

**Subsurface Methane Gas Survey Report LA Sports  
and Entertainment District, Figueroa Central and  
Figueroa South Parcels, Los Angeles, California**

**SUBSURFACE METHANE GAS SURVEY REPORT  
LA SPORTS AND ENTERTAINMENT DISTRICT  
FIGUEROA CENTRAL AND SOUTH PARCELS  
LOS ANGELES, CALIFORNIA**

Prepared for:

Latham & Watkins  
633 West Fifth Street  
Suite 4000  
Los Angeles, CA 90071-2007

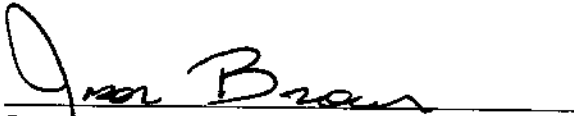
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SCS Engineers  
3711 Long Beach Boulevard, 9<sup>th</sup> Floor  
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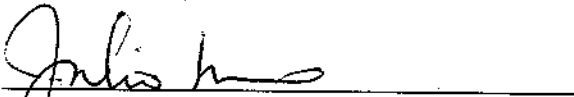
November 3, 2000  
File No. 01200149.00



This report, dated November 3, 2000, and titled *Subsurface Methane Gas Survey Report, LA Sports and Entertainment District, Figueroa Central and South Parcels, Los Angeles, CA*, was prepared and reviewed by the following:



Jason E. Brown  
Staff Scientist



Julio Nuno, REA  
Project Director  
SCS ENGINEERS

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### DISCLAIMER

This report has been prepared for Latham & Watkins with specific application to a subsurface methane gas investigation for the LA Sports and Entertainment District, Figueroa Central and South Parcels, Los Angeles, CA. This report has been prepared in accordance with the care and skill generally exercised by reputable professionals, under similar circumstances, in this or similar localities. No other warranty, either expressed or implied, is made as to the professional advice presented herein.



**SUBSURFACE METHANE GAS SURVEY REPORT  
LA SPORTS AND ENTERTAINMENT DISTRICT  
FIGUEROA CENTRAL AND SOUTH  
LOS ANGELES, CALIFORNIA**

## **INTRODUCTION**

SCS Engineers (SCS) was retained by Latham & Watkins to conduct a methane gas investigation at the LA Sports and Entertainment District, Figueroa Central and South, Los Angeles, CA (the "Property"). Figueroa Central is described as property bounded by South Figueroa, 11<sup>th</sup>, South Flower, and 12<sup>th</sup> Streets. Figueroa South is roughly defined as the northern 2/3rds of the block bounded by South Figueroa Street, 12<sup>th</sup> Street, South Flower Street, and Pico Boulevard. These properties are presently used as parking lots for the Staples Center. Figueroa Central contains Parking Lots 6 and 7 and Figueroa South contains Parking Lot 5. A map showing the location of the Property is provided as Figure 1.

The results of the Phase I Assessment conducted by SCS indicated that these properties lie within an area broadly defined as the Los Angeles Downtown Oil Field (Figure 2). According to Division of Oil and Gas maps, oil exploration in areas closest to the site did not produce oil and holes were not completed as wells (Department of Conservation, Division of Oil and Gas, Map 119, Los Angeles County, July 1, 1986). The only oil producing area in the Los Angeles Downtown Oil Field is at 14<sup>th</sup> and Hill Streets, approximately 1800 feet southeast of the property.

Elevated concentrations of methane gas can be associated with oil fields. The lower explosive limit for methane in air is 5 percent by volume (equivalent to 50,000 parts per million by volume or ppmv). The action level typically used for methane gas in air is 20 percent of the lower explosive limit or 1 percent by volume (10,000 ppmv). The purpose of this investigation was to assess the potential for methane in soil at the subject property. This project was completed in accordance with the proposal prepared by SCS dated October 25, 2000.

## **SOIL VAPOR INVESTIGATION**

On October 26, 2000, 16 soil vapor sampling locations were marked at the subject site by SCS. Seven locations were placed on Parking Lot 5, two locations were placed on Parking Lot 6, and five locations were placed on Parking Lot 7. Locations were selected to provide good coverage of the parcels within accessible areas. A subsurface ramp and structure on Figueroa Central limited access on the central and eastern portions of the site. Maps of the property showing the sampling locations are provided as Figure 3 (Figueroa South) and 4 (Figueroa Central).

