011 - 6/30/2011	8 inches	270 feet

GROUNDWATER READINGS
Encountered at 38 feet.

ELEVATION (ft)	DEPTH (ft)	BOX #	RUN #	% RECOVERY	SAMPLE LOC.
65	205				
60	210				
55	215				
	220				

Boring backfilled with cement/bentonite grout from bottom up and patched.

-Munsell colors listed in order of predominance (most predominant color first).
-Where observed, contacts and bedding appear subhorizontal unless otherwise noted.
-Non-recovery intervals are assumed to occur at the bottom of run unless otherwise noted.
-Santa Monica Slate (Jsm) clasts are generally very dark gray, subangular to subrounded slate unless otherwise noted. Modelo Formation (Tm) clasts are generally white to pale yellow to tan, subangular to subrounded shale and sandstone unless otherwise noted.
-The term "clasts" herein describes gravel-size rock fragments (larger than ¼ inch).
-Beds are generally massive unless otherwise noted.

Boring deepended from 149 to 199 on 6/28 to 6/30/11. Locationof deepened boring offset south-east approximately 1 foot from original boring location

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LOG OF BORING
Project No.: 4953-10-1561 Figure: T2E-B9k