GEOTECHNICAL SITE ASSESSMENT REPORT

Exxon Company, U.S.A.
Exxon Service Station No. 7-0210
7840 Amador Valley Boulevard
Dublin, California

Project No. 30-0602

Prepared for:

Exxon Company, U.S.A.
2300 Clayton Road
Concord, California

Prepared by:

Alton Geoscience
1000 Burnett Avenue, Suite 140
Concord, California

October 22, 1991

TABLE OF CONTENTS

1.0 INTRODUCTION

Exxon Company, U.S.A. retained Alton Geoscience in October 14, 1991 to conduct a geotechnical soil assessment at Exxon Service Station No. 7-0210, 7840 Amador Valley Boulevard, Dublin, California.

1.1 Site Location and Description

Exxon Service Station No. 7-0210 is located on the southeast corner of the Amador Valley Boulevard and Regional Street intersection in Dublin, California. The site is presently an operating service station with three underground fuel storage tanks. The site plan shows the present tank locations.

1.2 Purpose and Scope

The purpose of this investigative geotechnical soil assessment was to obtain depth to water and to collect soil samples for geotechnical and chemical analysis from the boring.

Alton Geoscience supervised and/or performed the following tasks during this geotechnical soil assessment:

- Drilled, logged, collected soil samples, and grouted one exploratory soil boring.
- Soil samples were analyzed for specified hydrocarbon constituents (TPH-G and BTEX).
- Calculated unit weights, penetration, and penetrometer readings.
- Analyzed data and prepared this report presenting the results, findings, and conclusions.

The above tasks and related field and sampling activities were performed in accordance with the requirements of the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), and the Alameda County Flood Control and Water Conservation District, Zone 7. Geotechnical analysis were performed in accordance with Exxon's investigation requirements.

2.0 FIELD AND ANALYTICAL METHODS

The procedures and methods used during field activities are discussed below, and a description of the drilling and sampling procedures is presented in Appendix A.

2.1 Soil Boring and Sampling

On October 16, 1991, Alton Geoscience supervised the onsite drilling of one exploratory soil boring. The drilling activity was performed by West Hazmat Drilling Corporation of Hayward, California, using a truck-mounted Soil Master No. 50 drilling rig. The soil boring was drilled using a 4-inch-diameter hollow-stem auger to a depth of 21.5 feet below grade.

The boring was drilled adjacent to the underground fuel storage tanks. Following sampling the soil boring was backfilled to grade with cement slurry grout. The location of the soil boring is shown in the site plan.

The boring log was generated using the Unified Soil Classification System including a description of soil characteristics such as color, moisture, consistency, and field readings using a combustible gas indicator (CGI) meter. The boring log is included as Appendix B.

2.2 Chemical Analysis

Chemical laboratory analyses of soil samples were performed by a California-certified analytical laboratory, using standard test methods of the U.S. Environmental Protection Agency (EPA) and the California Department of Health Services (DHS). Pace Laboratory in Novato, California, analyzed the soil samples.

Selected soil samples from the boring were analyzed for the following constituents:

- Total petroleum hydrocarbons as gasoline (TPH-G) using EPA Methods 5030/8015
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) constituents using EPA Methods 5030/8020

The results of the chemical analysis of soil samples are summarized in Table 1, while the official laboratory reports and chain of custody records are included in Appendix C.

2.3 Geotechnical Analysis

Soil samples collected from the boring were used by Alton Geoscience to calculate field unit weights and penetrometer readings. Specific geotechnical data and results are included in the Geotechnical Site Investigation Report Sheet presented in Appendix B.

3.0 FINDINGS AND CONCLUSIONS

Three soil samples (5.5-6, 10-10.5, and 15.5-16) were analyzed for hydrocarbon constituents. The results of the field activities and laboratory analyses of soil samples collected during this investigation are discussed below.

- Ground water was encountered at a depth of approximately 15 feet below grade. The soil boring was drilled at the site to a maximum depth of approximately 21.5 feet.

- Soil types encountered during drilling and sampling generally consisted of silty sand to sandy silt from 0 to 7 feet below grade; silty clay from 7 to 17 feet below grade; and sand with silt and some gravel from 17 feet below grade to the bottom of the boring.

- Detectable concentrations of TPH-G and/or BTEX constituents were detected in the soil sample collected at 15.5-16 feet below grade.

