Environmental
Science &
Engineering, Inc.
A CILCORP Company

January 6, 1993

ESE Project No. 6-92-5413

Mr. Jim de Vos
Alameda County General
Services Agency
4400 MacArthur Boulevard
Oakland, California

SUBJECT: **Report of Findings, Subsurface Investigation for Former Used Oil Tank, ALCOPARK Facility, 165 13th Street, Oakland, California**

Dear Mr. de Vos:

Environmental Science & Engineering, Inc. (ESE) was contracted by Alameda County General Services Agency (ACGSA) to perform a subsurface investigation adjacent to the location of a former underground used oil storage tank. This investigation was conducted due to the results obtained from soil and ground water samples collected during the used oil tank removal (ESE, April, 1992). This report presents an overview of the site history for the former used oil tank and the findings and conclusions of subsurface investigation.

BACKGROUND

The County of Alameda General Services Agency owned and operated one 550-gallon used oil underground storage tank at the subject facility. ALCOPARK, a county-owned parcel, is located on Jackson Street between 12th and 13th Streets in Oakland, California (see Figure 1 - Location Map and Figure 2 - Site Plan). The tank, which was of single-walled, carbon steel construction, was located in the basement of this facility.

The Alcopark basement is used for vehicle parking and the maintenance of county-owned vehicles. The used oil tank was utilized for the storage of used crankcase motor oil, and was filled via three remote fills. The remote fills are a network of buried pipe which gravity feeds to the used oil tank. The used oil storage tank was routinely evacuated every three months. The tank, which was buried below the floor, was precision tested in 1989 and tested tight at that time. Noticeable spillage of waste oil around the tank fill riser (located within a concrete sump directly over the tank) was observed during a preliminary site visit by ESE.

In February 1992, ESE coordinated and performed oversight of the evacuation and removal of the used oil tank from the site. It was observed that the lowermost portion of the tank was in contact with ground water. The tank was inspected by ESE upon its removal and while no holes were observed, corrosion was observed along the bottom portion of the tank. Piping from the remote fills was capped, grouted and abandoned in place. ESE collected two soil samples from the side walls of the excavation at a depth immediately above the static water in the tank pit. Additionally, a ground water sample was collected from the tank pit subsequent to the removal of 60-gallons of ground water from the pit.

Total Petroleum Hydrocarbons as Gasoline (TPH-G), Total Extractable Petroleum Hydrocarbons (TEPH), Oil and Grease (O&G), Semi-Volatile Organic Compounds (semi-VOCs) and Halogenated Volatile Organic compounds (HVOs) were not detected in the soil samples collected from the used oil pit. However, Total Xylenes were detected in one sample at a concentration of 6.8 milligrams per Kilogram (mg/Kg) or parts per million (ppm).

TPH-G, TEPH (characterized as Kerosene) and Benzene were detected in the ground water sample collected from the tank pit at concentrations of 2,800 micrograms per Liter (ug/L) or parts per billion (ppb), 19,000 ug/L and 52 ug/L, respectively. The semi-VOCs, Phenol, 2-Methylphenol, 4-Methylphenol and Napthalene were detected in the ground water sample at concentrations ranging from 30 ug/L to 120 ug/L. The HVOs Trichlorofluoromethane, 1,1-Dichloroethene (DCE), 1,1,1-Trichloroethane (TCA) and Tetrachloroethene (PCE) were detected in the ground water sample at concentrations ranging from 5.5 ug/L to 320 ug/L. O&G was not detected in the ground water sample. The metals Cadmium, Chromium, Lead, Nickel and Zinc detected in soil and ground water sample collected from the tank pit were below Total Threshold Limit Concentration (TTLC) and Soluble Threshold Limit Concentration (STLC) values respectively.

SUBSURFACE INVESTIGATION

Soil Boring and Sampling

On October 29, 1992 ESE supervised the drilling and installation of ground water monitoring well MW-6. The well number MW-6 was chosen due to the presence of three ground water monitoring wells and two vadose zone monitoring wells previously installed at the ALCOPARK facility, adjacent to two fuel USTs at the corner of 13th and Jackson Street (Figure 2). Well MW-6 was drilled and installed at a location adjacent to the northeast corner of the excavation. This is in a presumed downgradient location with respect to the former used oil UST. The ground water flow direction for this site was

ground or garage surface, which is below grade.

determined from measured ground water elevations in three wells located at the ALCOPARK facility at the intersection of 13th and Jackson Streets (Figure 2).

The drilling was performed by Soils Exploration Services, Inc. (SES) of Vacaville, California. SES used a low-clearance rig due to limited overhead space. Soil samples were collected from the boring between four and eight feet bgs. Ground water was encountered at a depth of seven feet bgs. Soil samples were collected by driving a split-spoon sampler, lined with brass sleeves, 24-inches through the center of and ahead of the hollow stem augers. The samplers were driven by dropping a 140-pound hammer 30-inches onto rods attached to the top of the sampler. The number of blows required to drive the sampler each six-inch interval were noted and appear on the geologic boring log (Appendix A). The ends of two brass sleeves from the lower sample interval were covered with Teflon-lined plastic end caps, which were sealed to the brass sleeve with duct tape, labeled and placed on ice. The soil samples were transported under chain of custody to Sequoia Analytical (Sequoia) of Concord, California. A portion of the soil sample from the upper sample interval was sealed in a new ziploc® bag for approximately 15 minutes to allow for the volatilization of any volatile organic compounds (VOCs) present in the soil. After approximately 15-minutes the sample was screened for VOCs using a photoionization detector (PID). The PID reading appear on the geologic boring log (Appendix A).

