



JACOB & HEFNER ASSOCIATES, INC.
ENVIRONMENTAL REMEDIATION SERVICES

August 7, 2009
UCSB-01A

UCSB Design & Construction Services
University of California
Santa Barbara, California 93106

Attention: Mr. Ray Aronson, P.E.

Report
Shallow Subsurface Soil Assessment, New Ocean Science Education Buildings
Northwest of Lagoon Road and UCEN Road, UCSB Main Campus

1.0 Introduction

Jacob & Hefner Associates, Inc. (JHA) is pleased to present this report of the results of a shallow subsurface soil assessment in the area of the proposed new Ocean Science Education Buildings (Site). The Site is located east of the existing Biological Sciences 2 Building, west of Lagoon Road, and north of UCEN Road on the UCSB campus. The total footprint of the proposed buildings is approximately 7,500-square-feet and the shallow soil will be excavated for the new building foundations to a depth of approximately 5 feet below ground surface.

Based on the presence of petroleum hydrocarbons (typically naturally occurring crude oil) encountered in soil excavated from other locations on campus, JHA was requested to perform a shallow soil screening for the presence of total petroleum hydrocarbons (TPH) in the light oil range (diesel) and in the heavy oil range (TPHd and TPHo), and for aromatic and halogenated volatile organic compounds (VOCs) in the area of the planned new construction.

There is no documentation or physical evidence to suggest that the Site has ever had underground storage tanks (USTs), or been used for the storage of hazardous materials or hazardous wastes. During the assessment no evidence of USTs, hazardous materials, or hazardous waste was observed at the Site.

2.0 Objective

The objective of the screening level assessment was to confirm or deny the presence of significant concentrations of TPH and/or VOCs in the area to be excavated. It was not intended

to completely delineate the lateral and vertical extend of any petroleum hydrocarbons that maybe present in the shallow subsurface.

3.0 Site Description

The site is currently developed with an asphalt driveway and paved parking lot, a bicycle path, a one-story wood framed seawater annex, a block wall enclosing a storage shed, and landscaped areas. The Site is generally flat at an elevation of approximately 44 feet above mean sea level. According to a January 2006 Geotechnical Report prepared by Fugro West, Inc., the Site is underlain by a variable thickness artificial fill overlying Pleistocene age granular terrace deposits to depths of 12 to 13 feet. The generally flat lying terrace deposits overlie folded and faulted Miocene age marine sediments (Sisquoc/Monterey formation) to considerable depth.

4.0 Field Methods

Prior to the fieldwork, JHA and UCSB personnel checked utility drawings and marked the boring locations. In order to gather data from across the Site, two borings were located in the southern portion, two in the central portion, and two in the northern portion of the proposed excavation area (Plate 2). As required by law, JHA notified Underground Service Alert three days prior to the fieldwork to mark public utilities in the work area (Ticket Number A-91980583).

On July 21, 2009, JHA advanced six soil borings using a 6610 limited-access Geoprobe rig operated by S & G Drilling Company of Lompoc, California, under contract to JHA. The continuous cores were recovered in 5-foot-long, 2-inch-diameter acetate liners placed inside the core barrel. The asphalt surface and gravel base material was cored and the top one-foot of soil was removed with hand auger equipment. At each location, a continuous soil core was collected from one-foot below the ground surface (bgs) to a depth of approximately 6 feet bgs. The cores were logged and observed for visible petroleum staining by a California Professional Geologist. Two soil samples from each core were collected at selected depths between 2 and 6 feet (a total of 12 samples, or approximately one sample for each 115 cubic yards of in-place soil).

For vertical control, representative soil samples were collected at various depths from the cores: two from 2 feet bgs, two from 3 feet bgs, four from 4 feet bgs, three from 5 feet bgs, and one from 6 feet bgs. For lateral control, samples from the southern two borings were collected at 2, 3, 4, and 5 feet bgs, samples from the central two boring were collected at 2, 4 (two samples), and 5 feet bgs, and samples from the northern two borings were collected at 3, 4, 5, and 6 feet bgs.

5.0 Laboratory Methods

The 12 samples will be submitted to American Scientific Laboratories (a State certified laboratory in Los Angeles, California) following chain-of-custody protocol for analysis of TPHd and TPHo using modified EPA Test Method 8015. Three of the 12 samples were selected for

further analyses for TPH as gasoline (TPHg) and aromatic and halogenated volatile organic compounds using EPA Test Method 8260B, full scan.

6.0 Field and Laboratory Results

Soil encountered in the borings from 1-foot to 6 feet bgs was generally loose to firm, brown to light-brown or light-gray, clayey silt and clayey silty fine-sand with occasional thin beds of tan fine sand. Soil moisture generally increased with depth; however, groundwater was not encountered in the borings. Except for the gravely base material under the asphalt, if artificial fill was present, it was not distinguishable from the terrace deposits. The Sisquoc/Monterey bedrock was not encountered at the depth explored. No visible soil staining or tar was observed in any of the cores.