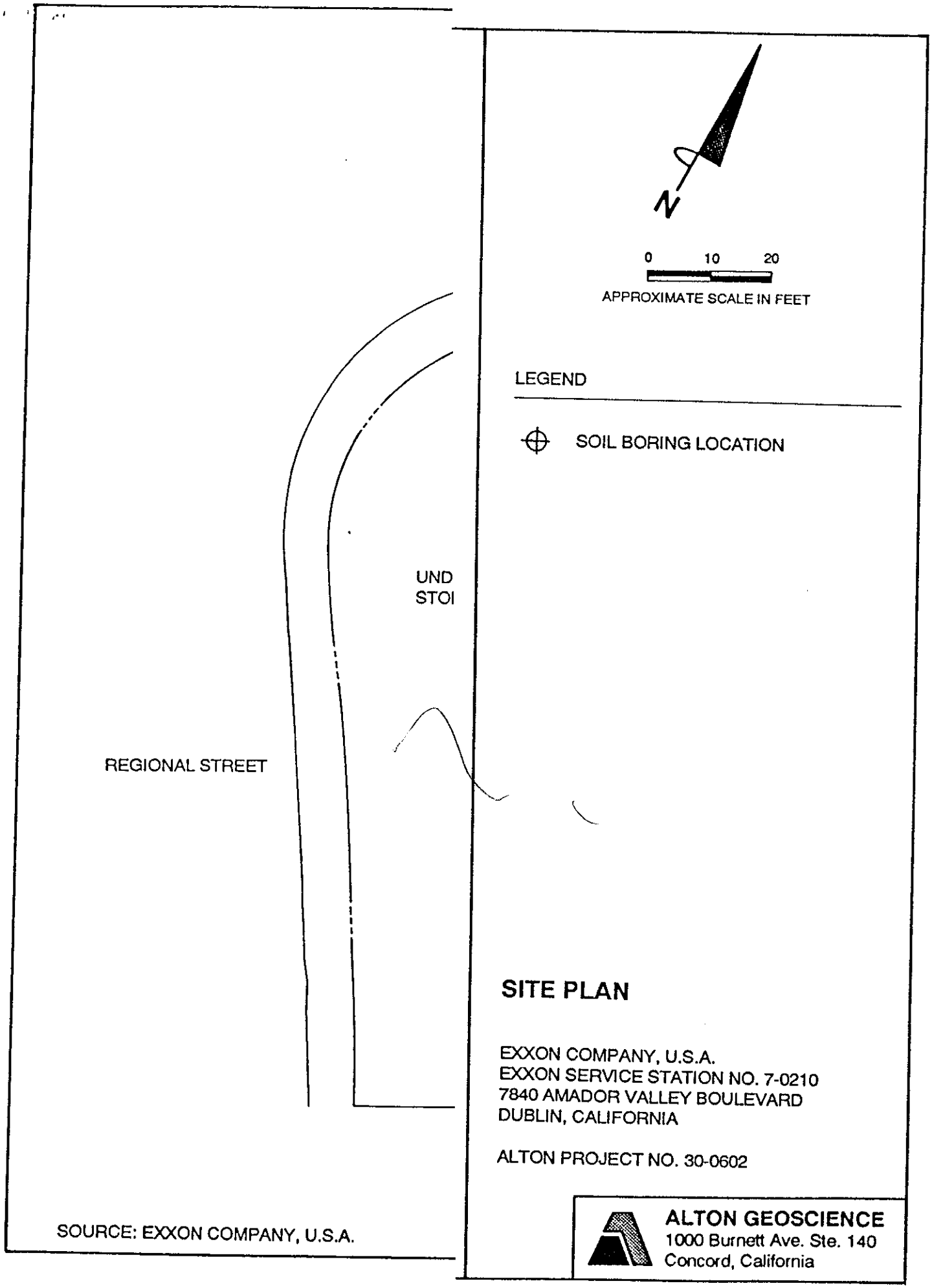
- The specific geotechnical data is presented in Appendix B.