Prior to the initiation of field activities, proposed sample locations were cleared of subsurface obstructions by Underground Service Alert, an underground clearance notification system. Individual locations were also cleared by Goldak/Udsec, a geophysical locating company.



HP Labs of Escondido, California, and West Haz Mat Drilling Co., of Anaheim, California, conducted soil vapor sampling activities on October 31, 2000 under the direction of an SCS scientist. Twelve sampling probes were driven to a depth of 10 feet below ground surface (bgs) using a direct push drill rig (Strataprobe). Two of the locations were sampled at two feet bgs due to rock or a foundation that prevented the drill rig from continuing to 10 feet bgs. Two sampling probes were driven to a depth of forty feet bgs using a CME 75 drill rig with a hollow stem auger. A state-certified, mobile laboratory provided by HP Labs was used to analyze soil vapor samples immediately following collection.

### **Materials and Methods**

Soil vapor equipment for shallow samples consisted of hollow steel probes that were driven into subsurface soils to the desired depth. Soil vapor samples were recovered by slightly retracting the probe and exposing sampling ports on the drive point. Vapor samples were extracted with a syringe via a Nylaflo tube attached to the drive tip. Soil vapor equipment for deep samples consisted of a hollow stem auger that was drilled down to the desired depth. A Nylaflo tube was attached to a simulprobe and driven down to forty feet and a syringe was used to extract the soil vapor sample.

Prior to sampling, the tubing was purged to remove ambient air from the sampling system and to ensure that the collected soil vapor sample represented conditions in the soil. Clean Nylaflo tubing was utilized for each sample. Duplicate samples, calibration standards, and sample blanks were used to provide Quality Assurance/Quality Control (QA/QC).

A purge test was completed prior to sampling to verify that an adequate volume of soil gas was purged prior to collecting a sample for reporting purposes. Sampling was conducted after purging volumes of 30, 60, and 90 cc. Results indicated that a purge volume of 60 cc (4 well volumes) provided optimum results. This purge volume (4 well volumes) was used for all subsequent sampling.

### **Analytical Results**

A total of 17 soil vapor samples (one duplicate) and one blank vapor sample were analyzed for methane, carbon dioxide, oxygen, and nitrogen using EPA Method 8015 within the mobile laboratory provided by HP Labs. A copy of the HP Labs laboratory report, including chain-of-custody documentation and QA/QC data, is provided in Appendix A. The summary of analytical data for soil vapor samples is provided in Table 1.

As shown in Table 1, methane was detected in six ten foot samples (samples SV3-10, SV4-10, SV7-10, SV13-2, SV14-2, and SV15-10) at concentrations between 10 to 74 parts per million by volume (ppmv). A duplicate sample was taken at SV14-2 for quality assurance and will not be discussed as a separate sample. No methane was detected in the two-forty foot samples at a detection limit of 10 ppmv. Carbon Dioxide (CO<sub>2</sub>) was measured in all samples at levels



between 0.03 to 3 percent by volume. Oxygen (O<sub>2</sub>) was measured in all samples at levels between 16.2 to 20.5 percent by volume. Nitrogen was measured in all samples at levels between 76 to 87 percent by volume.

### **CONCLUSIONS AND RECOMMENDATIONS**

The highest concentration of methane detected during this investigation was 74 ppmv. This result is far below the lower explosive limit for methane in air of 50,000 ppmv and below the typical action level of 10,000 ppmv. Analytical results indicated non-detectable to low concentrations of methane in both the shallow (10 foot depth) and deeper (40 foot depth) samples. Based on this information, subsurface methane accumulations do not appear to be a concern for the properties. Furthermore, concentrations of carbon dioxide detected as part of this investigation were also low, indicating that no aerobic decomposition of organics is occurring.

Based on the results of this investigation further investigation of subsurface methane accumulations is not recommended or warranted.