The laboratory results are summarized on Table 1. The laboratory reported that no TPHd was detected in any of the 12 samples. TPHo (heavy oil >C²⁸) was detected in only two of the 12 samples. In Sample B-2-5' collected at 5 feet, TPHo was 92 milligrams per kilogram (mg/kg). TPHo was not detected in the sample collected at 3 feet in Boring B-2. In Sample B-4-2' collected at 2 feet, TPHo was 112 mg/kg. TPHo was not detected in the sample collected at 4 feet in Boring B-4. No VOCs or TPHg were detected in the three samples analyzed, including Sample B-4-2 (with 112 mg/kg TPHo). The laboratory report and chain-of-custody documentation are provided in Attachment A.

7.0 Discussion

Based on the limited sporadic distribution of low concentrations of TPHo, JHA concludes that the TPHo detected in the Site soil is most likely the result of crude oil stained sediments incorporated into the terrace during deposition, and is not the result of a release or spill of a petroleum product. The occurrence of TPHo at the Site is similar to TPH as crude oil detected in soils at other locations on the UCSB campus.

The Santa Barbara County Fire Department Fire Prevention Division (FPD) has established a general action level for total petroleum hydrocarbons (TPH) in soil for residential use at approximately 100 milligrams per kilogram (mg/kg). Based on a July 13, 2009 letter from the FPD to UCSB allowing the unrestricted use of soil with somewhat higher concentrations of TPH excavated from another location on the UCSB campus, the soil at the Site would not be restricted either. JHA contacted Mr. Tom Rejzek, P.G. at the FPD to discuss the results of the assessment. Mr. Rejzek stated that based on the small volume of soil to be excavated and assuming the results of the assessment are representative of the Site soil, the FPD would not restrict the use of the soil if it were transported off-Site.

JHA recommends that should visibly stained soil, tary soil, or odorous soil be encountered during Site grading or excavation, that the suspect soil be segregated from the clean soil and evaluated for TPH concentration prior to removing the soil from the Site. JHA would be available to assist UCSB and/or the grading contractor should suspect soil is encountered.

8.0 Limitations

This report has been prepared for UCSB as a limited subsurface soil assessment at the Site of the proposed Ocean Sciences Education Buildings. Parties not designated by UCSB should not rely on the information in this report without the written consent of JHA.

Inferences with respect to potential subsurface contamination are based on a review of readily available information and limited soil sampling. The findings and interpretations in this report have been developed based on the review of existing information pertaining to the subject Site. It should be recognized that subsurface contamination can vary laterally and with depth below a given Site.

If you have any questions, or require additional information, please call.

Yours very truly,
Jacob & Hefner Associates, Inc.



Wallace A. Jensky, II, P.G., R.E.A.
Professional Geologist



Attachments: Plate 1 – Site Location Map
Plate 2 – Site Map with Boring Locations