ALTON GEOSCIENCE

Mamdouh A. Awwad
Project Civil Engineer

Peter C. Lange, R.G. 5089
Associate, Concord Operations

FIGURE



SITE PLAN

EXXON COMPANY, U.S.A.
EXXON SERVICE STATION NO. 7-0210
7840 AMADOR VALLEY BOULEVARD
DUBLIN, CALIFORNIA

ALTON PROJECT NO. 30-0602

ALTON GEOSCIENCE
1000 Burnett Ave. Ste. 140
Concord, California

TABLE

TABLE 1

ANALYTICAL RESULTS FOR SOIL SAMPLES

Exxon Service Station No. 7-0210
7840 Amador Valley Boulevard
Dublin, California

Boring No.	Depth	TPH-G	Benzene	Toluene	Ethyl-benzene	Xylenes
		Concentrations in Parts Per Million				
SB-1	5.5-6	ND<0.2	ND<0.001	ND<0.001	ND<0.001	ND<0.001
SB-1	10-10.5	ND<0.2	ND<0.001	ND<0.001	ND<0.001	ND<0.001
SB-1	15.5-16	69	0.045	0.150	0.670	2.000

TPH-G = Total petroleum hydrocarbons as gasoline
ND = Not detected above the reported detection limits

APPENDIX A

DRILLING AND SOIL SAMPLING PROCEDURES

APPENDIX A

DRILLING AND SOIL SAMPLING PROCEDURES

The soil boring was drilled using 4-inch-diameter, continuous-flight hollow-stem augers. To avoid cross-contamination, the augers were steam cleaned prior to drilling the boring.

Soil samples were obtained for soil description, field hydrocarbon vapor testing, and laboratory analysis. Samples were collected at 5-foot intervals from the boring drilled for this geotechnical assessment.

Soil samples collected at 5-foot intervals were retrieved ahead of the lead auger using an 18-inch-long by 2-inch-diameter split spoon sampler lined with 1.5-inch-diameter stainless steel sample tube inserts. The sampler and sample tubes were washed with alconox solution and rinsed before each sampling event. The sampler was driven by a 30-inch free fall of a 140-pound hammer. Blow counts were recorded for three successive 6-inch intervals.

Upon retrieval from the sampler, the sample sleeve was removed and securely sealed with aluminum sheeting and polyurethane caps. The sample was labeled with sample identification, sample depth, engineer's initials, and date of collection. The soil sample was kept on ice prior to and during transport to a California-certified laboratory.

The remaining soil recovered was described in accordance with the Unified Soil Classification System. For each soil type, field estimates of density/consistency, moisture, color, grading, and soil type were recorded on the boring log.

APPENDIX B

BORING LOG

GEOTECHNICAL SITE INVESTIGATION REPORT SHEET

ALTON GEOSCIENCE
LOG OF EXPLORATORY BORING

PROJECT NO. 30-0602 DATE DRILLED 10-16-91
CLIENT EXXON COMPANY, U.S.A.
LOCATION AMADOR VALLEY RD., DUBLIN
LOGGED BY M. TAYLOR APPROVED BY

BORING NO. SB-1

Page 1 of 1

FIELD SKETCH OF BORING LOCATION:

(SEE SITE DIAGRAM)

DRILLING METHOD HOLLOW STEM AUGER HOLE DIAM. 4"
SAMPLER TYPE SPLIT-SPOON
DRILLER WEST HAZMAT DRILLING

WATER LEVEL	15'		
DATE	10-16-91		
TIME	11:30 AM		

BLOWS PER 1/2 FOOT	CGI (PPM)	SAMPLE	DEPTH	PENETROMETER TONS/SQ. FT	BORING CLOSURE	USCS	PROFILE	DESCRIPTION
			0					ASPHALT
	0		2			CH		SILTY CLAY, with gravel, dk. brown, moist
	0		4			ML		SANDY SILT; with gravel, brown, moist
						SM		SILTY SAND, with gravel, brown, moist
8, 8, 9	0		6	0		SW		GRAVELLY SAND, brown, m. dense, moist
9, 10, 11	0		8	2.25		CL		SILTY CLAY, brown, very stiff, moist
4, 5, 7			10	2.0				SILTY CLAY, with some sand, greenish brown, stiff, moist
			12					
			14			CL		SILTY CLAY, greenish brown, stiff, wet
4, 6, 8	25		16	2.0				
			18			SW		GRAVELLY SAND, brown, m. dense, wet
				NEAT CEMENT				
10, 6, 2			20	0		SM		SILTY SAND, brown, loose, wet
			22					BORING TERMINATED @ 21.5'
			24					
			26					
			28					
			30					
			32					
			34					
			36					

GEOTECHNICAL
SITE INVESTIGATION REPORT SHEET

RAS No: 7-0210 Testing Firm: ALTON

Crossroads: REGIONAL ST. Sampling Date: 10-16-91

City, State: DUBLIN, CA. Exxon Engineer: G.D.

