

Mobil Oil Corporation

927113 17

3225 GALLOWS ROAD
FAIRFAX, VIRGINIA 22037-0001

July 31, 1992

Ms. Jenifer Eberly
Alameda County Environmental Health Dept.
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, California 94621

STID 1108

**FORMER MOBIL STATION 04-E6A
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA**

94610

Dear Ms. Eberly:

Attached per your request is the December 20, 1989 Preliminary Site Investigation Report prepared by Alton Geoscience, Inc.

In addition, I am enclosing a Soil Sampling Report prepared by Kaprealian Engineering, Inc. dated October 7, 1988. I think the soil samples data you are looking for may be in the Soil Sampling Report.

Also, I attached the letter requesting semi-annual sampling events for the above location. Based on the low levels of dissolved contamination, Mobil feels the sampling events should be reduced to semi-annual.

9-16-91

Should you have any further questions, please call me at 1-800-227-0707 extension 5316.

Sincerely,



Michele A. Fear
Environmental Monitoring
Analyst

enclosure:

cc: Mr. Donald Dalke - RWQCB- San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

P. DeSantis - BP Oil- Northwest Division- Southcenter Pl Bldg-
16400 Southcenter Pkwy, Suite 301; Tukwila, WA 98148

D. J. Hill - Mobil Environmental Field Supervisor
J. G. Schoepf - Mobil Environmental Monitoring Supervisor



RECEIVED

JAN 11 1990



ALTON GEOSCIENCE, INC.

PRELIMINARY SITE INVESTIGATION REPORT

**Former Mobil Service Station No. 10-E6A
100 MacArthur Boulevard
Oakland, California**

Prepared for:

**Mobil Oil Corporation
3800 West Alameda Avenue
Burbank, California 91505-4331**

Alton Geoscience, Inc.

Project No. 30-063

December 20, 1989

PRELIMINARY SITE INVESTIGATION

FORMER MOBIL SERVICE
STATION NO. 10-E6A
100 MACARTHUR BOULEVARD
OAKLAND, CALIFORNIA

ALTON GEOSCIENCE PROJECT NO. 30-063


This Preliminary Site Investigation Report was prepared in accordance with current procedures and guidelines established by the governing Regulatory Agencies.

The report was prepared by:


Matt Hopwood
Geologist

12/20/89
Date

This report was reviewed by:


Al Sevilla
Registered Civil Engineer
No. 26392
Operations Manager

12/20/89
Date



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AND CHAIN OF CUSTODY RECORDS

1.0 INTRODUCTION AND BACKGROUND

Mobil Oil Corporation retained Alton Geoscience, Inc. to perform a preliminary site investigation at the former Mobil Service Station No. 10-E6A, located at 100 MacArthur Boulevard, Oakland, California. The site vicinity map is presented in Figure 1 while the site plan is shown in Figure 2.

1.1 Purpose and Scope

The preliminary site investigation was conducted at the former Mobil Oil Service Station Number 10-E6A in response to the concerns of the Alameda County Department of Environmental Health (ACDEH) regarding suspected subsurface contamination, following the removal of a 280-gallon waste oil tank in September 1988. Soil samples collected from native material below the tank pit and from the excavated material were analyzed to contain total oil and grease (TOG) up to 64,000 parts per million (ppm). To address the concerns of the ACDEH, a site investigation was conducted which involved installation of three ground water monitoring wells; analysis of soil and ground water samples; and determination of the gradient and direction of ground water flow beneath the site.

no overexcavation

1.2 Site Description

The former Mobil station site is located on the northeast corner of the intersection of MacArthur Avenue and Oakland Avenue in Oakland, California, at an elevation of approximately 81 feet above mean sea level. Local topography is irregular with high relief, but generally slopes to the west. The former Mobil service station is now an operating BP Oil Company service station with three underground gasoline storage tanks and one waste oil tank, as follows:

<u>Tank Size</u>	<u>Tank Contents</u>	<u>Tank Material</u>	<u>Year Installed</u>
6,000	Unleaded Premium	Single Wall Fiberglass	1982
10,000	Leaded Regular	Single Wall Fiberglass	1982
12,000	Unleaded Regular	Single Wall Fiberglass	1982
1,000	Waste Oil	Double Wall Fiberglass	1988

Figure 2 shows the layout of the existing service station and the location of the underground storage tanks. Adjacent properties are primarily residential, with some commercial establishments.

1.3 Regional Geology

The site is located in the an area underlain by Quaternary alluvium consisting of weakly consolidated clay, silt, sand, and gravel. The unit includes minor deposits of Holocene and late Pleistocene beach sand and marine terrace deposits, ranging from 0 to 50 meters in thickness. Underlying the Quaternary alluvium is the Franciscan Formation, consisting of mainly well-indurated sandstone and shale but includes greenstone, chert, limestone, conglomerate, and metamorphic rock. This geologic unit is generally highly deformed and sheared with blocks of various lithologies in a matrix of clay materials.

1.4 Regional Hydrogeology

The site is within the Alameda Bay Plain Ground Water Basin. The ground water in this alluvial basin flows regionally to the west. According to Alameda County Public Works Office, there are no production or domestic wells within a half mile radius of the site. Municipal water supply in Oakland is provided by the East Bay Municipal Utilities District which obtains its water from the Mokelumne River.

2.0 **FIELD METHODS**

The procedures and methods used during field activities were in accordance with applicable regulatory requirements and procedures outlined in Appendix A. Initial investigation work entailed review of available background information, drilling of three soil borings to depths of approximately 33 feet below grade, and collection of soil samples. Each boring was completed as a ground water monitoring well following the design and installation procedures outlined in Appendix D.

2.1 Soil Borings and Sampling

On October 12, 1989, prior to commencement of drilling activities, Ground Water Protection Ordinance Permit Application Number 89601 was completed by Alton Geoscience and approved by the Alameda County Flood Control and Water Conservation District. A copy of the permit is included in Appendix B.

On October 25 and 26, 1989, Alton Geoscience supervised the drilling of three soil borings, and installation of three, 4-inch-diameter ground water monitoring wells. The borings were drilled to a depth of 33 below grade. Soil samples were collected at 5-foot intervals. Drilling activities were performed by Bay Area Exploration of Suisun, California using a CME 75 drill rig with hollow stem augers.

Saturated soils were encountered at different depths in each boring; as can be noted in the enclosed boring logs in Appendix C. Water levels were allowed to equilibrate prior to completion of each monitoring well. A description of drilling procedures and soil sampling protocol are included as Appendix A while copies of the boring logs are presented in Appendix C.

2.2 Ground Water Monitoring Well Construction

The three soil borings were converted to ground water monitoring wells MW-1, MW-2, and MW-3. The wells were constructed of clean, 4-inch-diameter, flush threaded, Schedule 40 polyvinyl chloride (PVC) blank casing and 0.020-inch, slotted PVC casing, to a depth of 32 feet below grade. Well installation procedures and construction details are presented in Appendix D.

2.3 Monitoring Well Development and Sampling

Well development was conducted on November 4, 1989, using an above-ground, air-powered, double diaphragm, positive displacement pump. Each well was developed by purging various amounts of water, until stabilization of pH, temperature, and conductivity of the well water was achieved. Field observations during well development are presented in the water sampling survey forms (Appendix E). Water samples were collected on November 11, 1989, following the purging of 10 gallons from each well. The well development and sampling procedures were conducted in accordance with Regional Water Quality Control Board (RWQCB) guidelines and the standard protocol described in Appendix E.

Water samples were collected in clean containers and transported in an iced cooler to Superior Analytical Laboratories for analysis, following proper chain of custody procedures.

2.4 Ground Water Level Monitoring and Surveying

Ground water level monitoring data collected at the time of sample collection is presented in Table 1. A ground water elevation contour map based on interpretation of this monitoring data is presented in Figure 4.

The monitoring wells were surveyed on November 11, 1989, using an arbitrary benchmark with an assumed elevation of 90 feet. The two City of Oakland benchmarks near the site have been destroyed due to new construction. The purpose of the survey was to determine the relative top of casing elevations of the three monitoring wells, for use in calculating the water table elevation at each well. The water table elevation data are used to determine the direction of ground water flow in the shallow aquifer beneath the site, as discussed in Section 3.2, Site Hydrogeology. The survey data is also included in Table 1.

TABLE 1
SURVEY AND WATER LEVEL MONITORING DATA

Well Number	Elevation (feet)*	Depth to Water (feet)	Water Level Elevation (feet)*
November 4, 1989			
MW-1	90.20	13.21	76.99
MW-2	87.91	15.84	72.07
MW-3	87.02	15.40	71.62
November 11, 1989			
MW-1	90.20	13.32	76.90
MW-2	87.91	14.75	73.16
MW-3	87.02	14.10	72.92
Note: (feet)* = feet above mean sea level using an arbitrary benchmark of 90 feet; approximate site elevation.			

3.0 SITE GEOLOGY AND HYDROGEOLOGY

This section presents a brief description of the pertinent background information on the site and the regional geology and hydrogeology of the area.

3.1 Site Geology

Lithology below the site is not uniform; borings MW-1 and MW-3 consisted of gravelly sand to a depth of approximately 10 feet, compared to boring MW-2 which consisted of silty clay to this depth. Soil from 10 feet below grade to total depth of borings MW-2 and MW-3 was brown to tan silty clay. In boring MW-1, coarse sand was encountered at 10 feet below grade, extending to 21 feet, where a gravelly sand with some clay was penetrated. Each well was terminated at depths of 32 feet in a stiff clay, which was encountered at approximately 30 feet below grade in MW-2 and MW-3

3.2 Site Hydrogeology

The relative ground water elevations from Monitoring Wells MW-1, MW-2, and MW-3, as measured on November 11, 1989, were used to develop the ground water elevation contour map shown as Figure 3. The average depth to water at the site is approximately 14 feet below grade. The data indicates a southwesterly flow direction with a relatively steep gradient of approximately 0.04 foot per foot.