**FIGURES**

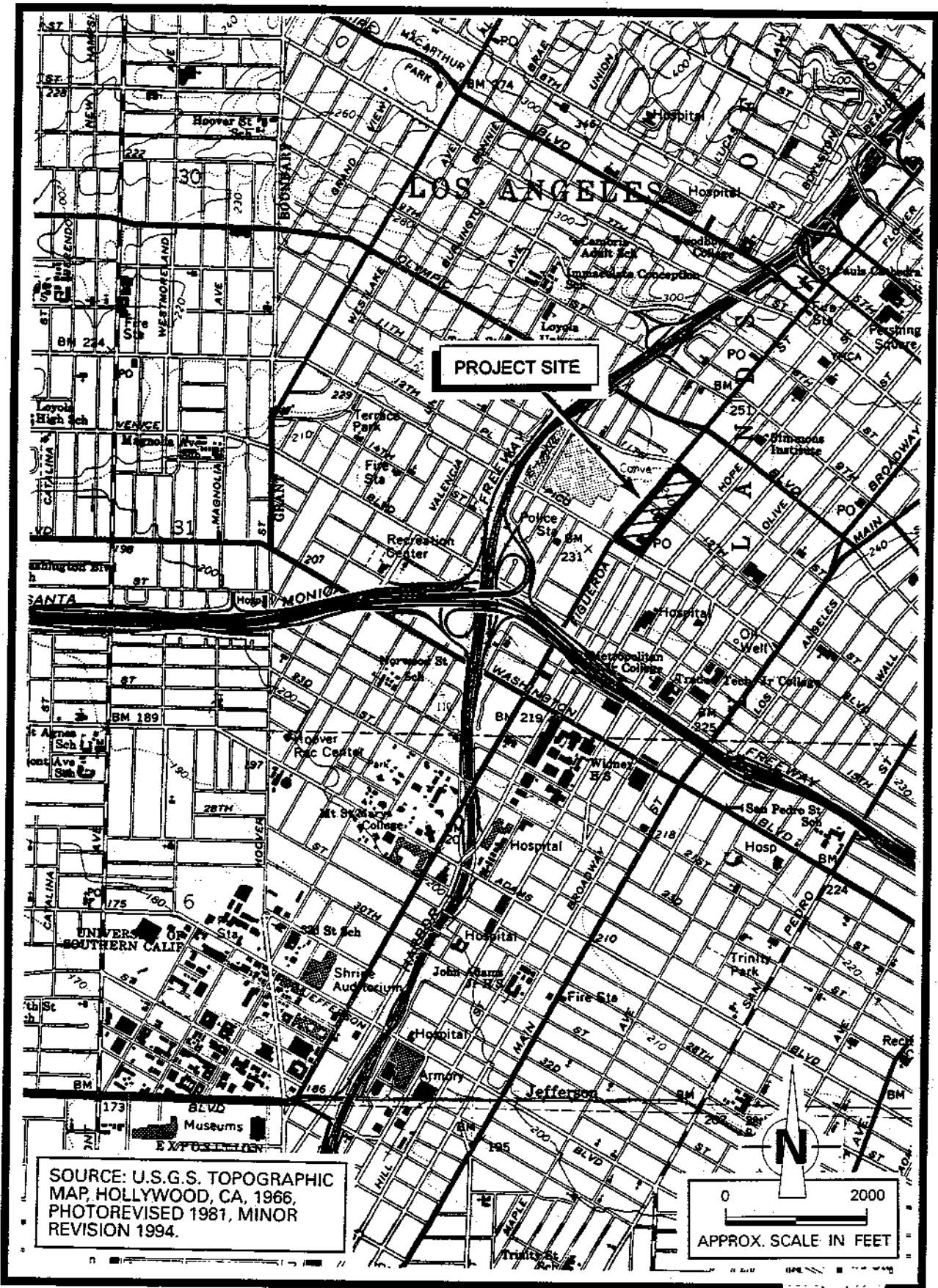