Well Installation, Development and Surveying

Monitoring well MW-6 was installed on October 29, 1992. A graphic presentation of MW-6 is included on the geologic boring log (Appendix A). The well was constructed of new 2-inch diameter schedule 40 polyvinylchloride (pvc) pipe. The lower portion of the PVC pipe is perforated with slot openings, 0.020-inch in width. The perforated section of pipe extends from 5-feet below ground surface (bgs) to 20-feet bgs where it is sealed with a PVC cap. The annular space surrounding the perforated pipe and one-foot above the top of the perforated interval was backfilled with No. 3 Monterey Sand. The well was developed by utilizing surging and bailing techniques. Approximately 20 gallons of ground water was purged from well MW-6 during the development process. All water generated during well development and associated cleaning procedures was stored on site in 55-gallon drums pending proper disposal.

The top of the PVC casing for each new well was marked and surveyed by ESE relative to the elevations of wells MW-1, MW-4 and MW-5, located at 13th and Jackson Streets. This mark on the top of casing for each well will be used as the reference datum for the measurement of the depth to ground water for each well.

Ground Water Monitoring
On November 5, 1992, ESE measured the depth to water in well MW-6 and in wells MW-1, MW-4 and MW-5 (located at 13th and Jackson Streets) using an electric water level probe. Depth to water measurements are presented in Table 1 - Ground Water Elevation Data. Subsequent to measuring the depth to water, well MW-6 was purged and ground water samples were collected.

Ground water samples were collected subsequent to purging ten well-casing volumes of ground water from well MW-6 using a submersible pump. The ground water sampling data form is included as Appendix B. During the well purging process conductivity, temperature and pH of the purge water was monitored by ESE. Once the temperature, conductivity and pH of the ground water had stabilized, the ground water sample was collected from well MW-6. The ground water sample was collected by lowering a new disposable polyethylene bailer into the well using new disposable nylon cord. The filled bailer was then retrieved, emptied, then filled again. The ground water from this bailer was then decanted into four 40-milliliter glass vials and three one-liter bottles. The sample containers contained appropriate preservatives as defined by the Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Storage Tank Sites (San Francisco Bay Regional Water Quality Control Board, August 1990). The samples were then labeled and placed on ice in a cooler for transport under chain of custody to Sequoia.

RESULTS

Soil Samples
Laboratory analytical reports with chain of custody documentation for the soil sample are presented as Attachment C. TPH-G, BTEX, O&G and HVOs were not detected in the soil sample collected from MW-6 at a depth of 6.5 feet bgs, collected immediately above the occurrence of the ground water table. TEPH at a concentration of 1 mg/Kg was detected in the soil sample from a depth of 6.5 feet bgs in MW-6.

Ground Water Flow
Ground water flow beneath the site was calculated from depth to water measurements collected from wells MW-1, MW-4, MW-5 and MW-6. Ground water elevation data, and a graphical presentation of the ground water gradient is presented on Figure 3 - Ground Water Elevations. Ground water flow beneath the site on November 5, 1992 was towards the southeast at a gradient of 0.0037 foot per foot.

Ground Water Samples
Laboratory analytical reports with chain of custody documentation for the ground water sample are presented as Attachment D. TPH-G, TEPH, O&G and Ethylbenzene were not detected in the ground water sample collected from well MW-6. Benzene, Toluene, Total Xylenes and the HVO compounds Chloroform, PCE, and TCA were detected in the ground water sample collected from well MW-6 at concentrations of 1.0 ug/L, 0.79 ug/L, 2.7 ug/L, 0.54 ug/L, 1.7 ug/L, and 8.3 ug/L, respectively.

CONCLUSIONS AND RECOMMENDATIONS

- The metals Cadmium, Chromium, Lead, Nickel and Zinc detected in the soil and the ground water samples collected from the tank pit, during tank removal activities, were below TTLC and STLC values respectively.

- TPH-G, BTEX, HVOs and O&G were not detected in the soil sample analyzed from MW-6 (collected at a depth of 6.5 feet bgs). TEPH was detected at a concentration of 1 mg/Kg in the soil sample analyzed from MW-6.

- None of the compounds detected in the ground water sample collected from well MW-6 exceeded primary Maximum Contaminant Levels (MCLs) for drinking water as defined by the United States Environmental Protection Agency (EPA) or by California State Department of Health Services (DHS). However, benzene was detected at the DHS primary MCL of 1.0 ug/L.

- ESE recommends continuing the monitoring of monitoring well MW-6 for three additional quarters as typically required by regulatory agencies for ground water investigations. At the end of that time, ESE will evaluate the data and make recommendations for further activities to be performed in pursuit of case closure.

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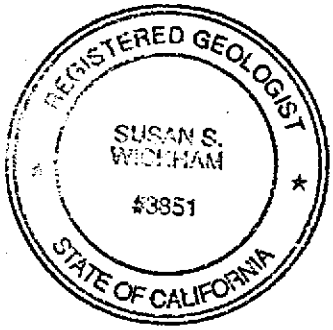
Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other hydrogeologists and engineers practicing in this field. No other warranty, express or implied, is made as to the professional advice in this report.

If you have any questions regarding the material presented in this report, please do not hesitate to contact the undersigned at (510) 685-4053.