4.0 ANALYTICAL METHODS AND RESULTS

All laboratory analyses of soils and ground water samples were performed by California state-certified analytical laboratories, using standard test methods of the U.S. Environmental Protection Agency (EPA) and the California Department of Health Services (DHS). Anametrix, of San Jose, analyzed the soil samples while Superior Analytical analyzed the water samples. A listing of the analytical methods used is presented in Appendix F.

4.1 Soil Analysis and Results

Soil samples collected from borings MW-2 and MW-3 were analyzed for total petroleum hydrocarbons as gasoline or low boiling point (TPH-G), and for benzene, toluene, ethylbenzene, and xylenes (BTEX). Soil samples collected from boring MW-1 were analyzed for total oil and grease (TOG), TPH-diesel, BTEX, and halogenated volatile organic compounds (HVOC) because of its proximity to the waste oil tank. The results of the laboratory analyses are presented

in Table 2. The official Laboratory Reports and Chain of Custody Records are included in Appendix F.

4.2 Water Analysis and Results

Ground water samples collected from Monitoring Wells MW-2 and MW-3 were analyzed for TPH-G and BTEX. Ground water from Monitoring Well MW-1 was analyzed for the same constituents and for halogenated volatile organic compounds (HVOC) and total oil and grease (TOG). The results of the laboratory analyses are presented in Table 3. The official Laboratory Reports and Chain of Custody Record are included in Appendix F.

TABLE 2
RESULTS OF
LABORATORY ANALYSIS OF SOIL SAMPLES

Sampled 10-26-89

Boring	Depth (Feet)	TOG	TPH-A	B	T	E	X	HVOC
		(Concentrations in parts per billion)						
MW-1	5	ND	ND	ND	ND	ND	ND	ND
	10	ND	ND	ND	ND	ND	ND	ND
	15	ND	ND	ND	ND	ND	ND	ND
MW-2	5	---	ND	6	ND	ND	ND	---
	10	---	ND	8	ND	ND	ND	---
	15	ND-NR	ND	ND	ND	ND	ND	---
MW-3	5	---	ND	ND	6	ND	13	---
	10	---	ND	ND	ND	ND	ND	---
	15	---	ND	ND	ND	ND	ND	---

Notes: TOG = total oil and grease
 TPH = total petroleum hydrocarbons
 B = benzene
 T = toluene
 E = ethylbenzene
 X = xylenes
 HVOC = halogenated volatile organic compounds
 ND = not detected; see lab sheets for various detection limits
 --- = not analyzed

TABLE 3
RESULTS OF
LABORATORY ANALYSIS OF GROUND WATER SAMPLES

Monitoring Well	TOG	TPH-G	B	T	E	X	HVOC
	(Concentrations in parts per billion)						
MW-1	ND ✓	ND ✓	3.4 ✓	0.6 ✓	ND ✓	ND ✓	0.9 (DCE) ✓
MW-2	---	ND ✓	6.5 ✓	ND ✓	ND ✓	ND ✓	---
MW-3	---	ND ✓	ND ✓	ND ✓	ND ✓	ND ✓	---
California Department of Health Services Primary Maximum Contaminant Levels (MCL) or Action Levels for Drinking Water (Concentrations in parts per billion)							
			1.0	100*	680	1,750	1.0 (DCE) *
Notes: TOG = total oil and grease HOC = halogenated organic compounds TPH-G = total petroleum hydrocarbons - gasoline B = benzene T = toluene E = ethylbenzene X = xylenes DCE = 1,2-dichloroethane --- = not analyzed * = state action level							

*Sampled
11-10-89*

1,2-DCE

5.0 DISCUSSION OF RESULTS

The results of the laboratory analyses of soil and ground water samples collected during this investigation are discussed below.

5.1 Soil

No detectable concentrations of TPH-diesel, BTEX, TOG, or HVOC were analyzed in the soil samples collected from Boring MW-1. Detectable concentrations of BTEX were present in the soil samples from boring MW-2 at depths of 5 and 10 feet below grade, primarily benzene at levels of 6 and 8 ppb, respectively. The soil sample from 5 feet below grade in Boring MW-3 contained 6 ppb of toluene and 13 ppb of total xylenes. All other soil samples contained no detectable levels of any of the other compounds analyzed.

5.2 Ground Water

Laboratory analyses of ground water samples indicated no detectable concentrations of TPH in any of water samples from the monitoring wells. However, water samples from Monitoring Wells MW-1 and MW-2 contained detectable levels of benzene (3.4 and 6.5 ppb, respectively). The sample from Monitoring Well MW-1 also contained 0.6 ppb of toluene and 0.9 ppb of 1-2-dichloroethane.

6.0 FINDINGS AND CONCLUSIONS

Three soil borings were drilled and ground water monitoring wells installed to depths of approximately 32 feet below grade. The soils consisted of clay, silt, sand, and gravel in various mixtures. During drilling, ground water was encountered at a depth of 14 feet below grade, stabilizing at depths between 13 and 16 feet below grade.

The ground water elevation contour map developed from the water level and survey data indicate a relatively steep gradient with a southwesterly flow direction beneath the site. Ground water flow direction correlates with the site surface topography.

All nine soil samples collected contained no detectable concentrations of TPH-G with only three soil samples containing low levels of hydrocarbon constituents (BTEX). Analysis of ground water samples revealed no detectable concentration of TPH-G in any of the wells, however, low levels of benzene, toluene, and DCE were detected in the samples from Monitoring Wells MW-1 and MW-2. With the exception of benzene, the levels of hydrocarbon constituents (BTEX) detected in the water samples are well below the state primary MCL and state action levels for drinking water, as can be noted in Table 3.

The benzene concentrations detected in water samples from MW-1 and MW-2 exceed the state primary MCL established for drinking water, while the 1,2-dichloroethane (DCE) detected in MW-1 (at 0.9 ppb) is below the state recommended action level for this compound. Since there are no domestic or municipal wells in the region, and since Oakland obtains municipal water from a distant source, it does not appear that the detectable levels of benzene in the shallow ground water would impact any domestic water supply source.