Table 1 – Summary of Laboratory Results

A – Laboratory Results and Chain-of-Custody Documentation

PLATES



Transportation and Parking Services

MAP & DIRECTORY

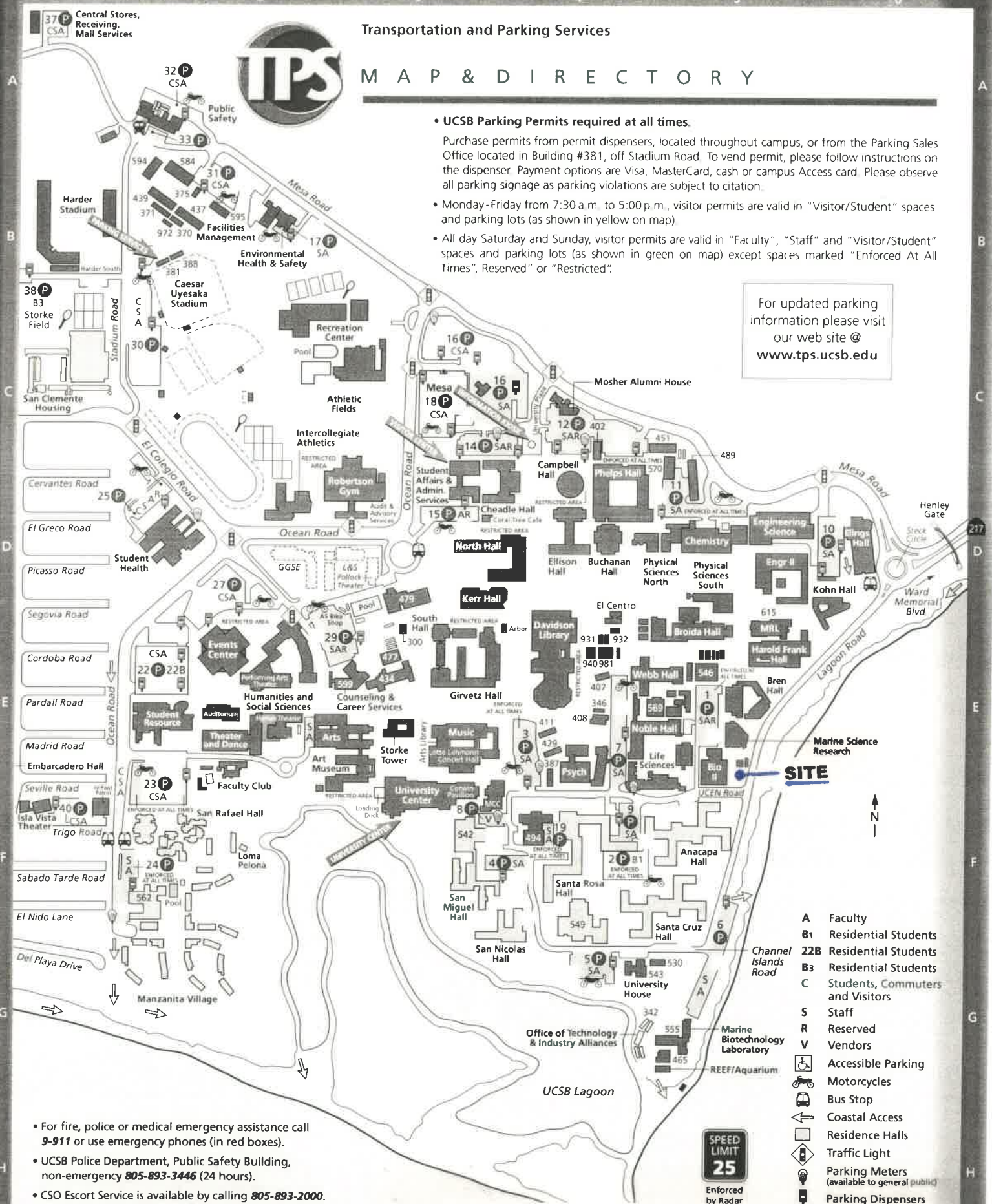
• UCSB Parking Permits required at all times.

Purchase permits from permit dispensers, located throughout campus, or from the Parking Sales Office located in Building #381, off Stadium Road. To vend permit, please follow instructions on the dispenser. Payment options are Visa, MasterCard, cash or campus Access card. Please observe all parking signage as parking violations are subject to citation.

• Monday-Friday from 7:30 a.m. to 5:00 p.m., visitor permits are valid in "Visitor/Student" spaces and parking lots (as shown in yellow on map).

• All day Saturday and Sunday, visitor permits are valid in "Faculty", "Staff" and "Visitor/Student" spaces and parking lots (as shown in green on map) except spaces marked "Enforced At All Times", "Reserved" or "Restricted".

For updated parking information please visit our web site @ www.tps.ucsb.edu



- For fire, police or medical emergency assistance call **9-911** or use emergency phones (in red boxes).
- UCSB Police Department, Public Safety Building, non-emergency **805-893-3446** (24 hours).
- CSO Escort Service is available by calling **805-893-2000**.