BORING #1 (Boring in the area of the proposed tankhole)

Ground Water Depth (Ft.) -15.0

	Layer 1	Layer 2	Layer 3	Layer 4	Layer 5
Soil Classification (U.S.C.)	CH	SM-ML	SW	CL	SW
Depth (Ft.)	0-3	3-5	5-8	8-16.5	16.5-20
Undrained Shear Strength (c)/ Cohesion from Lab Tests (psf)	NA	NA	NA	NA	NA
Internal Angle of Friction from Lab Tests (degrees)	NA	NA	NA	NA	NA
In-Situ Moist Unit Wt. (pcf)	131	123.6	137.0	130.4	136.6

Hydrocarbons encountered? Yes X No ____

ADDITIONAL REQUIRED DATA

CBR NA @ NA % max. density

Optimum Compaction Moisture Content NA

Bearing Capacity at Footing Depth (psf) NA

Maximum Compacted Dry Unit Weight (pcf) NA

COMMENTS

RR/kdm
39520/6
12/11/90

APPENDIX C

ANALYTICAL METHODS, OFFICIAL LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS

APPENDIX C

ANALYTICAL METHODS, OFFICIAL LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS

This appendix includes copies of the official laboratory reports and chain of custody records for soil samples selected for laboratory analysis.

Chain of custody protocol was followed for all samples. The chain of custody form accompanies the samples from the sampling locality to the laboratory, providing a continuous record of possession prior to actual analysis.

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Alton Geoscience
1000 Burnett Avenue
Concord, CA 94520

October 18, 1991
PACE Project Number: 411017500

Attn: Mr. Mamdouh Awwad

Client Reference: Exxon 7-0210

PACE Sample Number:			70 0103002	
Date Collected:			10/16/91	
Date Received:			10/17/91	
Client Sample ID:			SB-1	
Parameter	Units	MDL	@5.5-6	DATE ANALYZED
ORGANIC ANALYSIS				
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	10/17/91
Purgeable Fuels, as Gasoline (EPA 8015)	ug/kg wet	200	ND	10/17/91
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	10/17/91
Benzene	ug/kg wet	1.0	ND	10/17/91
Toluene	ug/kg wet	1.0	ND	10/17/91
Ethylbenzene	ug/kg wet	1.0	ND	10/17/91
Xylenes, Total	ug/kg wet	1.0	ND	10/17/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

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REPORT OF LABORATORY ANALYSIS

Mr. Mamdouh Awwad
Page 2

October 18, 1991
PACE Project Number: 411017500

Client Reference: Exxon 7-0210

Parameter	Units	MDL	70 0103010 10/16/91 10/17/91 SB-1 @10-10.5	DATE ANALYZED
PACE Sample Number:				
Date Collected:				
Date Received:				
Client Sample ID:				
ORGANIC ANALYSIS				
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	10/17/91
Purgeable Fuels, as Gasoline (EPA 8015)	ug/kg wet	200	ND	10/17/91
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	10/17/91
Benzene	ug/kg wet	1.0	ND	10/17/91
Toluene	ug/kg wet	1.0	ND	10/17/91
Ethylbenzene	ug/kg wet	1.0	ND	10/17/91
Xylenes, Total	ug/kg wet	1.0	ND	10/17/91

MDL Method Detection Limit
ND Not detected at or above the MDL.

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REPORT OF LABORATORY ANALYSIS

Mr. Mamdouh Awwad
Page 3

October 18, 1991
PACE Project Number: 411017500

Client Reference: Exxon 7-0210

Parameter	Units	MDL	70 0103029 10/16/91 10/17/91 SB-1 @15.5-16	DATE ANALYZED
PACE Sample Number:				
Date Collected:				
Date Received:				
Client Sample ID:				
ORGANIC ANALYSIS				
TPH GASOLINE/BTEX				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	10/17/91
Purgeable Fuels, as Gasoline (EPA 8015)	ug/kg wet	2000	69000	10/17/91
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-	10/17/91
Benzene	ug/kg wet	10	45	10/17/91
Toluene	ug/kg wet	10	150	10/17/91
Ethylbenzene	ug/kg wet	10	670	10/17/91
Xylenes, Total	ug/kg wet	10	2000	10/17/91

MDL Method Detection Limit

These data have been reviewed and are approved for release.