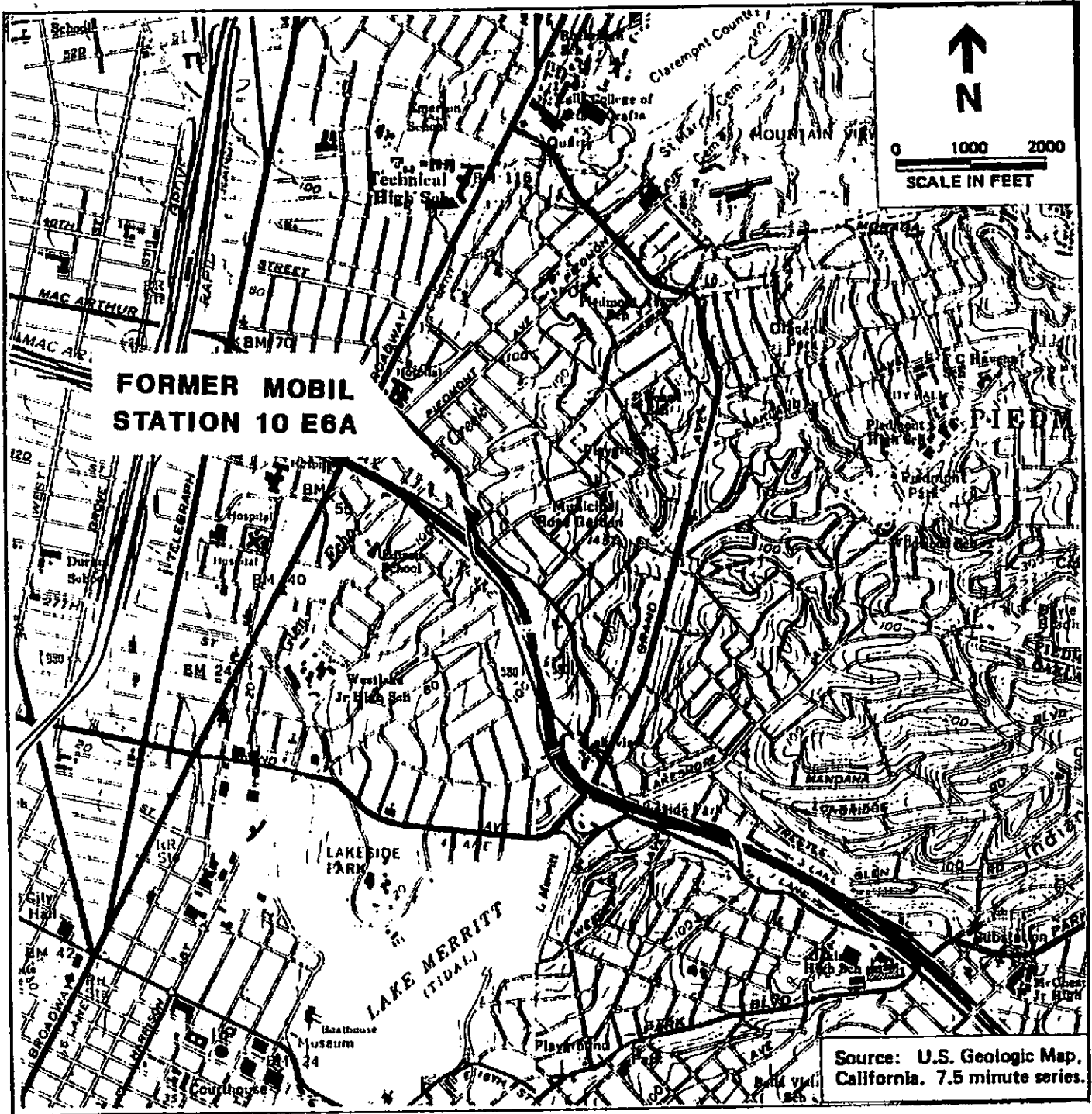
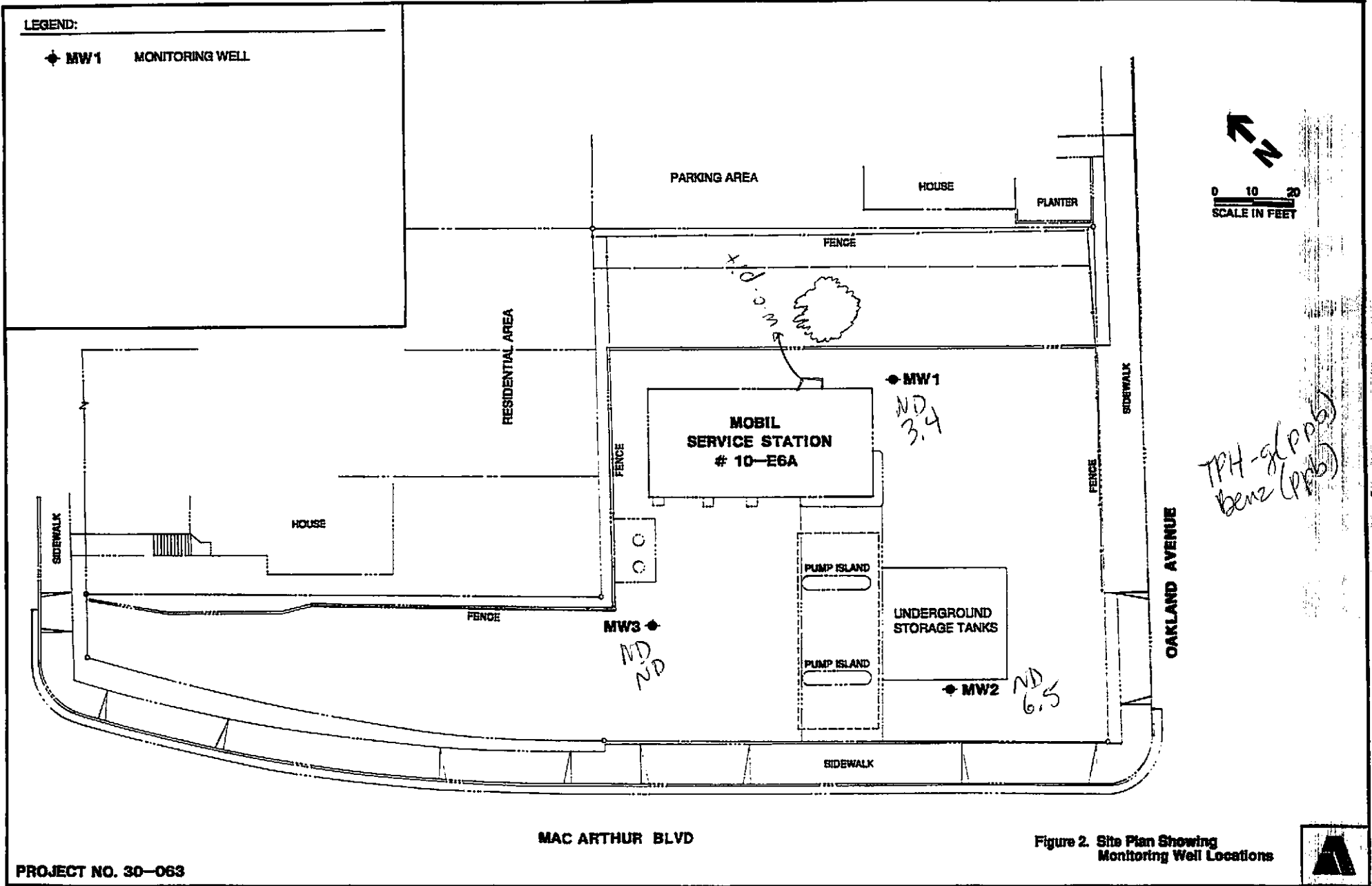
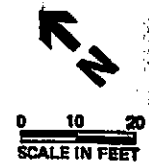


FIGURE 1. VICINITY MAP



LEGEND:

◆ MW1 MONITORING WELL



MAC ARTHUR BLVD

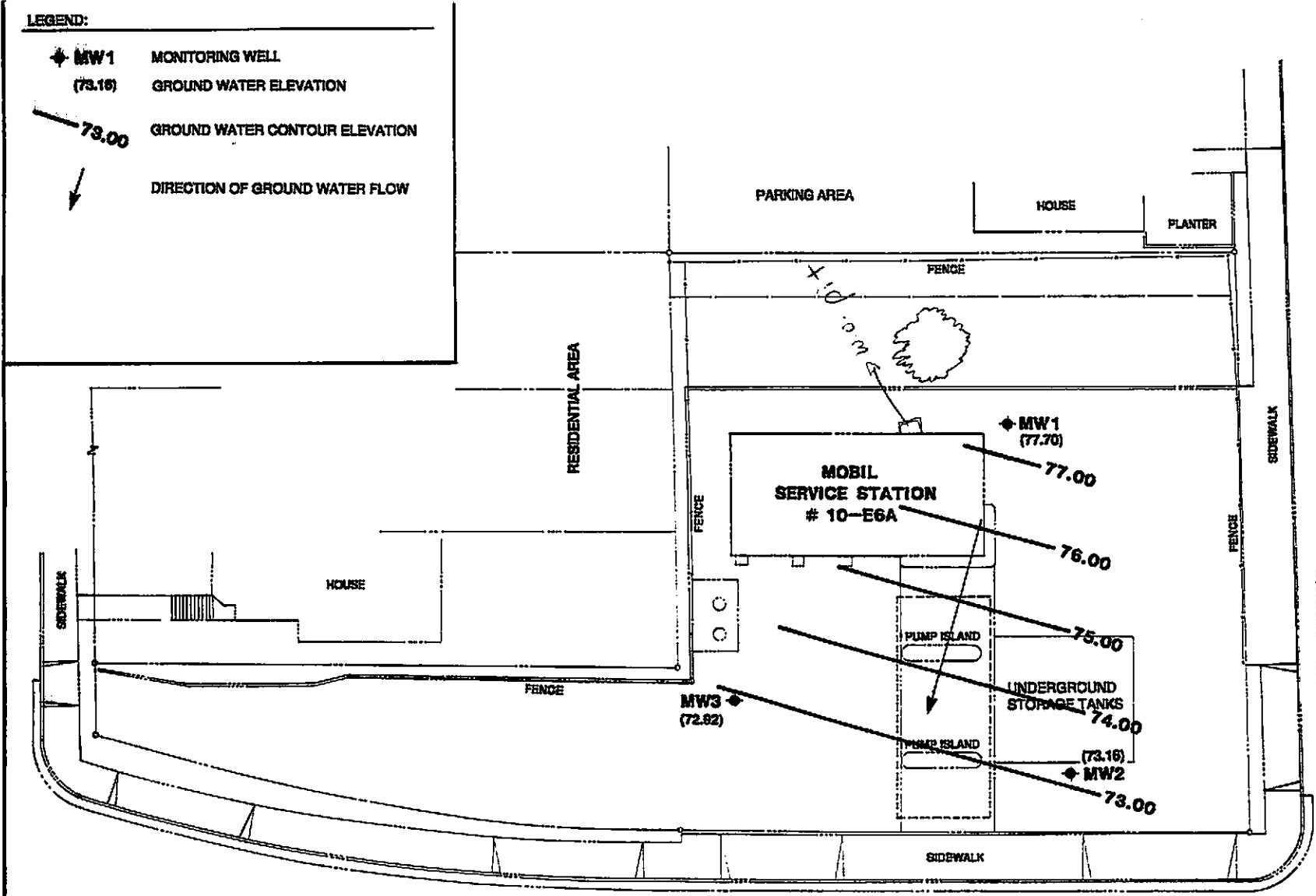
Figure 2. Site Plan Showing Monitoring Well Locations

PROJECT NO. 30-063



LEGEND:

- ◆ MW1 MONITORING WELL
- (73.18) GROUND WATER ELEVATION
- 73.00 GROUND WATER CONTOUR ELEVATION
- DIRECTION OF GROUND WATER FLOW



MAC ARTHUR BLVD

OAKLAND AVENUE

PROJECT NO. 30-063

Figure 3. Ground Water Contour Elevation



APPENDIX A
DRILLING AND SOIL SAMPLING

APPENDIX A

DRILLING AND SOIL SAMPLING

Soil borings/monitoring wells were drilled utilizing 10-inch-diameter, continuous-flight, hollow-stem augers. Boring B-1 was initially drilled with 8-inch-diameter, hollow-stem augers. It was determined that the installation of monitoring wells was necessary and therefore required re-drilling with 10-inch-diameter, hollow-stem augers. To avoid cross-contamination, the augers were steam-cleaned prior to drilling each boring.