MARCH 2009

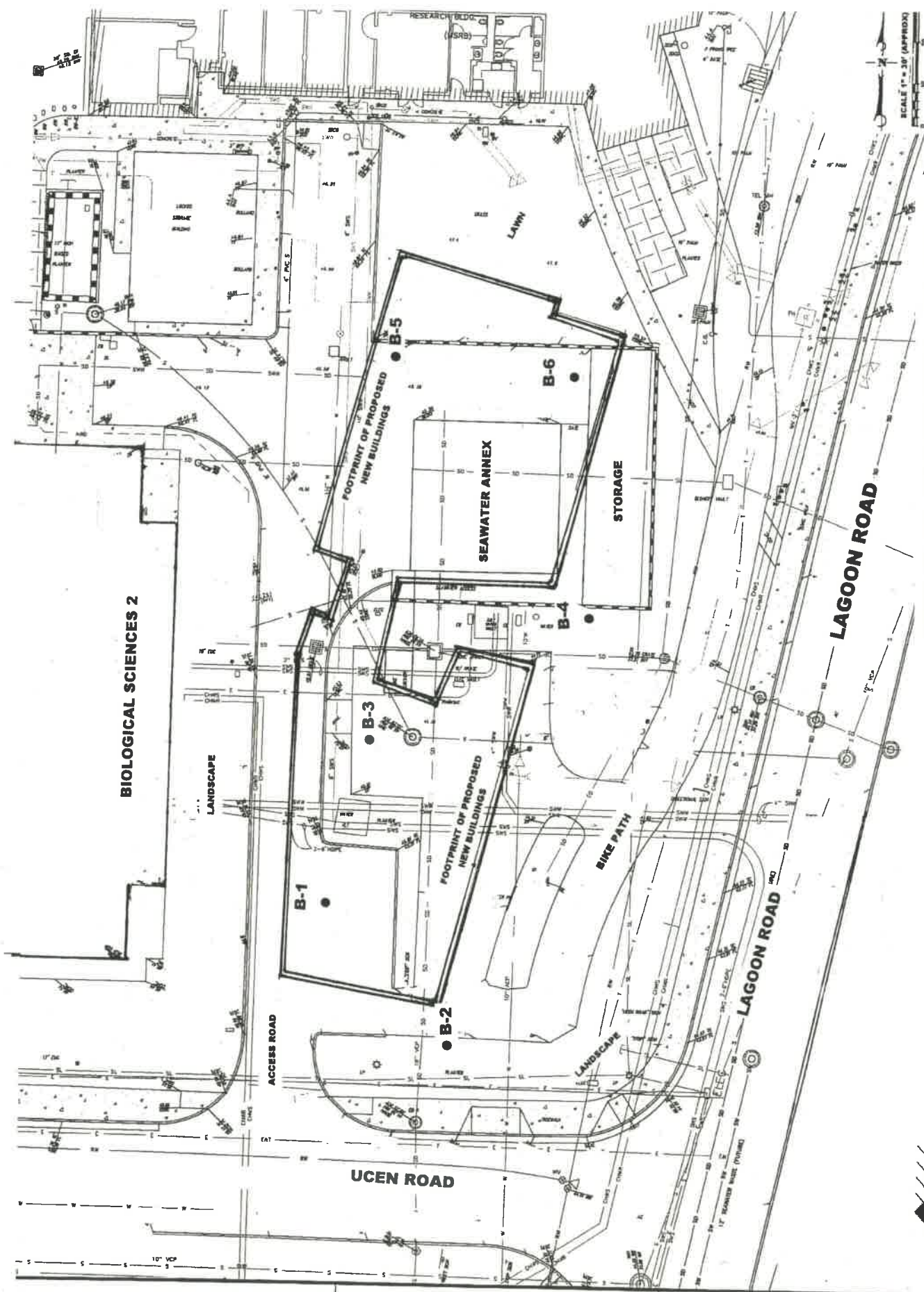
SITE LOCATION MAP

PLATE 1



SITE PLAN AND BORING LOCATIONS
PROPOSED OCEAN SCIENCES
EDUCATION BUILDING

JACOB & HEFNER ASSOCIATES, INC.
ENVIRONMENTAL REMEDIATION SERVICES



TABLE

**Table 1 - Analytical Results
UCSB - Ocean Science**

Sample ID	Depth (feet bgs)	TPHgro C6 - C10 (mg/kg)	TPHdro C10 - C28 (mg/kg)	TPHoro C28+ (mg/kg)	VOCs (µg/kg)
B-1-2'	2	na	ND _(<10)	ND _(<50)	na
B-1-4'	4	ND _(<0.5)	ND _(<10)	ND _(<50)	ND _(all)
B-2-3'	3	na	ND _(<10)	ND _(<50)	na
B-2-5'	5	na	ND _(<10)	92	na
B-3-4'	4	na	ND _(<10)	ND _(<50)	na
B-3-5'	5	na	ND _(<10)	ND _(<50)	na
B-4-2'	2	ND _(<0.5)	ND _(<10)	112	ND _(all)
B-4-4'	4	na	ND _(<10)	ND _(<50)	na
B-5-3'	3	na	ND _(<10)	ND _(<50)	na
B-5-5'	5	na	ND _(<10)	ND _(<50)	na
B-6-4'	4	na	ND _(<10)	ND _(<50)	na
B-6-6'	6	ND _(<0.5)	ND _(<10)	ND _(<50)	ND _(all)

notes:

bgs = below ground surface

TPH = total petroleum hydrocarbons

gro = gasoline range organics analyzed by EPA Test Method 8260B

dro = diesel range organics analyzed by EPA Test Method 8015B

oro = oil range organics analyzed by EPA Test Method 8015B

C = carbon chain length

VOCs = volatile organic compounds analyzed by EPA Test Method 8260B

mg/kg = milligrams per kilogram

µg/kg = micrograms per kilogram

ND_(<10) = not detected above laboratory practical quantitation limit (PQL)

ND_(all) = all constituents listed in analysis reported as not detected above laboratory PQL

na = not analyzed for constituents listed

ATTACHMENT A

Laboratory Report and Chain-of-Custody Documentation



AMERICAN SCIENTIFIC LABORATORIES, LLC
Environmental Testing Services

2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

Ordered By

Jacob & Hefner
4835 Colt Street # C
Ventura, CA 93003

Number of Pages 8
Date Received 07/22/2009
Date Reported 07/29/2009

Telephone (805) 654-6166
Attn Wally A. Jensky

Job Number	Ordered	Client
42564	07/22/2009	JACHEF

Project ID: E-508
Project Name: UCSB - Ocean Science
Site: Santa Barbara, CA 93106

Enclosed are the results of analyses on 12 samples analyzed as specified on attached chain of custody.