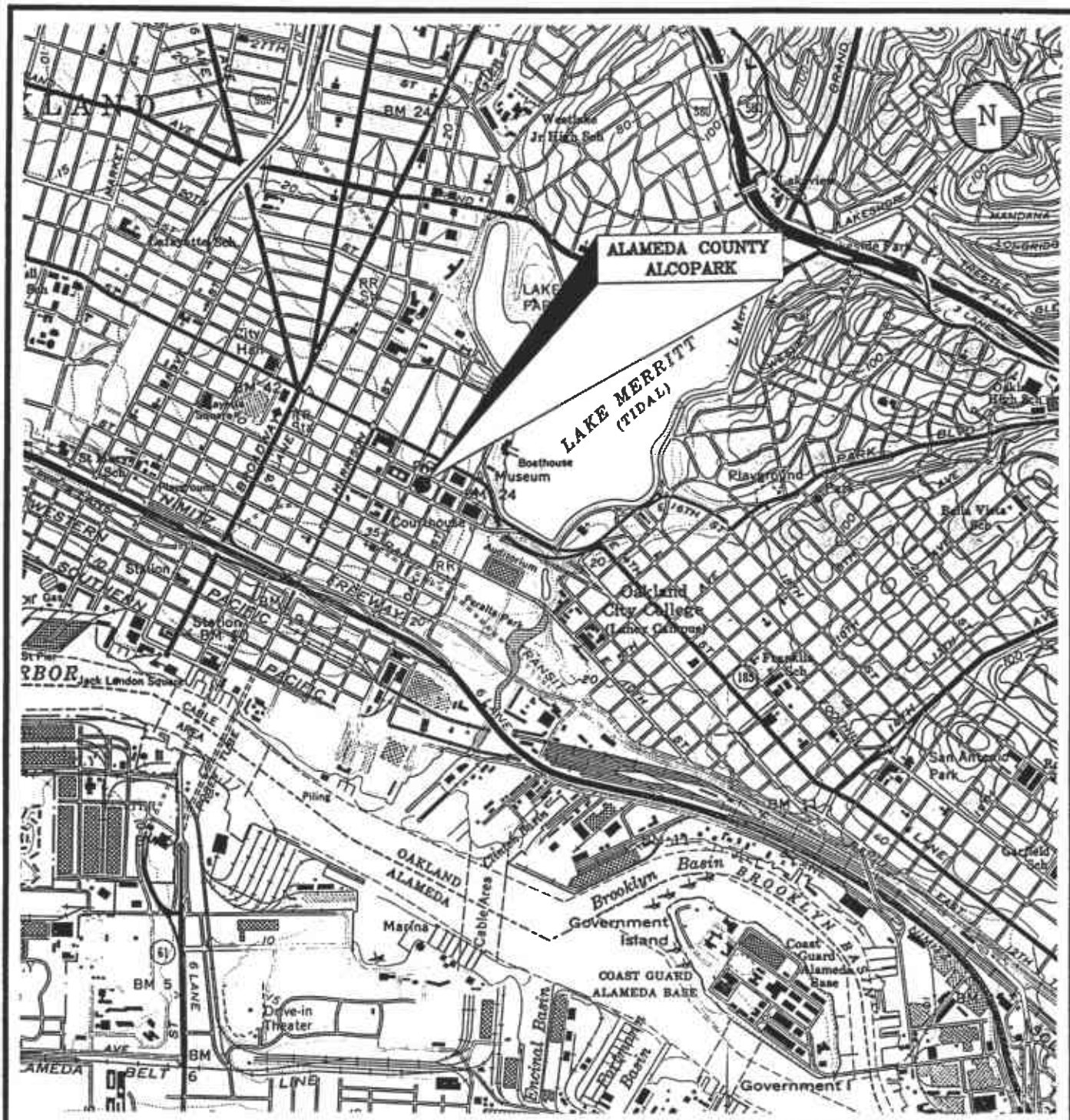
Michael K. Edmonson
Project Geologist

Susan S. Wickham
Senior Geologist
California Registered Geologist No. 3851



Attachments:

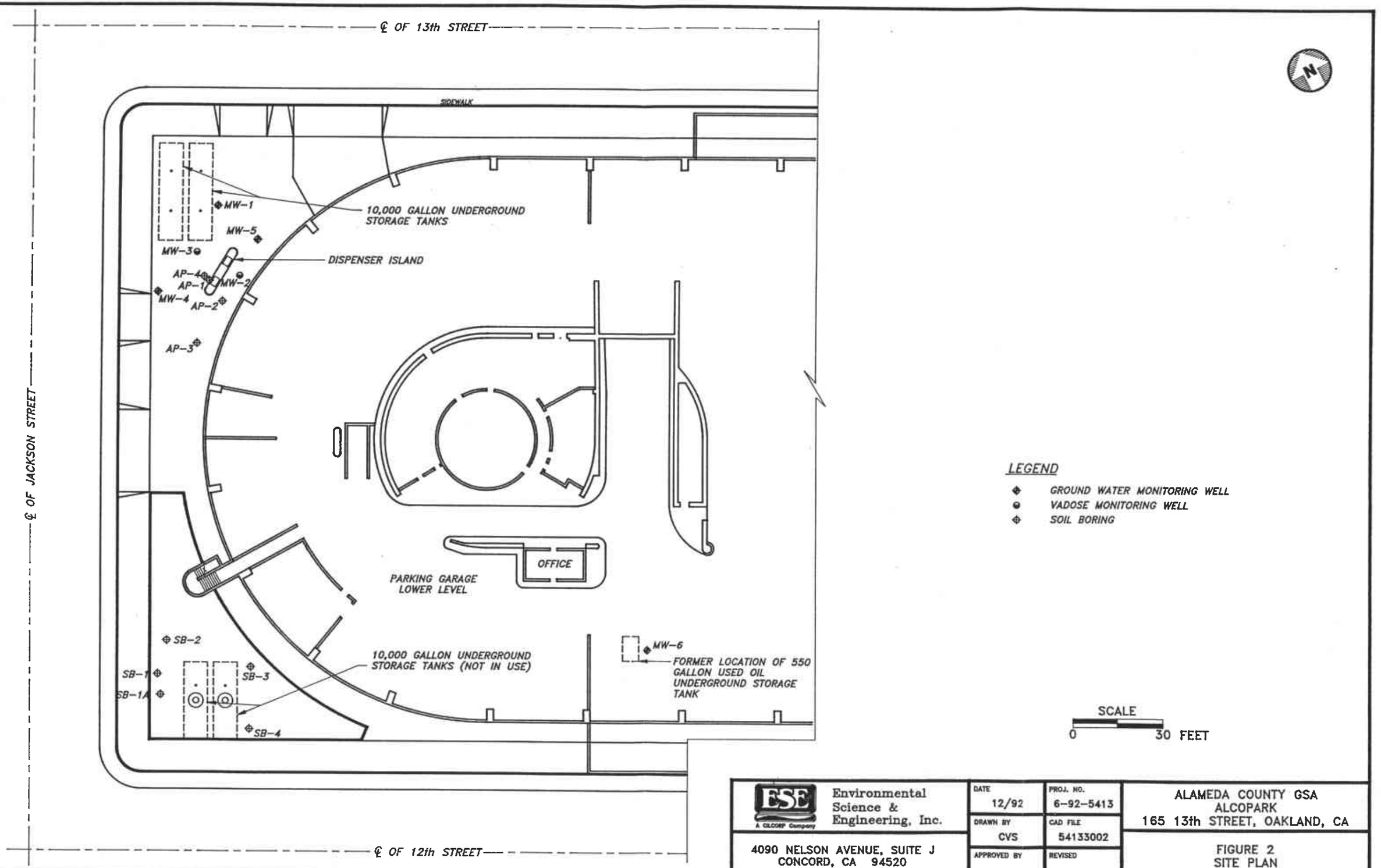
Figures (3)
Attachment A - Geologic Boring Log
Attachment B - Ground Water Sampling Data Form
Attachment C - Analytical Reports: Soil Samples
Attachment D - Analytical Reports: Ground Water Samples



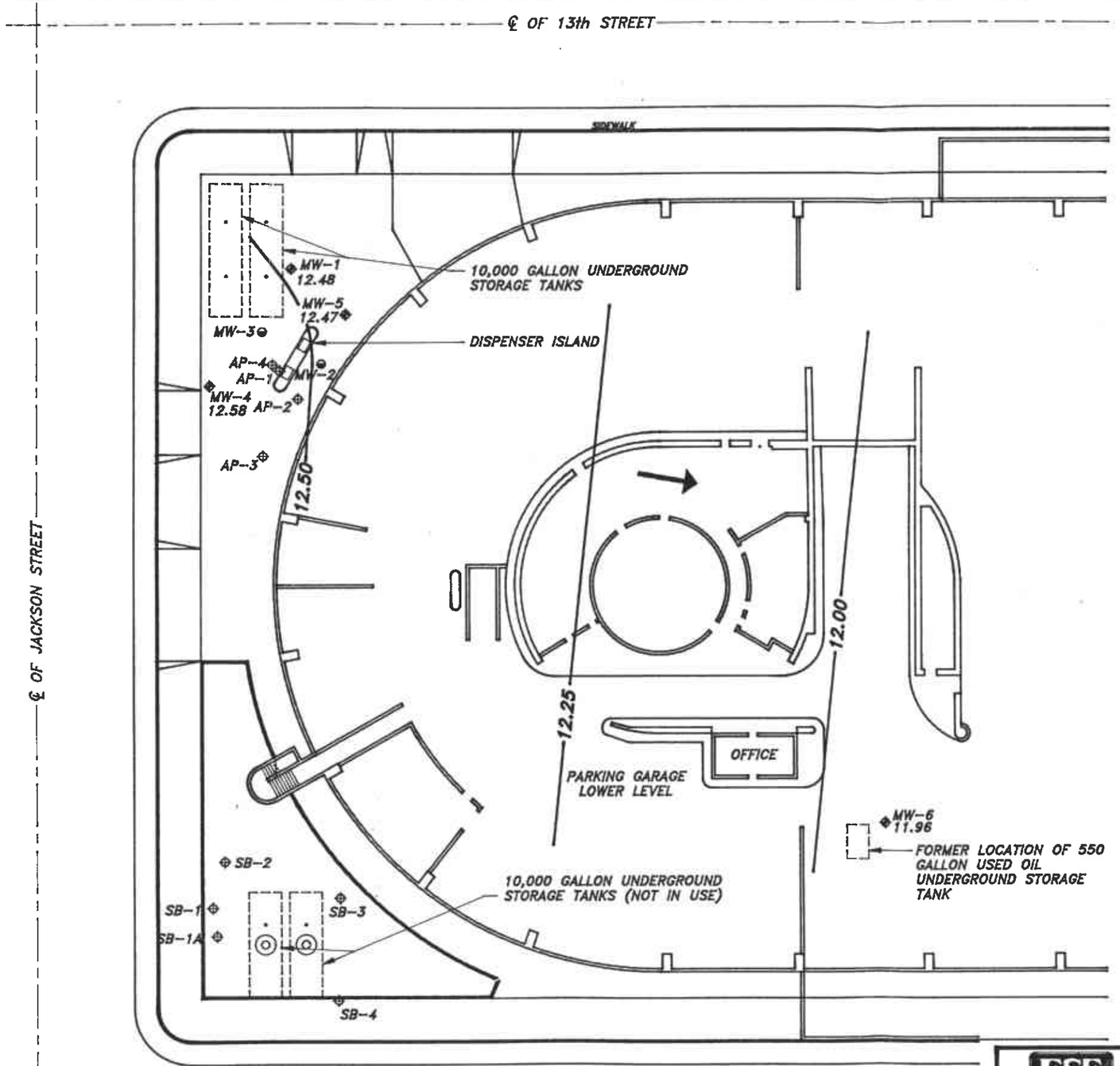
ESE A CALCOMP COMPANY	Environmental Science & Engineering, Inc.
ALEMEDA COUNTY ALCOPARK OAKLAND, CALIFORNIA	
FIGURE 1 LOCATION MAP	