Soil samples were obtained for soil description, field hydrocarbon vapor testing, and laboratory analysis. Samples were collected continuously from Boring B-1 and at 5-foot intervals in Borings B-2 and B-3.

Continuous sampling was performed using a 5-foot-long continuous core sampler fixed inside the lead auger. The core sampler was washed with a sodium tripolyphosphate solution and rinsed before each sampling event. Upon retrieval, the core sampler was split and 1.5-inch-diameter, stainless steel sample tubes were driven into the core.

Soil samples collected at 5-foot intervals were retrieved ahead of the lead auger utilizing 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 a sodium tripolyphosphate 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 both the 5-foot and 18-inch samplers, the sample tubes were removed and securely sealed with Teflon sheeting and polyurethane caps. In the 18-inch sampler, the bottom sample tube was removed and capped. The sample was labeled with sample identification, sample depth, geologist's initials, and date of collection. The soil sample was kept on dry ice prior to and during transport to a state-certified laboratory.

Soil immediately adjacent to that selected for laboratory analysis was tested for elevated hydrocarbon concentrations, with a Gastech Model 1238 combustible gas indicator (CGI). The CGI reading was taken after approximately 15 seconds and recorded on the boring log.

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 logs.

APPENDIX B
WELL PERMIT



ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
 5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

(1) LOCATION OF PROJECT 100 MacArthur Blvd
Oakland, CA

PERMIT NUMBER 89601
 LOCATION NUMBER _____

(2) CLIENT Name Mobil Oil - Steve Pao
 Address 3800 W. Alameda Ave Phone _____
 City Burbank, CA Zip 91505-2519

PERMIT CONDITIONS

Circled Permit Requirements Apply

(3) APPLICANT Name Matt Hopwood
Alton Geoscience
 Address 1170 Burnett Ave Phone 682-1582
 City Concord Zip 94520

(A.) GENERAL

1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling log and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(4) DESCRIPTION OF PROJECT
 Water Well Construction Geotechnical Investigation _____
 Cathodic Protection _____ General _____
 Well Destruction _____ Contamination _____

(B.) WATER WELLS, INCLUDING PIEZOMETERS

1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic, irrigation, and monitoring wells unless a lesser depth is specially approved.

(5) PROPOSED WATER WELL USE
 Domestic _____ Industrial _____ Irrigation _____
 Municipal _____ Monitoring Other _____

C. GEOTECHNICAL. Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

(6) PROPOSED CONSTRUCTION
 Drilling Method:
 Mud Rotary _____ Air Rotary _____ Auger
 Cable _____ Other _____

D. CATHODIC. Fill hole above anode zone with concrete placed by tremie.

DRILLER'S LICENSE NO. C57

E. WELL DESTRUCTION. See attached.

WELL PROJECTS
 Drill Hole Diameter 8 In. Maximum _____
 Casing Diameter 4 In. Depth 40 ft.
 Surface Seal Depth 15 ft. Number 3

GEOTECHNICAL PROJECTS
 Number of Borings _____ Maximum _____
 Hole Diameter _____ In. Depth _____ ft.

(7) ESTIMATED STARTING DATE 10/24/89
 ESTIMATED COMPLETION DATE 10/24/89

(8) I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68.

Approved Wyman Hong Date 12 Oct 89
 Wyman Hong

APPLICANT'S SIGNATURE [Signature] Date 10/11/89

APPENDIX C
BORING LOGS

ALTON GEOSCIENCE BORING LOG

PROJECT: 30-063

BORING DATE: 10-26-89

LOCATION: 100 MacArthur Boulevard, Oakland

GEOLOGIST: M. Hopwood

TYPE: 10" HSA

BORING NO.: MW-1

DRILLING COMPANY: Bay Area Exploration

DEPTH (FEET)	I	BLOW CTS	MATERIAL ENCOUNTERED	USCS
0			Asphalt Over Road Base Loose, dry, tan to orange, gravelly SAND.	GP
5		5,14,16	Loose, damp, tan to orange, gravelly SAND; wood fragments. CGI = ND.	GP
10		6,10,13	Loose, damp, tan to light brown, clayey SAND; poorly sorted. CGI = ND.	SC
15		8,8,25	Loose, very moist, tan to light brown, clayey SAND; some iron staining.	SC
20		9,9,12	Loose, saturated, tan to brown, gravelly SAND, with clay. CGI = ND.	GC
30			Medium stiff, moist, tan CLAY.	CL
35			Total Depth = 32 Feet	
40				

TPH = Total Petroleum Hydrocarbons
 TRPH = Total Recoverable Petroleum Hydrocarbons
 ▽ = Ground Water Piezometric Surface
 ND = Not Detected
 CGI = Combustible Gas Indicator

++ = Sample Analyzed for Hydrocarbon Concentration
 I = Sampling Interval
 ppm = Parts per Million
 LEL = Lower Explosive Limit

B = Benzene
 T = Toluene
 E = Ethylbenzene
 X = Xylene
 Total Depth = 32 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: 30-063

BORING DATE: 10-25-89

LOCATION: 100 MacArthur Boulevard, Oakland

GEOLOGIST: M. Hopwood

TYPE: 10" HSA

BORING NO.: MW-2

DRILLING COMPANY: Bay Area Exploration

DEPTH (FEET)	I	BLOW CTS	MATERIAL ENCOUNTERED	USCS
0			Asphalt Over Road Base Very loose, damp, dark brown, silty CLAY.	CL
5		3,4,7	Loose, damp, greenish gray, silty CLAY with some coarse sand; very slight odor. CGI = 75 ppm.	CL
10		2,4,6	Medium stiff, damp, tan, sandy SILTY/CLAY. CGI = ND.	CL
15	▼	5,7,12	Moderately stiff, damp, tan, clayey SILT.	ML
25			Stiff, damp, gray, silty CLAY; iron stains; calcite stringers.	CL
35			Total Depth - 32 Feet	
40				

TPH = Total Petroleum Hydrocarbons
 TRPH = Total Recoverable Petroleum Hydrocarbons
 ▼ = Ground Water Piezometric Surface
 ND = Not Detected
 CGI = Combustible Gas Indicator

++ = Sample Analyzed for Hydrocarbon Concentration
 I = Sampling Interval
 ppm = Parts per Million
 LEL = Lower Explosive Limit

B = Benzene
 T = Toluene
 E = Ethylbenzene
 X = Xylene
 Total Depth = 32 Feet

ALTON GEOSCIENCE BORING LOG

PROJECT: 30-063

BORING DATE: 10-26-89

LOCATION: 100 MacArthur Boulevard, Oakland

GEOLOGIST: M. Hopwood

TYPE: 10" HSA

BORING NO.: NW-3

DRILLING COMPANY: Bay Area Explored

DEPTH (FEET)	I	BLOW CTS	MATERIAL ENCOUNTERED	USCS
-			Asphalt Over Road Base	
-			Loose, dry, tan to orange, gravelly SAND.	GP
5		7,11,14	Moderately stiff, damp, tan to gray/green, silty CLAY, with gravel; some iron staining.	CL
10		3,5,6		
15		6,8,13	Moderately soft, damp, brown, silty CLAY.	CL
20			Moderately loose, damp, tan to brown, sandy CLAY.	CL
25			Soft, moist, tan CLAY.	CL
30			Becomes silty.	
35			Total Depth - 32 Feet	
40				

TPH = Total Petroleum Hydrocarbons
 TRPH = Total Recoverable Petroleum Hydrocarbons
 ▽ = Ground Water Piezometric Surface
 ND = Not Detected
 CGI = Combustible Gas Indicator

++ = Sample Analyzed for Hydrocarbon Concentration
 I = Sampling Interval
 ppm = Parts per Million
 LEL = Lower Explosive Limit