Mark A. Valentini

Mark A. Valentini, Ph.D.
Regional Director

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FAX: 415-883-2673

REPORT OF LABORATORY ANALYSIS

Mr. Mamdouh Awwad
Page 4

QUALITY CONTROL DATA

October 18, 1991
PACE Project Number: 411017500

Client Reference: Exxon 7-0210

TPH GASOLINE/BTEX
Batch: 70 06911
Samples: 70 0103002, 70 0103029

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015)	ug/kg wet	200	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-
Benzene	ug/kg wet	1.0	ND
Toluene	ug/kg wet	1.0	ND
Ethylbenzene	ug/kg wet	1.0	ND
Xylenes, Total	ug/kg wet	1.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015)	ug/kg wet	200	345	95%	96%	1%
Benzene	ug/kg wet	1.0	40.0	103%	102%	0%
Toluene	ug/kg wet	1.0	40.0	112%	103%	8%
Ethylbenzene	ug/kg wet	1.0	40.0	101%	98%	3%
Xylenes, Total	ug/kg wet	1.0	80.0	104%	103%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

Mr. Mamdouh Awwad
Page 5

QUALITY CONTROL DATA

October 18, 1991
PACE Project Number: 411017500

Client Reference: Exxon 7-0210

TPH GASOLINE/BTEX
Batch: 70 06940
Samples: 70 0103010

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015)	ug/kg wet	200	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020):			-
Benzene	ug/kg wet	1.0	ND
Toluene	ug/kg wet	1.0	ND
Ethylbenzene	ug/kg wet	1.0	ND
Xylenes, Total	ug/kg wet	1.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015)	ug/kg wet	200	376	93%	94%	1%
Benzene	ug/kg wet	1.0	40.0	106%	105%	0%
Toluene	ug/kg wet	1.0	40.0	105%	105%	0%
Ethylbenzene	ug/kg wet	1.0	40.0	107%	106%	0%
Xylenes, Total	ug/kg wet	1.0	80.0	106%	105%	0%

MDL Method Detection Limit
RPD Relative Percent Difference

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Alton Business Park
30 Hughes St., Suite 206, 92718
(714) 380-9559

EXXON COMPANY, U.S.A.

P.O. Box 4415, Houston, TX 77210-4415

CHAIN OF CUSTODY

Consultant Name: ALTON GEOSCIENCE
Address: 1000 BURNETT AVE SUITE 140, CONCORD CA 94520
Project Contact: Mamdouh Awwad Project #: 30-0602
Phone #: (510) 682-1582 Fax #: (510) 682-8921
Consultant Work Release #: 91147183

Exxon Contact: Greg Demarzo Phone #: (510) 246-8726
Site RAS #: 7-0210
Site Location: 7840 AMADOR Valley Blvd, Dublin, CA
Laboratory Work Release #:

Sampled by (please print): Matthew A. Taylor
Sampler Signature: Matthew A. Taylor Date Sampled: 10-16-91

Sample Description	Collection Date/Time	Matrix	Prsv.	# of Cont.	SOIL: TPH/GAS/BTEX EPA 8015/8020	SOIL: TPH/Diesel EPA 8015	SOIL: Organic Lead DHS Method	WATER: TPH/GAS/BTEX EPA 8015/602	WATER: TPH/Diesel EPA 8015	WATER: Organic Lead DHS Method	TRPH EPA 418.1	Total Oil & Grease SM 5520	Remarks
SB-1@5.5-6	10-16-91				X								10300.2
SB-1@10-10.5	10-16-91				X								01.0
SB-1@15.5-16	10-16-91				X								02.9
K/4													

Cooler No.

Cooler Seal Intact: ☒ Yes ☐ No

Turnaround Time (circle choice): (24 hr.) 48 hr. 72 hr. 96 hr. 5 workday (standard)

Shipment Method

Shipment Date

Relinquished by/Affiliation	Accepted by/Affiliation	Date	Time
Matthew A. Taylor AlTon	Donald Hanshi Pace	10/17/91	1015
Donald Hanshi Pace	Lea Lassere PACE	10/17/91	1107

Additional Comments:

Distribution: White - Original Yellow - Exxon Pink - Lab Goldenrod - Consultant Field Staff

411017.506