DRAWN BY	APPROVED BY	REVISED
DWR		

DATE	FILE NAME	PROJ. NO.
10/91	F2TOP010	6-90-6042



ESE A CLCORP Company — Environmental Science & Engineering, Inc. 4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	DATE 12/92	PROJ. NO. 6-92-5413	ALAMEDA COUNTY GSA ALCOPARK 165 13th STREET, OAKLAND, CA
	DRAWN BY CVS	CAD FILE 54133002	
	APPROVED BY	REVISED	FIGURE 2 SITE PLAN



WELL NO.	DATE	TOP OF CASING ELEVATION (FEET)	DEPTH TO WATER (FEET)	GROUND WATER ELEVATION (FEET)
MW-1	11/5/92	33.00	20.52	12.48
MW-4	11/5/92	33.63	21.05	12.58
MW-5	11/5/92	33.01	20.54	12.47
MW-6	11/5/92	19.47	7.51	11.96

LEGEND

- ◆ GROUND WATER MONITORING WELL
- ⊖ VADOSE MONITORING WELL
- ⊕ SOIL BORING
- 11.96 GROUND WATER ELEVATION IN FEET RELATIVE TO A COMMON DATUM
- ——12.00—— GROUND WATER ELEVATION CONTOUR IN FEET RELATIVE TO A COMMON DATUM
- → GROUND WATER FLOW DIRECTION

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Environmental Science & Engineering, Inc.
4090 NELSON AVENUE, SUITE J
CONCORD, CA 94520

DATE	PROJ. NO.
12/92	6-92-5413
DRAWN BY	CAD FILE
CVS	54133002
APPROVED BY	REVISED

ALAMEDA COUNTY GSA
ALCOPARK
165 13th STREET, OAKLAND, CA

FIGURE 3
GROUND WATER ELEVATIONS
NOVEMBER 5, 1992

APPENDIX A

GEOLOGIC BORING LOGS

Environmental Science & Engineering, Inc.

BORING LOG AND WELL COMPLETION SUMMARY

MW-6

Page 1 of 1

WELL COMPLETION

Completion Depth: 20 FEET

Size/Type	From	To
Casing: 2" PVC Sch. 40	5	0
Screen: 2"-0.02" slot PVC	20	5
Filter: #3 Monteray Sand	20	4
Seal: Bentonite Pellets	4	3.5
Grout /sand slurry	3.5	1.5
Concrete	1.5	0

Well Cap or Box: Flush Traffic box with locking well cap.

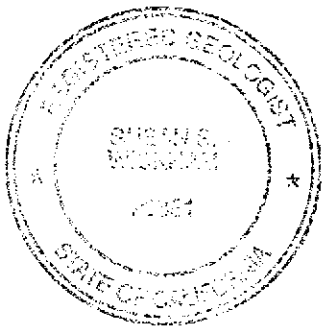
Project Name: ALCOPARK Project No: 6-92-5413

Location: 165 13th Street
Oakland, California

Driller: Soils Exploration Services, Inc.
Method: Hollow Stem Auger - Access II
Hole Diameter: 8 in. O.D. Total Depth: 20 Feet
Ref. Elevations: NA
Logged By: Kerry Lefever

Dates:
Start: 10-29-92
Finish: 10-29-92

Depth (ft)	Lithologic Description	USC	Graphic Log: Sample/Blows	Graphic Log: Lithology	Graphic Log: Well Installation	Vapor	Remarks: Water, drilling/completion, summary, sample type
0	Concrete						
1	SILTY SAND; orange-brown, dense, fine grained sand, moist, no odor.	SM					
2							
3							
4			22				
5			30				
6			22				
7	SAND; brown, wet, fine grained sand, no odor.	SP	48			2	Water at 7 Feet
8			17				
9			23				
10			24				
11							
12							
13							
14							
15							
16	GRAVELLY SAND; brown, wet, some clay, fine to coarse grained sand.	SW					
17							
18							
19							
20							Total Depth = 20 Feet
21							
22							