Wendy Lu
Organics Supervisor

Rojert G. Araghi
Laboratory Director

American Scientific Laboratories, LLC (ASL) accepts sample materials from clients for analysis with the assumption that all of the information provided to ASL verbally or in writing by our clients (and/or their agents), regarding samples being submitted to ASL, is complete and accurate. ASL accepts all samples subject to the following conditions:

- 1) ASL is not responsible for verifying any client-provided information regarding any samples submitted to the laboratory.
- 2) ASL is not responsible for any consequences resulting from any inaccuracies, omissions, or misrepresentations contained in client-provided information regarding samples submitted to the laboratory.



AMERICAN SCIENTIFIC LABORATORIES, LLC
Environmental Testing Services

2520 N. San Fernando Road, LA, CA 90065 Tel: (323) 223-9700 • Fax: (323) 223-9500

Page 1 of 1

COC# **Nº 51477** GLOBAL ID **NONE** EREPORT: ☐ PDF ☐ EDF ☐ EDD ASL JOB# **42564**

LAB USE ONLY		SAMPLE DESCRIPTION			Container(s)		Report To:		ANALYSIS REQUESTED															
I	T	Lab ID	Sample ID	Date	Time	#	Type	Matrix	Preservation	Address:	Invoice To:	P.O.#:												
1		239163	B-1-2'	7/21/09	10:45	1	ACETATE	SOIL	-	WALLY JENSKY	J&H	E-508												
2		239164	B-1-4'		10:50																			
3		239165	B-5-3'		11:00																			
4		239166	B-5-5'		11:05																			
5		239167	B-3-4'		12:15																			
6		239168	B-3-5'		12:20																			
7		239169	B-6-4'		11:30																			
8		239170	B-6-6'		11:35																			
9		239171	B-4-2'		12:45																			
10		239172	B-4-4'		12:50																			
11		239173	B-2-3'		1:00PM																			
12		239174	B-2-5'		1:05PM																			

Collected By:	WALLY JENSKY	Date	7/21/09	Time	2:00PM	Relinquished By:	WALLY JENSKY	Date	7/22/09	Time	10:45	TAT
Relinquished By:	Wally Jenskys	Date	7/21/09	Time	3:30PM	Received For Laboratory	Wally Jenskys	Date	7/22/09	Time	10:45	Normal
Received By:	WALLY JENSKY	Date	7/21/09	Time	3:30PM	Condition of Sample:	WALLY JENSKY					Rush



AMERICAN SCIENTIFIC LABORATORIES, LLC

Environmental Testing Services

2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

ANALYTICAL RESULTS

Ordered By

Jacob & Hefner
4835 Colt Street # C
Ventura, CA 93003

Site

Santa Barbara, CA 93106

Telephone: (805)654-6166

Attn: Wally A. Jensky

Page: 2

Project ID: E-508

Project Name: UCSB - Ocean Science

ASL Job Number	Submitted	Client
42564	07/22/2009	JACHEF

Method: 8015B, TPH DROs and OROs (Diesel and Oil Range Organics)

QC Batch No: 072809-1P

Our Lab I.D.		239163	239164	239165	239166	239167
Client Sample I.D.		B-1-2'	B-1-4'	B-5-3'	B-5-5'	B-3-4'
Date Sampled		07/21/2009	07/21/2009	07/21/2009	07/21/2009	07/21/2009
Date Prepared		07/28/2009	07/28/2009	07/28/2009	07/28/2009	07/28/2009
Preparation Method						
Date Analyzed		07/28/2009	07/28/2009	07/28/2009	07/28/2009	07/28/2009
Matrix		Soil	Soil	Soil	Soil	Soil
Units		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor		1	1	1	1	1
Analytes	PQL	Results	Results	Results	Results	Results
TPH DROs (C10 to C28)	10.0	ND	ND	ND	ND	ND
TPH OROs (C28+)	50.0	ND	ND	ND	ND	ND

Our Lab I.D.		239163	239164	239165	239166	239167
Surrogates	% Rec.Limit	% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Surrogate Percent Recovery						
Chlorobenzene	70-120	95	96	94	95	93

QUALITY CONTROL REPORT

QC Batch No: 072809-1P

Analytes	MS % REC	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit					
Diesel	102	104	1.9	75-120	<20					