B = Benzene
 T = Toluene
 E = Ethylbenzene
 X = Xylene
 Total Depth = 32 Feet

APPENDIX D

**MONITORING WELL INSTALLATION PROCEDURES
AND CONSTRUCTION DETAILS**

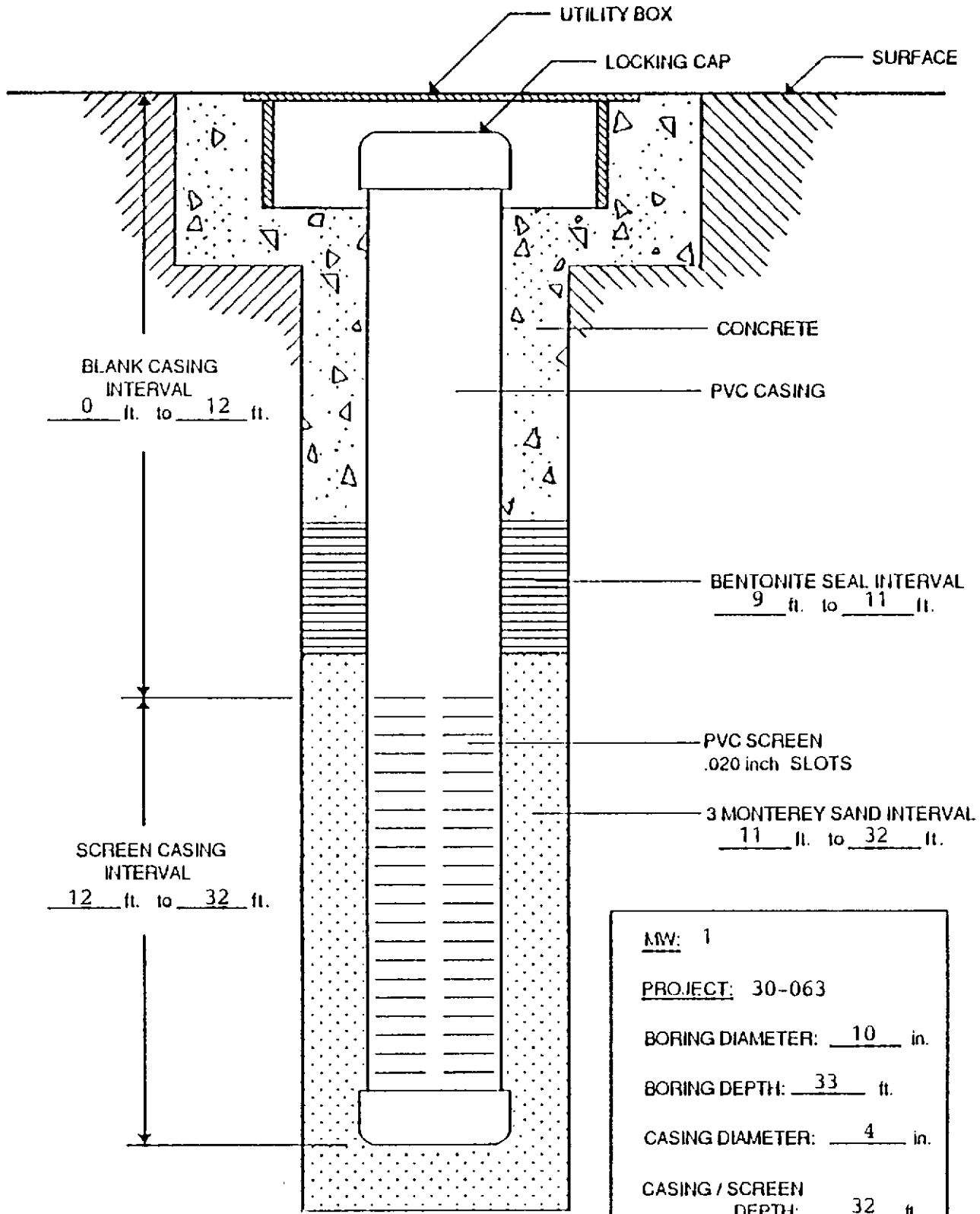
APPENDIX D

MONITORING WELL INSTALLATION AND CONSTRUCTION DETAILS

Included in this appendix are monitoring well installation and construction details for monitoring wells installed as part of this study.

Monitoring wells were constructed of 4-inch-diameter, flush-threaded, Schedule 40 PVC blank, and screened (0.020-inch slot size) casing. The annular space surrounding the screened portion was backfilled with No. 3 Monterey sand (filter pack) to approximately 1.5 feet above the top of the screened section. A 1.5-foot-thick bentonite annular seal was placed above the filter pack and the remaining annulus was grouted with neat cement to the surface. Utility boxes were installed slightly above grade to minimize infiltration of surface waters. Locking, water-tight well caps were installed to ensure the integrity of the well.

MONITORING WELL CONSTRUCTION DETAIL



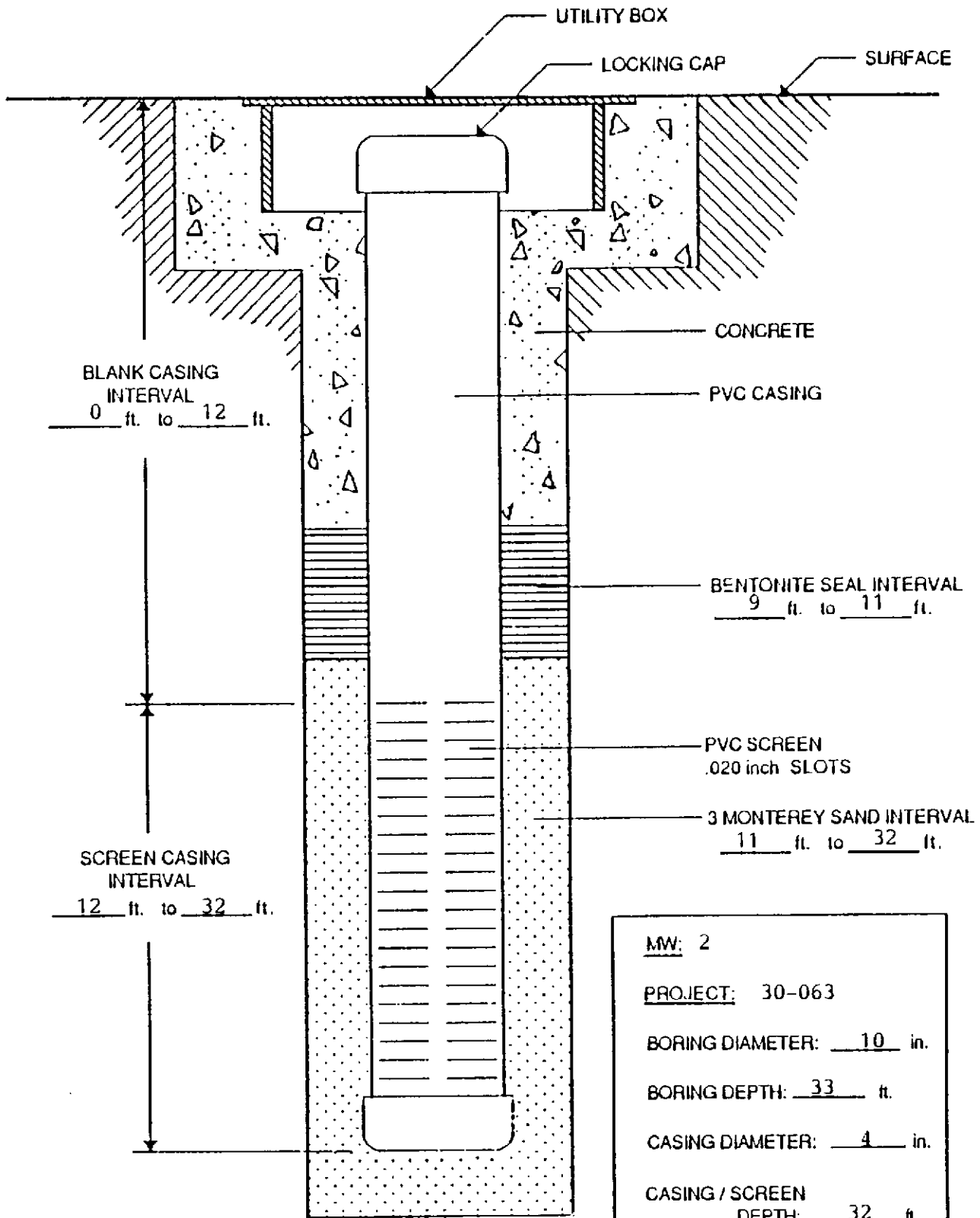
MW: 1
PROJECT: 30-063
BORING DIAMETER: 10 in.
BORING DEPTH: 33 ft.
CASING DIAMETER: 4 in.
CASING / SCREEN DEPTH: 32 ft.

NOTE: DRAWING IS NOT TO SCALE



ALTON GEOSCIENCE
1170 BURNETT AVE., STE S
CONCORD, CA 94520

MONITORING WELL CONSTRUCTION DETAIL



MW:	2
PROJECT:	30-063
BORING DIAMETER:	10 in.
BORING DEPTH:	33 ft.
CASING DIAMETER:	4 in.
CASING / SCREEN DEPTH:	32 ft.