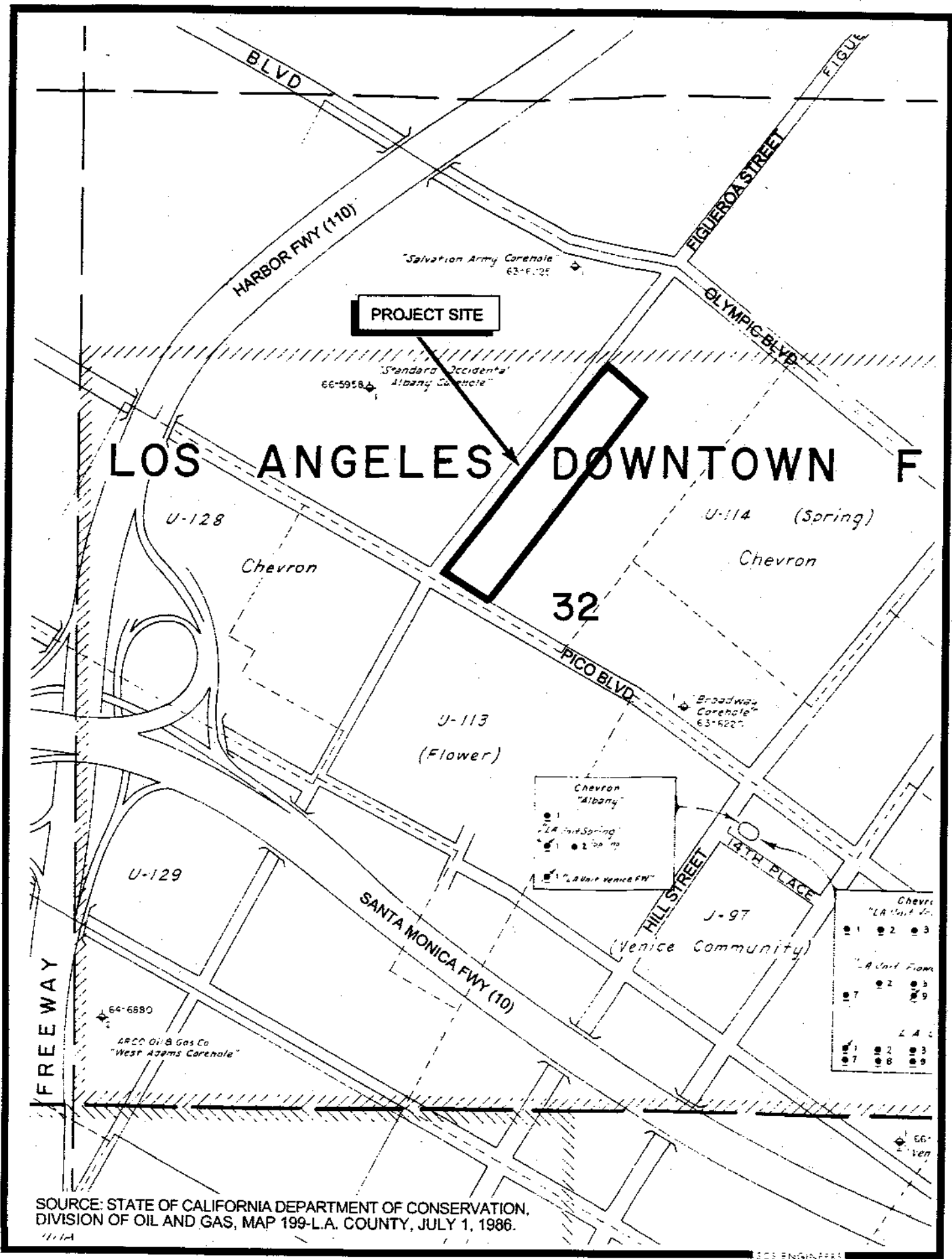