AMERICAN SCIENTIFIC LABORATORIES, LLC

Environmental Testing Services

2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

ANALYTICAL RESULTS

Ordered By

Jacob & Hefner
4835 Colt Street #C
Ventura, CA 93003

Site

Santa Barbara, CA 93106

Telephone: (805)654-6166

Attn: Wally A. Jensky

Page: 3

Project ID: E-508

Project Name: UCSB - Ocean Science

ASL Job Number	Submitted	Client
42564	07/22/2009	JACHEF

Method: 8015B, TPH DROs and OROs (Diesel and Oil Range Organics)

QC Batch No: 072809-1P

Our Lab I.D.		239168	239169	239170	239171	239172
Client Sample I.D.		B-3-5'	B-6-4'	B-6-6'	B-4-2'	B-4-4'
Date Sampled		07/21/2009	07/21/2009	07/21/2009	07/21/2009	07/21/2009
Date Prepared		07/28/2009	07/28/2009	07/28/2009	07/28/2009	07/28/2009
Preparation Method						
Date Analyzed		07/28/2009	07/28/2009	07/28/2009	07/28/2009	07/28/2009
Matrix		Soil	Soil	Soil	Soil	Soil
Units		mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
Dilution Factor		1	1	1	1	1
Analytes	PQL	Results	Results	Results	Results	Results
TPH DROs (C10 to C28)	10.0	ND	ND	ND	ND	ND
TPH OROs (C28+)	50.0	ND	ND	ND	112	ND

Our Lab I.D.		239168	239169	239170	239171	239172
Surrogates	% Rec.Limit	% Rec.	% Rec.	% Rec.	% Rec.	% Rec.
Surrogate Percent Recovery						
Chlorobenzene	70-120	98	100	98	95	99

QUALITY CONTROL REPORT

QC Batch No: 072809-1P

Analytes	MS % REC	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit					
Diesel	102	104	1.9	75-120	<20					



AMERICAN SCIENTIFIC LABORATORIES, LLC

Environmental Testing Services

2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

ANALYTICAL RESULTS

Ordered By

Jacob & Hefner
4835 Colt Street # C
Ventura, CA 93003

Site

Santa Barbara, CA 93106

Telephone: (805)654-6166

Attn: Wally A. Jensky

Page: 4

Project ID: E-508

Project Name: UCSB - Ocean Science

ASL Job Number	Submitted	Client
42564	07/22/2009	JACHEF

Method: 8015B, TPH DROs and OROs (Diesel and Oil Range Organics)

QC Batch No: 072809-1P

Our Lab I.D.		239173	239174			
Client Sample I.D.		B-2-3'	B-2-5'			
Date Sampled		07/21/2009	07/21/2009			
Date Prepared		07/28/2009	07/28/2009			
Preparation Method						
Date Analyzed		07/28/2009	07/28/2009			
Matrix		Soil	Soil			
Units		mg/Kg	mg/Kg			
Dilution Factor		1	1			
Analytes	PQL	Results	Results			
TPH DROs (C10 to C28)	10.0	ND	ND			
TPH OROs (C28+)	50.0	ND	92.0			

Our Lab I.D.		239173	239174			
Surrogates	% Rec.Limit	% Rec.	% Rec.			
Surrogate Percent Recovery						
Chlorobenzene	70-120	97	96			

QUALITY CONTROL REPORT

QC Batch No: 072809-1P

Analytes	MS % REC	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit					
Diesel	102	104	1.9	75-120	<20					