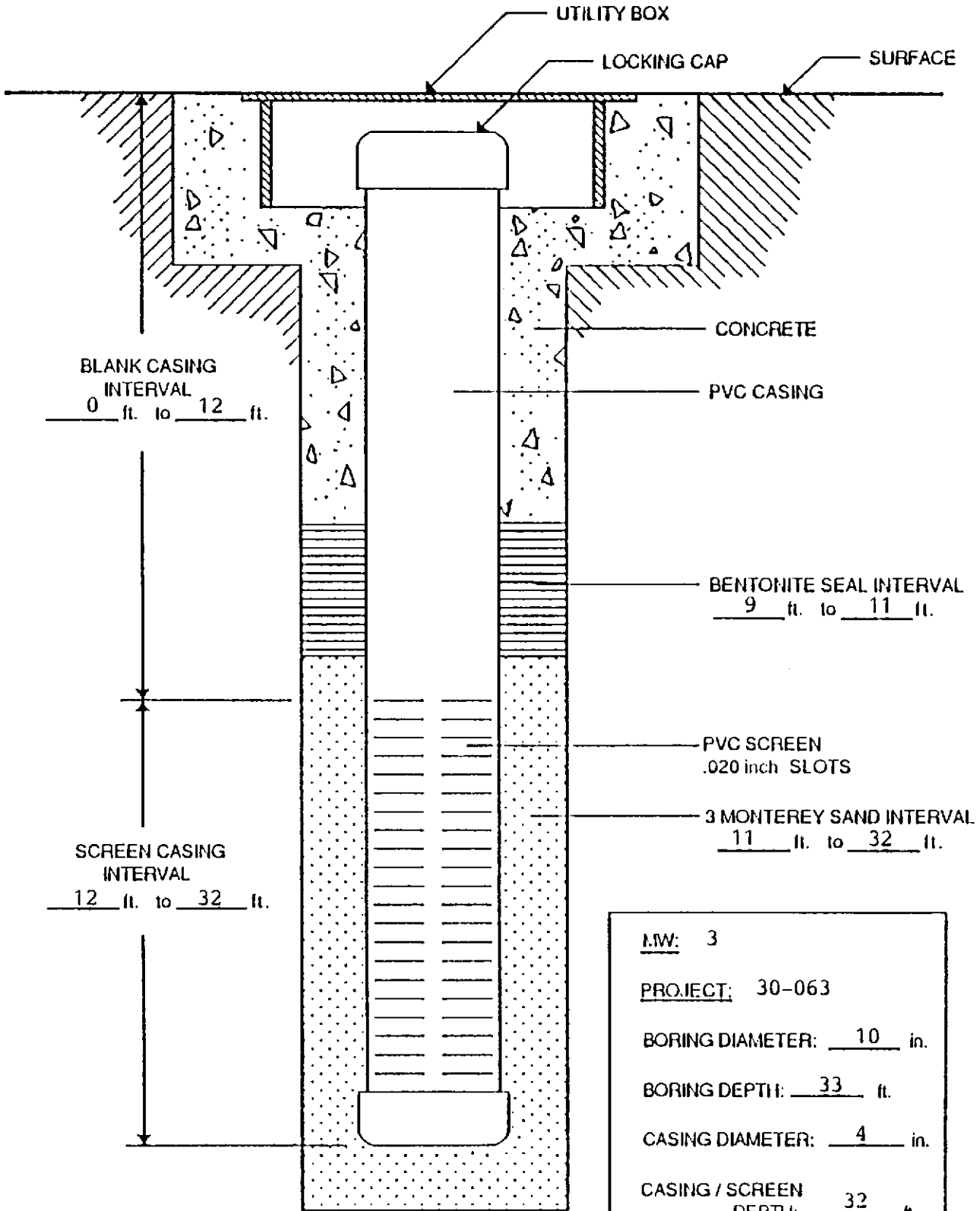
NOTE: DRAWING IS NOT TO SCALE



ALTON GEOSCIENCE

16510 ASTON ST.
IRVINE, CA 92714

MONITORING WELL CONSTRUCTION DETAIL



<u>M.W.:</u>	3
<u>PROJECT:</u>	30-063
<u>BORING DIAMETER:</u>	10 in.
<u>BORING DEPTH:</u>	33 ft.
<u>CASING DIAMETER:</u>	4 in.
<u>CASING / SCREEN DEPTH:</u>	32 ft.

NOTE: DRAWING IS NOT TO SCALE

ALTON GEOSCIENCE
 1170 BURNETT AVE., STE S
 CONCORD, CA 94520

APPENDIX E

**WELL DEVELOPMENT AND WATER SAMPLING
PROCEDURES AND FIELD SURVEY FORMS**

APPENDIX E

WELL DEVELOPMENT, WATER SAMPLING PROCEDURES, AND FIELD SURVEY FORMS

All purging and ground water sampling equipment was cleaned prior to use to minimize cross-contamination between wells. All equipment in contact with ground water was triple-rinsed prior to each sampling event in successive baths consisting of tripolyphosphate solution, tap water, and deionized water. Prior to sampling, the well was developed and purged in accordance with EPA protocol. During purging, pH, temperature, and electroconductivity were measured periodically until these parameters stabilized, indicating formation water had entered the well casing. The purged water was pumped into barrels prior to disposal or recycling at an appropriate waste disposal facility.

Ground water samples were collected by lowering a 2-inch-diameter, bottom-fill, Teflon bailer just below the water level in the well. The samples were carefully transferred from the check-valve-equipped Teflon bailer to zero-headspace 1-liter and 40-milliliter glass containers fitted with Teflon-sealed caps. All samples were inverted to ensure that entrapped air was not present. Each sample was labeled with sample number, well number, sample date, and geologist's initials. The samples remained on ice prior to laboratory analysis.

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey

Project # 30-063 Site: Mobil - Oakland Date: 11/4 & 11/9/89

Well: MW-1 Sampling Team: Hopwood/Shipp

Well Development Method: 0.5" Double Diaphragm Suction Pump

Sampling Method: Bailer

Describe Equipment Before Sampling This Well: Triple Rinse

Well Development Data - 11/4/89

Total Well Depth: 32 feet Time: _____ Water level Before Pumping: 13.21

Water Column	Casing Diameter		Volume	Factor	Volume to Purge
	2-inch	4-inch			
<u>19</u> feet x	<u>0.16</u>	<u>0.65</u>	<u>12.35</u>	<u>4</u>	<u>50</u>

Depth Purging From: 13-32 feet. Time Purging Begins: 10:00 a.m.

Notes on Initial Discharge: Very Silty

Time	Volume	pH	Conductivity	T	Notes
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Note: Initial discharge was very silty; production rate 2-3 gpm. Final discharge very clear. Total of 75 gallons purged.

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey
(Continued)

Project # 30-063 Site: Mobil, Oakland Well: MW-1
Date: _____

Well Sampling Data

Total Well Depth: 32 feet Time: _____ Water level Before Pumping: 13:32

Water Column	Casing Diameter		Volume	Factor	Volume to Purge
	2-inch	4-inch			
_____ feet x	0.16	0.65	_____	_____	_____

Time Field Parameter Measurement Begins: _____

	Rep #1	Rep #2	Rep #3	Rep #4
pH	<u>7.79</u>	<u>7.75</u>	<u>7.72</u>	<u>7.73</u>
Conductivity	<u>1.29</u>	<u>1.22</u>	<u>1.23</u>	<u>1.27</u>
Temperature (F)	<u>72.5</u>	<u>72.0</u>	<u>71.2</u>	<u>71.5</u>

Presample Collection Gallons Purged: 10

Time Sample Collection Begins: 10:40

Time Sample Collection Ends: 10:45

Total Gallons Purged: 11

Comments: _____

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey

Project # 30-063 Site: Mobil - Oakland Date: 11/4 & 11/9/89

Well: MW-2 Sampling Team: Hopwood/Shipp

Well Development Method: 0.5" Double Diaphragm Suction Pump

Sampling Method: Bailer

Describe Equipment Before Sampling This Well: Triple Rinse

Well Development Data - 11/4/89

Total Well Depth: 32 feet Time: _____ Water level Before Pumping: 15.84

Water Column	Casing Diameter		Volume	Factor	Volume to Purge
	2-inch	4-inch			
<u>16</u> feet x	<u>0.16</u>	<u>0.65</u>	<u>10.4</u>	<u>4</u>	<u>42</u>

Depth Purging From: 16-32 feet. Time Purging Begins: 11:00

Notes on Initial Discharge: See Below

Time	Volume	pH	Conductivity	T	Notes
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Note: Initial discharge very silty/clayey; production of about 1 gpm. Final discharge very clear but slow, $\frac{1}{4}$ to $\frac{1}{2}$ gpm. Total gallons purged - 32 due to extremely low rate.

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey
(Continued)

Page 2 of 2

Project # 30-063 Site: Mobil - Oakland Well: MW-2
Date: _____

Well Sampling Data

Total Well Depth: 32 feet Time: _____ Water level Before Pumping: 14.75

Water Column	Casing Diameter	Volume	Factor	Volume to Purge
_____ feet x	2-inch 4-inch	_____	_____	_____
	0.16 0.65			

Time Field Parameter Measurement Begins: _____

	<u>Rep #1</u>	<u>Rep #2</u>	<u>Rep #3</u>	<u>Rep #4</u>
pH	<u>7.65</u>	<u>7.43</u>	<u>7.21</u>	<u>7.30</u>
Conductivity	<u>1.16</u>	<u>1.10</u>	<u>1.25</u>	<u>1.20</u>
Temperature (F)	<u>70.0</u>	<u>70.2</u>	<u>69.6</u>	<u>70.0</u>

Presample Collection Gallons Purged: 13

Time Sample Collection Begins: 11:01

Time Sample Collection Ends: 11:03

Total Gallons Purged: 13

Comments: _____

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey

Page 1 of 2

Project # 30-063 Site: Mobil - Oakland Date: 11/4 & 11/9/89

Well: MW-3 Sampling Team: Hopwood/Shipp

Well Development Method: 0.5" Double Diaphragm Suction Pump

Sampling Method: Bailer

Describe Equipment Before Sampling This Well: Triple Rinse

Well Development Data

Total Well Depth: 32 feet Time: _____ Water level Before Pumping: 15.4

Water Column	Casing Diameter		Volume	Factor	Volume to Purge
	2-inch	4-inch			
<u>16</u> feet x	<u>0.16</u>	<u>0.65</u>	<u>10.4</u>	<u>4</u>	<u>42</u>

Depth Purging From: 15-32 feet. Time Purging Begins: 12:00

Notes on Initial Discharge: See Below

Time	Volume	pH	Conductivity	T	Notes
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

Note: Water very clean initially, with good flow rate (2 gpm) but with continued development well produced 1/4 gpm. Total of 42 gallons purged.

ALTON GEOSCIENCE, INC.
Well Development and
Water Sampling Field Survey
(Continued)

Project # 30-063 Site: Mobil - Oakland Well: MW-3
Date: 11/4 & 11/9/89

Well Sampling Data

Total Well Depth: 32 feet Time: _____ Water level Before Pumping: 14.1

Water Column	Casing Diameter		Volume	Factor	Volume to Purge
	2-inch	4-inch			
<u>16</u> feet x	<u>0.16</u>	<u>0.65</u>	<u>10.4</u>	<u>4</u>	<u>42</u>

Time Field Parameter Measurement Begins: _____

	<u>Rep #1</u>	<u>Rep #2</u>	<u>Rep #3</u>	<u>Rep #4</u>
pH	<u>7.77</u>	<u>7.84</u>	<u>7.70</u>	<u>7.65</u>
Conductivity	<u>1.16</u>	<u>1.15</u>	<u>1.21</u>	<u>1.25</u>
Temperature (F)	<u>69.5</u>	<u>70.1</u>	<u>70.7</u>	<u>71.3</u>

Presample Collection Gallons Purged: 10
Time Sample Collection Begins: 12:00
Time Sample Collection Ends: 12:03
Total Gallons Purged: 11

Comments: _____

APPENDIX F

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

APPENDIX F

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 and ground water samples selected for laboratory analysis. A description of laboratory methods and chain of custody procedures is presented below.