Figure 1. Project Site Location.



SOURCE: STATE OF CALIFORNIA DEPARTMENT OF CONSERVATION, DIVISION OF OIL AND GAS, MAP 199-L.A. COUNTY, JULY 1, 1986.

Figure 2. Los Angeles Downtown Oil Field.

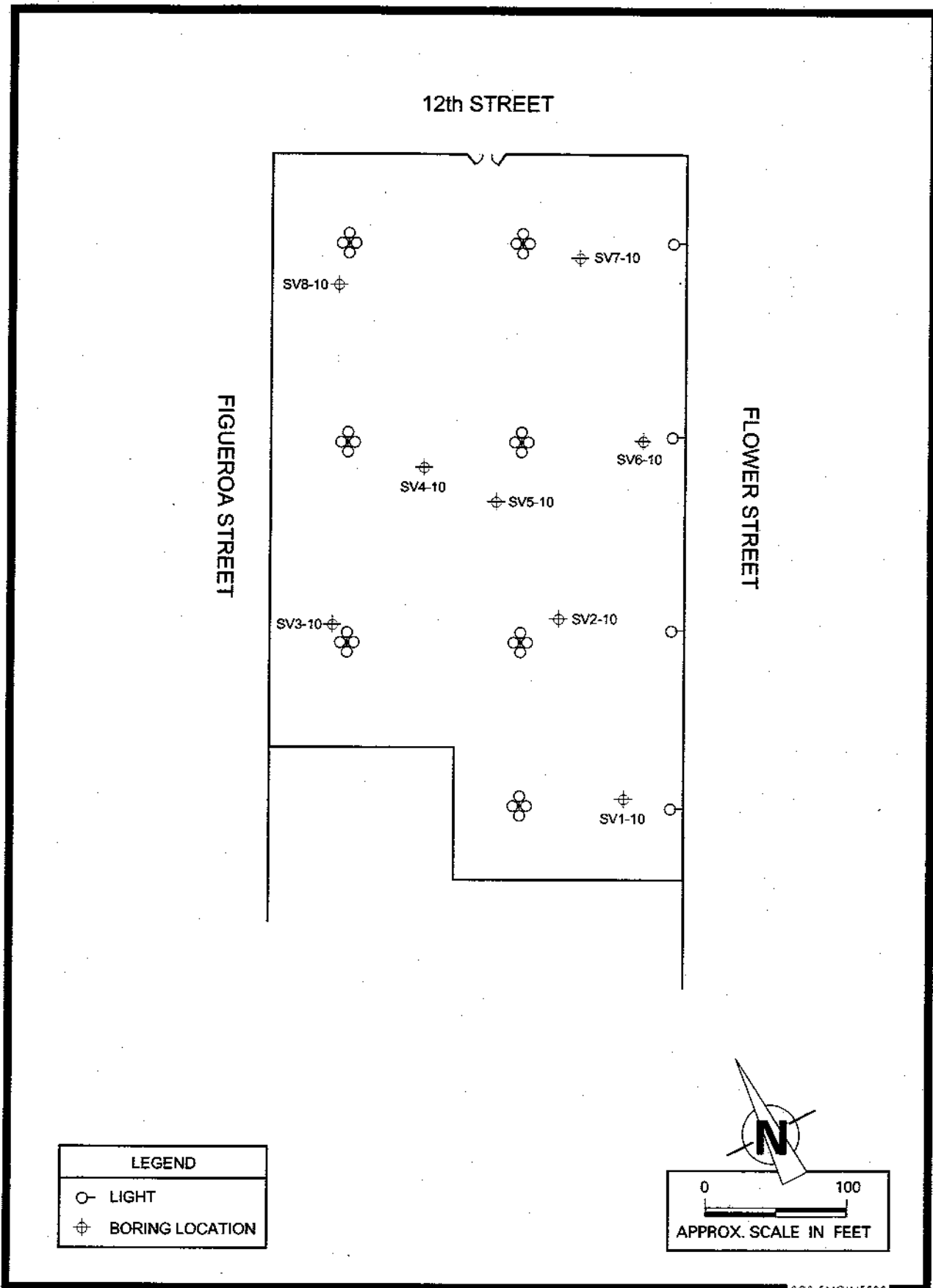


Figure 3. Soil Vapor Sample Locations, Staples Parking Lot 5.