AMERICAN SCIENTIFIC LABORATORIES, LLC

Environmental Testing Services

2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

ANALYTICAL RESULTS

Ordered By

Jacob & Hefner
4835 Colt Street # C
Ventura, CA 93003

Site

Santa Barbara, CA 93106

Telephone: (805)654-6166

Attn: Wally A. Jensky

Page: 5

Project ID: E-508

Project Name: UCSB - Ocean Science

ASL Job Number	Submitted	Client
42564	07/22/2009	JACHEF

Method: 8260B, Volatile Organic Compounds

QC Batch No: 072409-2C

Our Lab I.D.		239164	239170	239171		
Client Sample I.D.		B-1-4'	B-6-6'	B-4-2'		
Date Sampled		07/21/2009	07/21/2009	07/21/2009		
Date Prepared		07/25/2009	07/25/2009	07/25/2009		
Preparation Method						
Date Analyzed		07/25/2009	07/25/2009	07/25/2009		
Matrix		Soil	Soil	Soil		
Units		ug/kg	ug/kg	ug/kg		
Dilution Factor		1	1	1		
Analytes	PQL	Results	Results	Results		
Acetone	50.0	ND	ND	ND		
Benzene	2.00	ND	ND	ND		
Bromobenzene (Phenyl bromide)	10.0	ND	ND	ND		
Bromochloromethane (Chlorobromomethane)	10.0	ND	ND	ND		
Bromodichloromethane (Dichlorobromomethane)	10.0	ND	ND	ND		
Bromoform (Tribromomethane)	50.0	ND	ND	ND		
Bromomethane (Methyl bromide)	30.0	ND	ND	ND		
2-Butanone (MEK, Methyl ethyl ketone)	50.0	ND	ND	ND		
n-Butylbenzene	10.0	ND	ND	ND		
sec-Butylbenzene	10.0	ND	ND	ND		
tert-Butylbenzene	10.0	ND	ND	ND		
Carbon disulfide	10.0	ND	ND	ND		
Carbon tetrachloride (Tetrachloromethane)	10.0	ND	ND	ND		
Chlorobenzene	10.0	ND	ND	ND		
Chloroethane	30.0	ND	ND	ND		
2-Chloroethyl vinyl ether	50.0	ND	ND	ND		
Chloroform (Trichloromethane)	10.0	ND	ND	ND		
Chloromethane (Methyl chloride)	30.0	ND	ND	ND		
4-Chlorotoluene (p-Chlorotoluene)	10.0	ND	ND	ND		
2-Chlorotoluene (o-Chlorotoluene)	10.0	ND	ND	ND		
1,2-Dibromo-3-chloropropane (DBCP)	50.0	ND	ND	ND		
Dibromochloromethane	10.0	ND	ND	ND		
1,2-Dibromoethane (EDB, Ethylene dibromide)	10.0	ND	ND	ND		
Dibromomethane	10.0	ND	ND	ND		
1,2-Dichlorobenzene (o-Dichlorobenzene)	10.0	ND	ND	ND		
1,3-Dichlorobenzene (m-Dichlorobenzene)	10.0	ND	ND	ND		
1,4-Dichlorobenzene (p-Dichlorobenzene)	10.0	ND	ND	ND		
Dichlorodifluoromethane	30.0	ND	ND	ND		
1,1-Dichloroethane	10.0	ND	ND	ND		



AMERICAN SCIENTIFIC LABORATORIES, LLC

Environmental Testing Services

2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

ANALYTICAL RESULTS

Page: 6

Project ID: E-508

Project Name: UCSB - Ocean Science

ASL Job Number	Submitted	Client
42564	07/22/2009	JACHEF

Method: 8260B, Volatile Organic Compounds

QC Batch No: 072409-2C

Our Lab I.D.		239164	239170	239171		
Client Sample I.D.		B-1-4'	B-6-6'	B-4-2'		
Date Sampled		07/21/2009	07/21/2009	07/21/2009		
Date Prepared		07/25/2009	07/25/2009	07/25/2009		
Preparation Method						
Date Analyzed		07/25/2009	07/25/2009	07/25/2009		
Matrix		Soil	Soil	Soil		
Units		ug/kg	ug/kg	ug/kg		
Dilution Factor		1	1	1		
Analytes	PQL	Results	Results	Results		
1,2-Dichloroethane	10.0	ND	ND	ND		
1,1-Dichloroethene (1,1-Dichloroethylene)	10.0	ND	ND	ND		
cis-1,2-Dichloroethene	10.0	ND	ND	ND		
trans-1,2-Dichloroethene	10.0	ND	ND	ND		
1,2-Dichloropropane	10.0	ND	ND	ND		
1,3-Dichloropropane	10.0	ND	ND	ND		
2,2-Dichloropropane	10.0	ND	ND	ND		
1,1-Dichloropropene	10.0	ND	ND	ND		
cis-1,3-Dichloropropene	10.0	ND	ND	ND		
trans-1,3-Dichloropropene	10.0	ND	ND	ND		
Ethylbenzene	2.00	ND	ND	ND		
Hexachlorobutadiene (1,3-Hexachlorobutadiene)	30.0	ND	ND	ND		
2-Hexanone	50.0	ND	ND	ND		
Isopropylbenzene	10.0	ND	ND	ND		
p-Isopropyltoluene (4-Isopropyltoluene)	10.0	ND	ND	ND		
MTBE	5.00	ND	ND	ND		
4-Methyl-2-pentanone (MIBK, Methyl isobutyl ketone)	50.0	ND	ND	ND		
Methylene chloride (Dichloromethane, DCM)	50.0	ND	ND	ND		
Naphthalene	10.0	ND	ND	ND		
n-Propylbenzene	10.0	ND	ND	ND		
Styrene	10.0	ND	ND	ND		
1,1,1,2-Tetrachloroethane	10.0	ND	ND	ND		
1,1,2,2-Tetrachloroethane	10.0	ND	ND	ND		
Tetrachloroethene (Tetrachloroethylene)	10.0	ND	ND	ND		
Toluene (Methyl benzene)	2.00	ND	ND	ND		
1,2,3-Trichlorobenzene	10.0	ND	ND	ND		
1,2,4-Trichlorobenzene	10.0	ND	ND	ND		
1,1,1-Trichloroethane	10.0	ND	ND	ND		
1,1,2-Trichloroethane	10.0	ND	ND	ND		
Trichloroethene (TCE)	10.0	ND	ND	ND		
Trichlorofluoromethane	10.0	ND	ND	ND		
1,2,3-Trichloropropane	10.0	ND	ND	ND		
1,2,4-Trimethylbenzene	10.0	ND	ND	ND		
1,3,5-Trimethylbenzene	10.0	ND	ND	ND		
Vinyl acetate	50.0	ND	ND	ND		