Laboratory Procedures

All laboratory analyses were performed by a state-certified laboratory in accordance with the following methods:

<u>Sample Analysis</u>	<u>Soil</u>	<u>Water</u>
Total Petroleum Hydrocarbons -Low to Med Boiling Point	EPA Methods 5030/8015	
Total Petroleum Hydrocarbons -High Boiling Point	EPA Method 3350/8015	---
Benzene, Toluene, Ethylbenzene, and xylenes	EPA Methods 5030/8020	
Organic Lead	California LUFT 12/87	
Total Recoverable Petroleum Hydrocarbons	EPA Method 418.1	---
Halogenated Volatile Organics	EPA Method 8240	---
Purgeable Halocarbons	---	EPA Method 601
Total Oil and Grease	---	EPA Method 503A&E

Chain Of Custody Procedure

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

ANAMETRIX INC

1170 Burnett Avenue, Suite 5
Concord, CA 94520
Tel: (415) 391-1170



REPORT

Matt Hopwood
Alton Geoscience
1170 Burnett Avenue
Suite S
Concord, CA 94520

November 06, 1989
Anamatrix W.O.#: 8910253
Date Received : 10/30/89
Project Number : 30-063

Dear Mr. Hopwood:

Your samples have been received for analysis. The REPORT SUMMARY lists your sample identifications and the analytical methods you requested. The following sections are included in this report: RESULTS and QUALITY ASSURANCE.

NOTE: Amounts reported are net values, i.e. corrected for method blank contamination.

If there is any more that we can do, please give us a call. Thank you for using ANAMETRIX, INC.

Sincerely,

ANAMETRIX, INC.

Sarah Schoen, Ph.D.
Laboratory Manager

SRS/dag

REPORT SUMMARY
ANAMETRIX, INC. (408) 432-8192

Client : Alton Geoscience
Address : 1170 Burnett Avenue
 Suite S
City : Concord, CA 94520
Attn. : Matt Hopwood

Anamatrix W.O.#: 8910253
Date Received : 10/30/89
Purchase Order#: N/A
Project No. : 30-063
Date Released : 11/06/89

Anamatrix I.D.	Sample I.D.	Matrix	Date Sampled	Method	Date Extract	Date Analyzed	Inst I.D.
----------------	-------------	--------	--------------	--------	--------------	---------------	-----------

RESULTS

8910253-01	MW-1/5	SOIL	10/26/89	8010		10/31/89	HP10
8910253-02	MW-1/10	SOIL	10/26/89	8010		10/31/89	HP10
8910253-03	MW-1/15	SOIL	10/26/89	8010		10/31/89	HP10
8910253-01	MW-1/5	SOIL	10/26/89	TPH	10/31/89	11/02/89	N/A
8910253-02	MW-1/10	SOIL	10/26/89	TPH	10/31/89	11/02/89	N/A
8910253-03	MW-1/15	SOIL	10/26/89	TPH	10/31/89	11/02/89	N/A
8910253-04	MW-2/5	SOIL	10/25/89	TPHg		11/02/89	N/A
8910253-05	MW-2/10	SOIL	10/25/89	TPHg		11/02/89	N/A
8910253-06	MW-2/15	SOIL	10/25/89	TPHg		11/02/89	N/A
8910253-07	MW-3/5	SOIL	10/25/89	TPHg		11/03/89	N/A
8910253-08	MW-3/10	SOIL	10/25/89	TPHg		11/02/89	N/A
8910253-09	MW-3/15	SOIL	10/25/89	TPHg		11/02/89	N/A

QUALITY ASSURANCE (QA)

10B1031H01	METHOD BLANK	SOIL	N/A	8010		10/31/89	HP10
SPK103189	METHOD SPIKE	SOIL	N/A	SPIKE		10/31/89	HP10
8910253-01	MW-1/5	SOIL	10/26/89	SPIKE	11/01/89	11/01/89	N/A
8910253-08	MW-3/10	SOIL	10/25/89	SPIKE		11/02/89	N/A

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-1/5
Matrix : SOIL
Date sampled : 10/26/89
Date analyzed: 10/31/89
Dilution : NONE

Anamatrix I.D. : 8910253-01
Analyst : LY
Supervisor : CP
Date released : 11/06/89
Instrument ID : HP10

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	ND
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	ND
75-34-3	* 1,1-Dichloroethane	0.5	ND
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	ND
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	ND
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
% Surrogate Recovery		33-134%	66%

ND : Not detected at or above the practical quantitation limit for the method.

* A 601/8010 approved compound (Federal Register, 10/26/84).

A compound added by Anamatrix, Inc.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-1/10
 Matrix : SOIL
 Date sampled : 10/26/89
 Date analyzed: 10/31/89
 Dilution : NONE

Anamatrix I.D. : 8910253-02
 Analyst : CP
 Supervisor : CP
 Date released : 11/06/89
 Instrument ID : HP10

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	ND
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	ND
75-34-3	* 1,1-Dichloroethane	0.5	ND
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	ND
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	ND
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
	% Surrogate Recovery	33-134%	68%

ND : Not detected at or above the practical quantitation limit for the method.

* A 601/8010 approved compound (Federal Register, 10/26/84).

A compound added by Anamatrix, Inc.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-1/15
 Matrix : SOIL
 Date sampled : 10/26/89
 Date analyzed: 10/31/89
 Dilution : NONE

Anamatrix I.D. : 8910253-03
 Analyst : *LY*
 Supervisor : *CP*
 Date released : 11/06/89
 Instrument ID : HP10

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	ND
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	ND
75-34-3	* 1,1-Dichloroethane	0.5	ND
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	ND
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	ND
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
% Surrogate Recovery		33-134%	66%

ND : Not detected at or above the practical quantitation limit for the method.

* A 601/8010 approved compound (Federal Register, 10/26/84).

A compound added by Anamatrix, Inc.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-1/5
 Matrix : SOIL
 Date sampled : 10/26/89
 Date anl.BTEX: 11/02/89
 Date ext.TPHd: 10/31/89
 Date anl.TPHd: 11/02/89

Anametrix I.D. : 8910253-01
 Analyst : CB
 Supervisor : rL
 Date released : 11/06/89
 Date ext. TOG : 11/01/89
 Date anl. TOG : 11/01/89

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Diesel	10000	ND
	Total Oil & Grease	30000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.

TOG - Total Oil & Grease is determined by Standard Method 503E.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-1/10	Anamatrix I.D. : 8910253-02
Matrix : SOIL	Analyst : CB
Date sampled : 10/26/89	Supervisor : TC
Date anl.BTEX: 11/02/89	Date released : 11/06/89
Date ext.TPHd: 10/31/89	Date ext. TOG : 11/01/89
Date anl.TPHd: 11/02/89	Date anl. TOG : 11/01/89

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Diesel	10000	ND
	Total Oil & Grease	30000	ND

- ND - Not detected at or above the practical quantitation limit for the method.
- TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.
- TOG - Total Oil & Grease is determined by Standard Method 503E.
- BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-1/15
 Matrix : SOIL
 Date sampled : 10/26/89
 Date anl.BTEX: 11/02/89
 Date ext.TPHd: 10/31/89
 Date anl.TPHd: 11/02/89

Anamatrix I.D. : 8910253-03
 Analyst : CB
 Supervisor : TC
 Date released : 11/06/89
 Date ext. TOG : 11/01/89
 Date anl. TOG : 11/01/89

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Diesel	10000	ND
	Total Oil & Grease	30000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHd - Total Petroleum Hydrocarbons as diesel is determined by GCFID following either EPA Method 3510 or 3550.

TOG - Total Oil & Grease is determined by Standard Method 503E.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-2/5
 Matrix : SOIL
 Date sampled : 10/25/89
 Date anl.TPHg: 11/02/89
 Date ext.TPHd: N/A
 Date anl.TPHd: N/A

Anamatrix I.D. : 8910253-04
 Analyst : *CB*
 Supervisor : *TC*
 Date released : 11/06/89
 Date ext. TOG : N/A
 Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	6
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Gasoline	1000	ND

- ND - Not detected at or above the practical quantitation limit for the method.
 TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
 BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-2/10
 Matrix : SOIL
 Date sampled : 10/25/89
 Date anl.TPHg: 11/02/89
 Date ext.TPHd: N/A
 Date anl.TPHd: N/A

Anametrix I.D. : 8910253-05
 Analyst : CB
 Supervisor : TC
 Date released : 11/06/89
 Date ext. TOG : N/A
 Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	8
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Gasoline	1000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-2/15
 Matrix : SOIL
 Date sampled : 10/25/89
 Date anl.TPHg: 11/02/89
 Date ext.TPHd: N/A
 Date anl.TPHd: N/A

Anamatrix I.D. : 8910253-06
 Analyst : *CB*
 Supervisor : *TC*
 Date released : 11/06/89
 Date ext. TOG : N/A
 Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Gasoline	1000	ND

- ND - Not detected at or above the practical quantitation limit for the method.
 TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.
 BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-3/5
 Matrix : SOIL
 Date sampled : 10/25/89
 Date anl.TPHg: 11/03/89
 Date ext.TPHd: N/A
 Date anl.TPHd: N/A