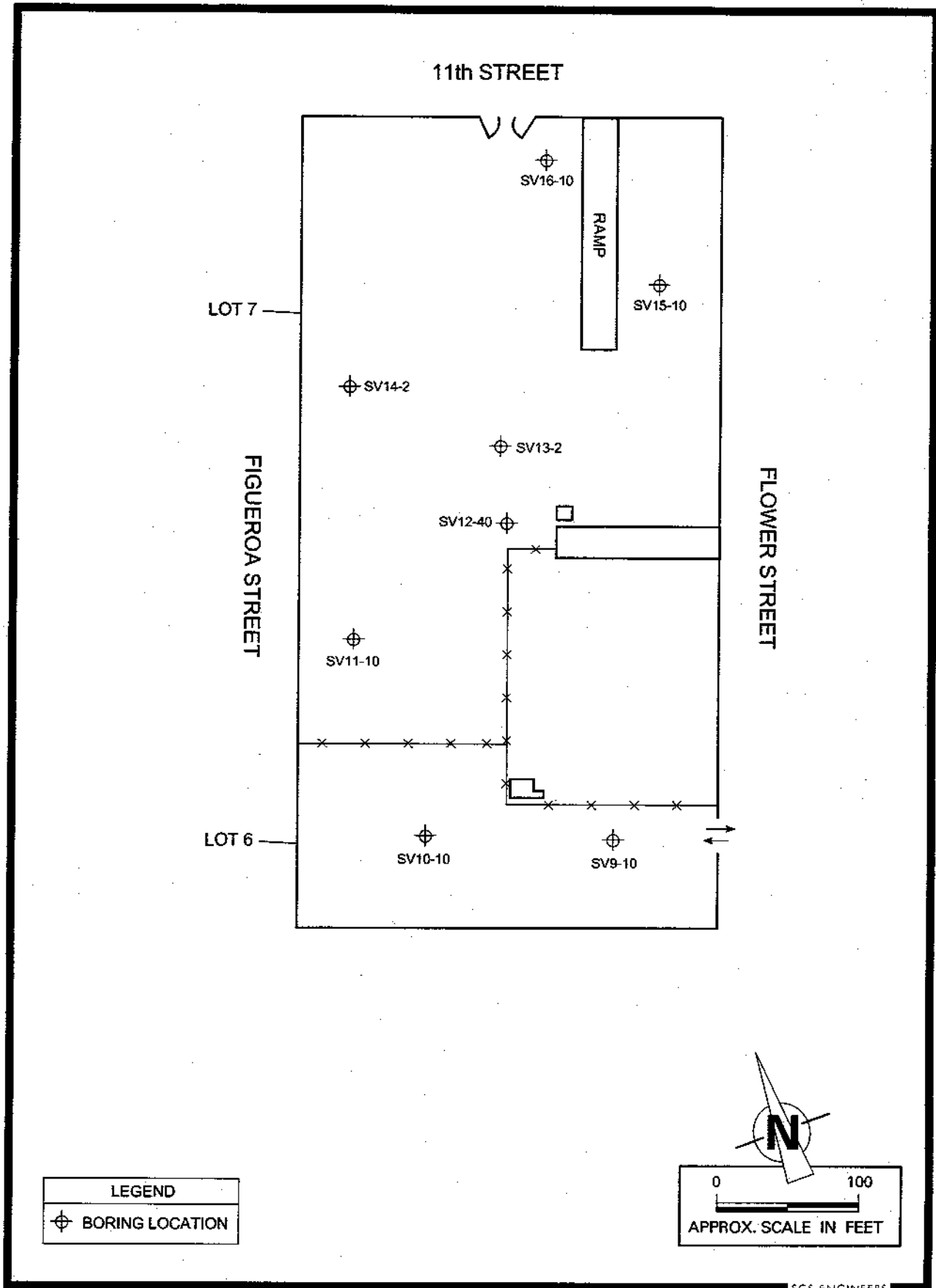


Figure 4. Soil Vapor Lamplle Locations, Staples Parking Lots 6 and 7.

**TABLES**



Table 1. Summary of Soil Vapor Analytical Results

Sample ID	EPA Method 8015 and Fixed Gases			
	Methane (ppmv)*	CO <sub>2</sub> ** (%)	O <sub>2</sub> ** (%)	N <sub>2</sub> ** (%)
SV1-10	<10	0.62	18.4	80.3
SV2-10	<10	0.9	18.4	84
SV3-10	12	0.55	16.7	76
SV4-10	10	0.31	18.7	77.3
SV5-40	<10	0.35	19.9	81.5
SV6-10	<10	1.3	18	82.1
SV7-10	66	3	16.5	85.2
SV8-10	<10	0.4	18.1	85.5
SV9-10	<10	2	16.2	80.2
SV10-10	<10	0.8	18.4	78.7
SV11-10	<10	0.6	19.2	82.6
SV12-40	<10	0.2	20.7	82.8
SV13-2	49	0.03	16.4	87
SV14-2	65	0.03	20	82.5
SV14-2 Dup	74	0.03	20.2	82.8
SV15-10	18	0.41	20.5	83.8
SV16-10	<10	0.63	18.5	78.8

\* ppmv = parts per million by volume

\*\* % = percent by volume

CO<sub>2</sub> = carbon dioxide

O<sub>2</sub> = oxygen

N<sub>2</sub> = nitrogen

**APPENDIX A**  
**LABORATORY REPORT**





# HP Labs

148 S. VINEWOOD STREET

ESCONDIDO, CA 92029

PHONE (760) 735-3208 • FAX (760) 735-2469

November 3, 2000

Mr. Julio Nuno  
SCS Engineers  
3711 Long Beach Boulevard  
Long Beach, CA 90807-3315

**SUBJECT: DATA REPORT – STAPLES CENTER – WEST 11TH STREET –  
WEST LOS ANGELES, CA – SCS ENGINEERS PROJECT #01200149**

HP Labs Project # 2K1031W1

Mr. Nuno:

Please find enclosed a data report for the above referenced location. Soil vapor samples were analyzed on-site in DOHS certified mobile laboratory (CERT #1745).

## Project Summary

Soil vapor from 16 points was analyzed for:

- methane by DOHS Modified EPA Method 8015
- fixed gases

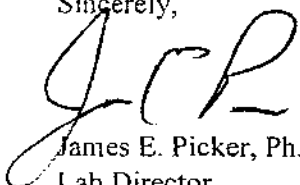

The samples were received on-site in appropriate containers with appropriate labels, seals, and chain-of-custody documentation.