APPENDIX B

GROUND WATER SAMPLING DATA FORM

WELL SAMPLING FIELD LOG

PROJECT NAME: Alcopark DATE: 11-5-92
PROJECT MANAGER: MKR CLIENT: Alameda Co. GSA
SAMPLER: Paul M / Chris V. SAMPLE LOCATION I.D. MW-6
GROUNDWATER: YES OTHER: START TIME:

CASING ELEVATION (FT): DATUM: CASING DIAMETER: 2" X 4" OTHER

DEPTH TO WATER (FT): 7.51 DEPTH OF WELL (FT): 18.65 DIFFERENCE (FT): 11.14

WATER ELEVATION (FT): CALCULATED WELL VOLUME (GAL): 2 gal

ACTUAL PURGE VOLUME (GAL): 20 GAL MINIMUM PURGE VOLUME (3 x WV): 6 gal

FIELD MEASUREMENTS

TIME	Volume (GAL)	pH (Units)	x1000 E.C.	Temp.	Clarity & Color	Other
	0	6.78	0.69	67.9	BRWN	
	4	6.36	0.66	67.6	"	
	8	6.42	0.65	67.4	"	
	10	6.51	0.63	67.3	"	

PURGE METHOD

__Pneumatic Displacement Pump __Other

__Bailer (Teflon/PVC/SS) X Submersible Pump

SAMPLE METHOD

__Bailer (Teflon/PVC/SS) __Dedicated

X Bailer (Disposable) __Other

WELL INTEGRITY:

REMARKS: Purged 10 gal at 2gpm then 10 more at ≈4gpm then dried up. Down Stairs 1 soil drum 2 damaged drums and 3 with purge water. MW-1 = 20.52 ft MW-5 - 20.54 MW-4 = 21.05 ft UPSTAIRS - 4 WATER - 1 SOIL DRUMS

SIGNATURE: C. H. Valliff CHECKED BY:

SELECTED WELL CASING DIAMETERS VOLUMES PER UNIT LENGTH

WELL CASING I.D. (Inches)	GAL/FT	CUBIC FT/FT
2.0	0.1632	0.0218
4.0	0.6528	0.0873
6.0	1.4690	0.1963

CONVERSION FACTORS

TO CONVERT	INTO	MULTIPLY
Feet of Water	Lbs/Sq. Inch	0.4335
Lbs/Sq. Inch	Feet of Water	2.3070
Cubic Feet	Gallons	7.4800
Gallons	Liters	3.7850
Feet	Meters	0.3048
Inches	Centimeters	2.5400

APPENDIX C

ANALYTICAL REPORTS: SOIL SAMPLES

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	Alcopark/#6-92-5413	Sampled:	Oct 29, 1992
4090 Nelson Ave., Suite J	Sample Matrix:	Soil	Received:	Oct 30, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 12, 1992
Attention: Michael Edmonson	First Sample #:	210-1037		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 210-1037 MW-6 @ 6.5'
Purgeable Hydrocarbons	1.0	N.D.
Benzene	0.005	N.D.
Toluene	0.005	N.D.
Ethyl Benzene	0.005	N.D.
Total Xylenes	0.005	N.D.
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	11/2/92
Instrument Identification:	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	104

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	Alocopark/ #6-92-5413	Sampled:	Oct 29, 1992
4090 Nelson Ave., Suite J	Sample Matrix:	Soil	Received:	Oct 30, 1992
Concord, CA 94520	Analysis Method:	EPA 3550/8015	Reported:	Nov 12, 1992
Attention: Michael Edmonson	First Sample #:	210-1037		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 210-1037 MW-6 @ 6.5'
Extractable Hydrocarbons	1.0	1.0
Chromatogram Pattern:		Diesel

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Extracted:	11/6/92
Date Analyzed:	11/10/92
Instrument Identification:	HP-3B

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	Alcopark/#6-92-5413	Sampled:	Oct 29, 1992
4090 Nelson Ave., Suite J	Matrix Descript:	Soil	Received:	Oct 30, 1992
Concord, CA 94520	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	Nov 3, 1992
Attention: Michael Edmonson	First Sample #:	210-1037	Analyzed:	Nov 9, 1992
			Reported:	Nov 12, 1992

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
210-1037	MW-6 @ 6.5'	N.D.

Detection Limits:	**30**

Analytes reported as N.D. were not present above the stated limit of detection.

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Karen L. Enstrom
Project Manager

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Environmental Science & Engineering, Inc.	Client Project ID:	Alcopark/#6-92-5413	Sampled:	Oct 29, 1992
4090 Nelson Ave., Suite J	Sample Descript:	Soil, MW-6 @ 6.5'	Received:	Oct 30, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	Nov 3, 1992
Attention: Michael Edmonson	Lab Number:	210-1037	Reported:	Nov 12, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	5.0	N.D.
Bromoform	5.0	N.D.
Bromomethane	10	N.D.
Carbon tetrachloride	5.0	N.D.
Chlorobenzene	5.0	N.D.
Chloroethane	10	N.D.
2-Chloroethylvinyl ether	10	N.D.
Chloroform	5.0	N.D.
Chloromethane	10	N.D.
Dibromochloromethane	5.0	N.D.
1,2-Dichlorobenzene	5.0	N.D.
1,3-Dichlorobenzene	5.0	N.D.
1,4-Dichlorobenzene	5.0	N.D.
1,1-Dichloroethane	5.0	N.D.
1,2-Dichloroethane	5.0	N.D.
1,1-Dichloroethene	5.0	N.D.
cis-1,2-Dichloroethene	5.0	N.D.
trans-1,2-Dichloroethene	5.0	N.D.
1,2-Dichloropropane	5.0	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Methylene chloride	50	N.D.
1,1,2,2-Tetrachloroethane	5.0	N.D.
Tetrachloroethene	5.0	N.D.
1,1,1-Trichloroethane	5.0	N.D.
1,1,2-Trichloroethane	5.0	N.D.
Trichloroethene	5.0	N.D.
Trichlorofluoromethane	5.0	N.D.
Vinyl chloride	10	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.
4090 Nelson Ave., Suite J
Concord, CA 94520
Attention: Michael Edmonson