AMERICAN SCIENTIFIC LABORATORIES, LLC

Environmental Testing Services

2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

ANALYTICAL RESULTS

Page: 7

Project ID: E-508

Project Name: UCSB - Ocean Science

ASL Job Number	Submitted	Client
42564	07/22/2009	JACHEF

Method: 8260B, Volatile Organic Compounds

QC Batch No: 072409-2C

Our Lab I.D.		239164	239170	239171		
Client Sample I.D.		B-1-4'	B-6-6'	B-4-2'		
Date Sampled		07/21/2009	07/21/2009	07/21/2009		
Date Prepared		07/25/2009	07/25/2009	07/25/2009		
Preparation Method						
Date Analyzed		07/25/2009	07/25/2009	07/25/2009		
Matrix		Soil	Soil	Soil		
Units		ug/kg	ug/kg	ug/kg		
Dilution Factor		1	1	1		
Analytes	PQL	Results	Results	Results		
Vinyl chloride (Chloroethene)	30.0	ND	ND	ND		
o-Xylene	2.00	ND	ND	ND		
m- & p-Xylenes	4.00	ND	ND	ND		

Our Lab I.D.		239164	239170	239171		
Surrogates	% Rec.Limit	% Rec.	% Rec.	% Rec.		
Surrogate Percent Recovery						
Bromofluorobenzene	70-120	90	89	96		
Dibromofluoromethane	70-120	98	93	96		
Toluene-d8	70-120	95	95	92		

QUALITY CONTROL REPORT

QC Batch No: 072409-2C

Analytes	MS % REC	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit					
Benzene	81	84	3.6	75-120	15					
Chlorobenzene	95	99	4.1	75-120	15					
1,1-Dichloroethene (1,1-Dichloroethylene)	90	91	1.1	75-120	15					
MTBE	87	98	11.9	75-120	15					
Toluene (Methyl benzene)	86	91	5.6	75-120	15					
Trichloroethene (TCE)	83	87	4.7	75-120	15					



AMERICAN SCIENTIFIC LABORATORIES, LLC

Environmental Testing Services

2520 N. San Fernando Rd., Los Angeles, CA 90065 Tel: (323) 223-9700 Fax: (323) 223-9500

ANALYTICAL RESULTS

Ordered By

Jacob & Hefner
4835 Colt Street # C
Ventura, CA 93003

Site

Santa Barbara, CA 93106

Telephone: (805)654-6166

Attn: Wally A. Jensky

Page: 8

Project ID: E-508

Project Name: UCSB - Ocean Science

ASL Job Number	Submitted	Client
42564	07/22/2009	JACHEF

Method: 8260B, TPH GROs(Gasoline Range Organics)

QC Batch No: 072409-2C

Our Lab I.D.		239164	239170	239171		
Client Sample I.D.		B-1-4'	B-6-6'	B-4-2'		
Date Sampled		07/21/2009	07/21/2009	07/21/2009		
Date Prepared		07/25/2009	07/25/2009	07/25/2009		
Preparation Method						
Date Analyzed		07/25/2009	07/25/2009	07/25/2009		
Matrix		Soil	Soil	Soil		
Units		ug/kg	ug/kg	ug/kg		
Dilution Factor		1	1	1		
Analytes	PQL	Results	Results	Results		
TPH GROs (C6 to C10)	500	ND	ND	ND		

Our Lab I.D.		239164	239170	239171		
Surrogates	% Rec.Limit	% Rec.	% Rec.	% Rec.		
Surrogate Percent Recovery						
Bromofluorobenzene	70-120	90	89	96		
Dibromofluoromethane	70-120	98	93	96		
Toluene-d8	70-120	95	95	92		

QUALITY CONTROL REPORT

QC Batch No: 072409-2C

Analytes	MS % REC	MS DUP % REC	RPD %	MS/MSD % Limit	MS RPD % Limit					
Benzene	81	84	3.6	75-120	15					
Chlorobenzene	95	99	4.1	75-120	15					
1,1-Dichloroethene (1,1-Dichloroethylene)	90	91	1.1	75-120	15					
MTBE	87	98	11.9	75-120	15					
Toluene (Methyl benzene)	86	91	5.6	75-120	15					
Trichloroethene (TCE)	83	87	4.7	75-120	15					