## Project Narrative

The results for all analyses and required QA/QC analyses are summarized in the enclosed tables. All calibrations, blanks, surrogates, and spike recoveries fulfill quality control criteria. No data qualifiers (flags) apply to any of the reported data.

HP Labs appreciates the opportunity to provide analytical services to SCS Engineers on this project. If you have any questions relating to this data or report, please do not hesitate to contact us.

Sincerely,

  
James E. Picker, Ph. D.  
Lab Director  
 *d.b.a.*

*d.b.a.*  
  
LABORATORIES, INC.



SCS ENGINEERS PROJECT #01200149  
STAPLES CENTER  
WEST 11TH STREET  
LOS ANGELES, CA

HP Labs Project #2K1031W1

METHANE (EPA Method 8015) AND FIXED GASES ANALYSES OF SOIL VAPOR

Sample ID	DATE	TIME	DEPTH (feet)	VOLUME (cc)	METHANE (ppmv)	CO <sub>2</sub> (%)	O <sub>2</sub> (%)	N <sub>2</sub> (%)	SUM (%)
METHOD BLANK	10/31/00	7:19	--	60	ND	0.06	19.8	78.2	98.1
SV9-10	10/31/00	7:48	10	60	ND	2.0	16.2	80.2	98.4
SV10-10	10/31/00	8:07	10	60	ND	0.80	18.4	78.7	97.9
SV1-10	10/31/00	8:30	10	60	ND	0.62	18.4	80.3	99.3
SV5-40	10/31/00	8:44	40	900	ND	0.35	19.9	81.5	101.8
SV2-10	10/31/00	8:48	10	60	ND	0.90	18.4	84.0	103.3
SV3-10	10/31/00	9:01	10	60	12	0.55	16.7	76.0	93.3
SV4-10	10/31/00	9:12	10	60	10	0.31	18.7	77.3	96.3
SV6-10	10/31/00	9:25	10	60	ND	1.3	18.0	82.1	101.4
SV7-10	10/31/00	9:40	10	60	66	3.0	16.5	85.2	104.7
SV8-10	10/31/00	9:51	10	60	ND	0.40	18.1	85.8	104.3
SV11-10	10/31/00	10:11	10	60	ND	0.60	19.2	82.6	102.4
SV12-40	10/31/00	10:40	40	900	ND	0.20	20.7	82.8	103.7
SV13-2	10/31/00	10:52	2	60	49	0.03	16.4	87.0	103.4
SV14-2	10/31/00	11:06	2	60	65	0.03	20.0	82.5	102.5
SV14-2 DUP	10/31/00	11:09	2	60	74	0.03	20.2	82.8	103.0
SV16-10	10/31/00	11:22	10	60	ND	0.63	18.5	78.8	97.9
SV15-10	10/31/00	11:36	10	60	18	0.41	20.5	83.3	104.2

DETECTION LIMITS 10 0.1 0.1 0.1 0.1

ND INDICATES NOT DETECTED AT A DETECTION LIMIT OF 10 PPMV FOR METHANE

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1475)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

QA/QC - CALIBRATION DATA

DATE: 10/31/00

HP Labs Project #2K1031W1

WINNEBAGO 1

SUPPLY SOURCE: CONTINUING CALIBRATION (OPENING) MG101900

SUPPLY SOURCE: QUALITY CONTROL (CLOSING) MG101900A

INSTRUMENT: SHIMADZU GC14A RIGHT

COMPOUND	DETECTOR	AVE RF	OPENING STANDARD					CLOSING STANDARD				
			MASS	RT	AREA	RF	%DIFF	MASS	RT	AREA	RF	%DIFF
METHANE RANGE 10-1	FID	0.370	2000	0.5	721	0.361	2.6%	2000	0.5	641	0.321	13.4%
METHANE RANGE 10-2	FID	0.370	200	0.5	69.4	0.347	6.2%	200	0.5	66.1	0.331	10.7%
METHANE RANGE 10-3	FID	0.370	20.0	0.5	7.34	0.367	0.8%	20.0	0.5	6.79	0.340	8.2%
CO2 (%)	TCD	35.9	1.00	1.4	37.0	37.0	3.1%	1.00	1.4	32.5	32.5	9.5%
O2 (%)	TCD	35.9	21.0	2.5	814	38.8	8.0%	21.0	2.5	744	35.4	1.3%
N2 (%)	TCD	35.6	78.0	2.7	3149	40.4	13.4%	78.0	2.9	2936	37.6	5.7%