Client Project ID: Alcopark/#6-92-5413
QC Sample Group: 210-1037
Reported: Nov 12, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel	Oil and Grease
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA8015	EPA 413.1
Analyst:	J.F.	J.F.	J.F.	J.F.	K.Wimer	D. Newcomb
Reporting Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Date Analyzed:	Nov 3, 1992	Nov 3, 1992	Nov 3, 1992	Nov 3, 1992	Nov 10, 1992	Nov 3, 1992
QC Sample #:	211-0013	211-0013	211-0013	211-0013	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	0.40	0.40	0.40	1.2	10	5000
Conc. Matrix Spike:	0.40	0.41	0.41	1.4	9.7	4600
Matrix Spike % Recovery:	100	103	103	116	97	92
Conc. Matrix Spike Dup.:	0.40	0.41	0.41	1.4	9.3	4600
Matrix Spike Duplicate % Recovery:	100	103	103	116	93	92
Relative % Difference:	0.0	0.0	0.0	0.0	4.2	0.0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

SEQUOIA ANALYTICAL

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Environmental Science & Engineering, Inc.
4090 Nelson Ave., Suite J
Concord, CA 94520
Attention: Michael Edmonson

Client Project ID: Alcopark/#6-92-5413
QC Sample Group: 210-1037
Reported: Nov 12, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloro-ethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	K.Nill	K.Nill	K.Nill
Reporting Units:	µg/Kg	µg/Kg	µg/Kg
Date Analyzed:	Nov 3, 1992	Nov 3, 1992	Nov 3, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10
Conc. Matrix Spike:	9.7	10	9.0
Matrix Spike % Recovery:	97	100	90
Conc. Matrix Spike Dup.:	8.3	9.3	8.2
Matrix Spike Duplicate % Recovery:	83	93	82
Relative % Difference:	16	7.3	7.1

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

DATE 10/29/92 PAGE ____ OF ____

CHAIN OF CUSTODY RECORD

PROJECT NAME ALCOPARK

ADDRESS 165 13th Street
Oakland

PROJECT NO. 6-92-5413

SAMPLED BY Kerry Lefever

LAB NAME ____

ESE Environmental Science & Engineering, Inc.
4090 Nelson Avenue
Suite J
Concord, CA 94520
(415) 685-4053
Fax (415) 685-3021

SAMPLE #	DATE	TIME	LOCATION	TPH 8015	TPH-Gasoline (5030)	TPH-Diesel (3550)	BTEX (8020)	HVOs (8010)					MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
				ANALYSES TO BE PERFORMED									MATRIX		
mw-6@6'	10/29/92	1115	Alcopark-	X	X	X	X	X	2	1	0	37	SOIL	1	BRASS RING (2" diam)
mw-6@7'	10/29/92	1120	garage basement	H	H	H	H	H					SOIL	1	BRASS RING (1.5" diam)

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1.			
2.		10-30-92	11:40 AM
3.			
4.			
5.			

2 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: MIKE EDMONSON

SPECIAL SHIPMENT REQUIREMENTS

SAMPLE RECEIPT

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	
CONFORMS TO RECORD	

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):

Standard Turnaround Time

X = Analyze
H = Hold

APPENDIX D

ANALYTICAL REPORTS: GROUND WATER SAMPLES

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	#6-92-5413/Alcopark-WO, Oakland	Sampled:	Nov 5, 1992
4090 Nelson Ave., Suite J	Sample Matrix:	Water	Received:	Nov 6, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Nov 18, 1992
Attention: Michael Edmonson	First Sample #:	211-0309		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 211-0309 MW-6
Purgeable Hydrocarbons	50	N.D.
Benzene	0.5	1.0
Toluene	0.5	0.79
Ethyl Benzene	0.5	N.D.
Total Xylenes	0.5	2.7
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Analyzed:	11/10/92
Instrument Identification:	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	101

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	#6-92-5413/Alcopark-WO, Oakland	Sampled:	Nov 5, 1992
4090 Nelson Ave., Suite J	Sample Matrix:	Water	Received:	Nov 6, 1992
Concord, CA 94520	Analysis Method:	EPA 3510/3520/8015	Reported:	Nov 18, 1992
Attention: Michael Edmonson	First Sample #:	211-0309		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 211-0309 MW-6
Extractable Hydrocarbons	50	N.D.
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Extracted:	11/11/92
Date Analyzed:	11/16/92
Instrument Identification:	HP-3A

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	#6-92-5413/Alcopark-WO, Oakland	Sampled:	Nov 5, 1992
4090 Nelson Ave., Suite J	Matrix Descript:	Water	Received:	Nov 6, 1992
Concord, CA 94520	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	Nov 11, 1992
Attention: Michael Edmonson	First Sample #:	211-0309	Analyzed:	Nov 12, 1992
			Reported:	Nov 18, 1992

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
211-0309	MW-6	N.D.

Detection Limits:	**5.0**

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.	Client Project ID:	#6-92-5413/Alcopark-WO, Oakland	Sampled:	Nov 5, 1992
4090 Nelson Ave., Suite J	Sample Descript:	Water, MW-6	Received:	Nov 6, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	Nov 12, 1992
Attention: Michael Edmonson	Lab Number:	211-0309	Reported:	Nov 18, 1992

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane	0.50	N.D.
Bromoform	0.50	N.D.
Bromomethane	1.0	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	1.0	N.D.
2-Chloroethylvinyl ether	1.0	N.D.
Chloroform	0.50	0.54
Chloromethane	1.0	N.D.
Dibromochloromethane	0.50	N.D.
1,3-Dichlorobenzene	0.50	N.D.
1,4-Dichlorobenzene	0.50	N.D.
1,2-Dichlorobenzene	0.50	N.D.
1,1-Dichloroethane	0.50	N.D.
1,2-Dichloroethane	0.50	N.D.
1,1-Dichloroethene	0.50	N.D.
cis-1,2-Dichloroethene	0.50	N.D.
trans-1,2-Dichloroethene	0.50	N.D.
1,2-Dichloropropane	0.50	N.D.
cis-1,3-Dichloropropene	0.50	N.D.
trans-1,3-Dichloropropene	0.50	N.D.
Methylene chloride	5.0	N.D.
1,1,2,2-Tetrachloroethane	0.50	N.D.
Tetrachloroethene	0.50	1.7
1,1,1-Trichloroethane	0.50	8.3
1,1,2-Trichloroethane	0.50	N.D.
Trichloroethene	0.50	N.D.
Trichlorofluoromethane	0.50	N.D.
Vinyl chloride	1.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.
4090 Nelson Ave., Suite J
Concord, CA 94520
Attention: Michael Edmonson

Client Project ID: #6-92-5413/Alcopark-WO, Oakland
QC Sample Group: 211-0309
Reported: Nov 18, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel	Oil and Grease
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA8015	EPA 413.1
Analyst:	A.T.	A.T.	A.T.	A.T.	K.Wimer	D. Newcomb
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
Date Analyzed:	Nov 10, 1992	Nov 10, 1992	Nov 10, 1992	Nov 10, 1992	Nov 17, 1992	Nov 11, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	20	20	20	60	300	100
Conc. Matrix Spike:	20	22	22	66	281	97
Matrix Spike % Recovery:	100	110	110	110	94	97
Conc. Matrix Spike Dup.:	21	23	24	69	279	99
Matrix Spike Duplicate % Recovery:	105	115	120	115	93	99
Relative % Difference:	4.9	4.4	8.7	4.4	0.70	2.0

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Environmental Science & Engineering, Inc.
4090 Nelson Ave., Suite J
Concord, CA 94520
Attention: Michael Edmonson

Client Project ID: #6-92-5413/Alcopark-WO, Oakland
QC Sample Group: 211-0309
Reported: Nov 18, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloro-ethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	K.Nill	K.Nill	K.Nill
Reporting Units:	µg/L	µg/L	µg/L
Date Analyzed:	Nov 12, 1992	Nov 12, 1992	Nov 12, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10
Conc. Matrix Spike:	11	11	11
Matrix Spike % Recovery:	110	110	110
Conc. Matrix Spike Dup.:	11	11	10
Matrix Spike Duplicate % Recovery:	110	110	100
Relative % Difference:	0.0	0.0	9.5

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.

SEQUOIA ANALYTICAL

Karen L. Enstrom
Project Manager

% Recovery:	Conc. of M.S. - Conc. of Sample / Spike Conc. Added	x 100
Relative % Difference:	Conc. of M.S. - Conc. of M.S.D. / (Conc. of M.S. + Conc. of M.S.D.) / 2	x 100

DATE 11/5/92 PAGE 1 OF 1

CHAIN OF CUSTODY RECORD

PROJECT NAME ALCOMARK - WO

ADDRESS 165 13th St
Oakland, CA

PROJECT NO. 6-92-5413

SAMPLED BY Chris Volcheff

LAB NAME Sequoia

ESE Environmental Science & Engineering, Inc.
4080 Nelson Avenue
Suite J
Concord, CA 94520
(415) 685-4053
Fax (415) 685-3323

SAMPLE #	DATE	TIME	LOCATION	ANALYSES TO BE PERFORMED: O&G (413.1); TPH-D (8015 mod); TPH-G (8015); BTEX (8020); HVOs (8010); Metals - Cd, Cr, Pb, Zn, Ni	MATRIX	NUMBER OF CONTAINERS	REMARKS (CONTAINER, SIZE, ETC.)
MW-6	11/5/92	10:10	Alcomark	X X X X X HOLD	Aq	7	3 liters 4 VOA's
							2110309AF
						7	mkc

RELINQUISHED BY: (signature)	RECEIVED BY: (signature)	date	time
1.		11-6-92	0930
2.			
3.			
4.			
5.			

7 TOTAL NUMBER OF CONTAINERS

REPORT RESULTS TO: Mike Edmonson

SPECIAL SHIPMENT REQUIREMENTS: Cold Transport

INSTRUCTIONS TO LABORATORY (handling, analyses, storage, etc.):
Standard Turnaround Time
X = Analyze
H = Hold

SAMPLE RECEIPT

CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDTN/COLD	
CONFORMS TO RECORD	