ANALYSES PERFORMED ON-SITE IN DOHS CERTIFIED MOBILE LABORATORY (CERT #1745)

ANALYSES PERFORMED BY: ALLEN GLOVER

DATA REVIEWED BY: JAMES E. PICKER

Nov. 03 2000 11:34AM P2

FAX NO. : 3103223759

FROM : ALLEN GLOVER



Transglobal Environmental Geochemistry  
 432 N. Cedros Avenue  
 Solana Beach, CA 92075  
 (858) 793-0401 Fax: (858) 793-0404

Chain of Custody Record

TEG Project #: 2K1031W1  
 Outside Lab: \_\_\_\_\_

Client: SCS  
 Address: \_\_\_\_\_  
 Phone: 800-326-9544 Fax: 562-427-0805

Date: 10-31-00 Page 1 of 2  
 Client Project #: 01200149 Project Manager: Julio Nino  
 Location: Staples Center L.A.  
 Collector: Robbie/Allen Date of Collection: 10-31-00

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8016 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 418.1	PEST/PCBs 8082	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers	
Blank	—	0715	10/31	Vapor	Syringe																	
SV9-10	10'	0740																				
SV10-10	10'	0805																				
SV1-10	10'	0830																				
SV5-40	40'	0840																				
SV2-10	10'	0845																				
SV3-10	10'	0900																				
SV4-10	10'	0910																				
SV6-10	10'	0925																				
SV7-10	10'	0935																				
SV8-10	10'	0950																				
SV11-10	10'	1010																				
SV12-40	40'	1035																				
SV13-2	2'	1050																				
SV14-2	2'	1105																				

Relinquished by: (signature) \_\_\_\_\_ Date / Time 10-31-00  
 Received by: (signature) \_\_\_\_\_ Date / Time 10-31-00  
 Relinquished by: (signature) \_\_\_\_\_ Date / Time 11:42 am  
 Received by: (signature) \_\_\_\_\_ Date / Time 10-31-00

Total # of containers: \_\_\_\_\_  
 Chain of Custody seals Y/N/NA \_\_\_\_\_  
 Seals intact? Y/N/NA \_\_\_\_\_  
 Received good condition/cold \_\_\_\_\_

Note:  
 purge volume test  
 2 vol on SV9-10  
 4 vol  
 6 vol

Turn around time: \_\_\_\_\_

Sample disposal instructions: \_\_\_\_\_ TEG Disposal @ \$2.00 each \_\_\_\_\_ Return to client \_\_\_\_\_ Pickup

Nov. 03 2000 11:35AM P3

FAX NO. : 3103237559

FROM : ALLEN\_GLOVER



Transglobal Environmental Geochemistry  
432 N. Cedros Avenue  
Solana Beach, CA 92075  
(858) 793-0401 Fax: (858) 793-0404

CH of Ord

TEG Project #: 24031W1

Outside Lab:

Client: SCS

Address:

Phone: 800-326-9544 Fax: 562-427-0805

Date: 10-31-00 Page 2 of 2

Client Project # 01200149 Project Manager: Julio Nino

Location: Staples Center LA.

Collector: Robbie Allen Date of Collection: 10-31-90

Sample #	Depth	Time	Date	Sample Type	Container Type	VOA 8010	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (gas & diesel)	VOA 8020 (BTEX)	VOA 8020 (MTBE)	TRPH 416.1	PEST/PCB's 8082	VOC 8260	Semi Vol 8270	PNA 8310/8270	Organic Lead	Total Lead	Metals	Field Notes	Total # of containers	
SV16-10	10'	1120	10-31	Vapor	Syringe																	
SV15-10	10'	1135	↓	↓	↓																purged 60 cc ↓ 60 cc	

Relinquished by: (signature) [Signature] Date / Time 8-31-00 11:45am Received by: (signature) [Signature] Date / Time 10-31-00

Relinquished by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_ Received by: (signature) \_\_\_\_\_ Date / Time \_\_\_\_\_

Total # of containers: \_\_\_\_\_  
Chain of Custody seals Y/N/NA \_\_\_\_\_  
Seals intact? Y/N/NA \_\_\_\_\_  
Received good condition/cold \_\_\_\_\_

Notes: \_\_\_\_\_

Turn around time: \_\_\_\_\_

Sample disposal instructions: \_\_\_\_\_ TEG Disposal @ \$2.00 each \_\_\_\_\_ Return to client \_\_\_\_\_ Pickup \_\_\_\_\_