Anametrix I.D. : 8910253-07
 Analyst : CB
 Supervisor : TC
 Date released : 11/06/89
 Date ext. TOG : N/A
 Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	6
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	13
	TPH as Gasoline	1000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-3/10
 Matrix : SOIL
 Date sampled : 10/25/89
 Date anl.TPHg: 11/02/89
 Date ext.TPHd: N/A
 Date anl.TPHd: N/A

Anamatrix I.D. : 8910253-08
 Analyst : *JB*
 Supervisor : *TC*
 Date released : 11/06/89
 Date ext. TOG : N/A
 Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Gasoline	1000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ANALYSIS DATA SHEET - PETROLEUM HYDROCARBON COMPOUNDS
ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-3/15
 Matrix : SOIL
 Date sampled : 10/25/89
 Date anl.TPHg: 11/02/89
 Date ext.TPHd: N/A
 Date anl.TPHd: N/A

Anamatrix I.D. : 8910253-09
 Analyst : *CB*
 Supervisor : *TC*
 Date released : 11/06/89
 Date ext. TOG : N/A
 Date anl. TOG : N/A

CAS #	Compound Name	Reporting Limit (ug/kg)	Amount Found (ug/kg)
71-43-2	Benzene	5	ND
108-88-3	Toluene	5	ND
100-41-4	Ethylbenzene	5	ND
1330-20-7	Total Xylenes	5	ND
	TPH as Gasoline	1000	ND

ND - Not detected at or above the practical quantitation limit for the method.

TPHg - Total Petroleum Hydrocarbons as gasoline is determined by GCFID using EPA Method 5030.

BTEX - Benzene, Toluene, Ethylbenzene, and Total Xylenes are determined by modified EPA 8020.

All testing procedures follow California Department of Health Services (Cal-DHS) approved methods.

ORGANIC ANALYSIS DATA SHEET - EPA METHOD 601/8010
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : METHOD BLANK
 Matrix : SOIL
 Date sampled : N/A
 Date analyzed: 10/31/89
 Dilution : NONE

Anamatrix I.D. : 10B1031H01
 Analyst : LY
 Supervisor : CE
 Date released : 11/06/89
 Instrument ID : HP10

CAS #	Compound Name	Reporting Limit (ug/Kg)	Amount Found (ug/Kg)
74-87-3	* Chloromethane	1	ND
74-83-9	* Bromomethane	0.5	ND
75-71-8	* Dichlorodifluoromethane	1	ND
75-01-4	* Vinyl Chloride	0.5	ND
75-00-3	* Chloroethane	0.5	ND
75-09-2	* Methylene Chloride	0.5	1.2
79-69-4	* Trichlorofluoromethane	0.5	ND
75-35-4	* 1,1-Dichloroethene	0.5	ND
75-34-3	* 1,1-Dichloroethane	0.5	ND
156-59-2	# Cis-1,2-Dichloroethene	0.5	ND
156-60-5	* Trans-1,2-Dichloroethene	0.5	ND
67-66-3	* Chloroform	0.5	ND
76-13-1	# Trichlorotrifluoroethane	0.5	ND
107-06-2	* 1,2-Dichloroethane	0.5	ND
71-55-6	* 1,1,1-Trichloroethane	0.5	ND
56-23-5	* Carbon Tetrachloride	0.5	ND
75-27-4	* Bromodichloromethane	0.5	ND
78-87-5	* 1,2-Dichloropropane	0.5	ND
10061-02-6	* Trans-1,3-Dichloropropene	0.5	ND
79-01-6	* Trichloroethene	0.5	ND
124-48-1	* Dibromochloromethane	0.5	ND
79-00-5	* 1,1,2-Trichloroethane	0.5	ND
10061-01-5	* cis-1,3-Dichloropropene	0.5	ND
110-75-8	* 2-Chloroethylvinylether	1	ND
75-25-2	* Bromoform	0.5	ND
127-18-4	* Tetrachloroethene	0.5	ND
79-34-5	* 1,1,2,2-Tetrachloroethane	0.5	ND
108-90-7	* Chlorobenzene	0.5	ND
95-50-1	* 1,2-Dichlorobenzene	1	ND
541-73-1	* 1,3-Dichlorobenzene	1	ND
106-46-7	* 1,4-Dichlorobenzene	1	ND
	% Surrogate Recovery	33-134%	90%

ND : Not detected at or above the practical quantitation limit for the method.

* A 601/8010 approved compound (Federal Register, 10/26/84).

A compound added by Anamatrix, Inc.

HALOGENATED VOLATILE RECOVERY REPORT
EPA METHOD 601/8010

Sample I.D. : METHOD SPIKE
Matrix : WATER
Date sampled : NA
Date analyzed : 10/31/89

Anamatrix I.D. : SPK103189
Analyst : LY
Supervisor : CP
Date released : 11/06/89
Instrument I.D.: HP10

COMPOUND	SPIKE AMT. (ug/L)	MS (ug/L)	REC MS	MSD (ug/L)	REC MSD	RPD	%REC LIMITS
1,1-DICHLOROETHENE	4	4.6	115%	4.8	120%	-4%	53 - 143
METHYLENE CHLORIDE	20	21.5	108%	21.9	110%	-2%	21 - 123
trans-1,2-DICHLOROETHENE	4	4.4	110%	4.6	115%	-4%	45 - 147
1,1-DICHLOROETHANE	4	4.7	118%	4.9	123%	-4%	75 - 141
1,1,1-TRICHLOROETHANE	4	4.2	105%	4.4	110%	-5%	71 - 138
CARBON TETRACHLORIDE	4	4.5	113%	4.6	115%	-2%	85 - 138
1,2-DICHLOROETHANE	4	4.6	115%	4.7	118%	-2%	71 - 153
TRICHLOROETHENE	4	4.6	115%	4.8	120%	-4%	65 - 149
1,2-DICHLOROPROPANE	4	4.7	118%	4.9	123%	-4%	77 - 131
cis-1,3-DICHLOROPROPENE	5	5.1	102%	5.3	106%	-4%	92 - 146
trans-1,3-DICHLOROPROPENE	3	3.4	113%	3.5	117%	-3%	91 - 115
1,1,2-TRICHLOROETHANE	4	4.9	123%	5.1	128%	-4%	87 - 132
TETRACHLOROETHENE	4	4.8	120%	4.9	123%	-2%	83 - 147
CHLOROBENZENE	20	21.6	108%	22.5	113%	-4%	72 - 123
1,1,2,2-TETRACHLOROETHANE	4	4.7	117%	5.1	128%	-9%	71 - 121
1,3-DICHLOROBENZENE	20	20.2	101%	21.9	110%	-8%	78 - 129
1,4-DICHLOROBENZENE	20	18.4	92%	20.3	102%	-10%	80 - 118
1,2-DICHLOROBENZENE	20	20.7	104%	22.5	113%	-8%	76 - 127

* Limits based on data generated by Anamatrix, Inc., 1988.

TOTAL OIL AND GREASE MATRIX SPIKE
 STANDARD METHOD 503E
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-1/5	Anametrix I.D. : 8910253-01
Matrix : SOIL	Analyst : <i>ICD</i>
Date Sampled : 10/26/89	Supervisor : <i>DJG</i>
Date extracted: 11/01/89	Date Released : 11/06/89
Date analyzed : 11/01/89	

COMPOUND	SPIKE AMT. (UG/Kg)	8910253 MS (UG/Kg)	%REC MS	8910253 MSD (UG/Kg)	%REC MSD	RPD	%REC LIMITS
Motor Oil	300000	210000	70%	170000	57%	21%	45-115%

TOTAL VOLATILE HYDROCARBON MATRIX SPIKE REPORT
 EPA METHOD 5030 WITH GC/FID
 ANAMETRIX, INC. (408) 432-8192

Sample I.D. : 30-063 MW-3/10
 Matrix : SOIL
 Date sampled : 10/25/89
 Date analyzed : 11/02/89

Anamatrix I.D. : 8910253-08
 Analyst : CB
 Supervisor : TC
 Date Released : 11/06/89

COMPOUND	SPIKE AMT. (ug/Kg)	MS (ug/Kg)	%REC MS	MSD (ug/Kg)	%REC MSD	RPD	%REC LIMITS
Gasoline	1000	890	89%	920	92%	3%	50-150

* Limits established by Anamatrix, Inc.

SUPERIOR ANALYTICAL LABORATORY INC.

825 ARNOLD, STE. 2 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 80244
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-063

DATE RECEIVED: 11/10/89
DATE REPORTED: 11/17/89

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (mg/L) Gasoline Range
1	MW-1	ND<0.1
2	MW-2	ND<0.1
3	MW-3	ND<0.1

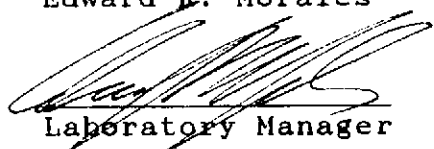
mg/L - parts per million (ppm)

Method Detection Limit for Gasoline in Soil: 0.5 mg/kg
Method Detection Limit for Gasoline in Water: 0.1 mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = 7%
MS/MSD Average Recovery = 113% : Duplicate RPD = 1%

Edward B. Morales



Laboratory Manager

SAN FRANCISCO

MARTINEZ

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORY INC.

825 ARNOLD, STE. 2 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 80244
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-063

DATE RECEIVED: 11/10/89
DATE REPORTED: 11/17/89

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/L)			
		Benzene	Toluene	Ethyl Benzene	Xylenes
1	MW-1	3.4	0.6	ND<0.3	ND<0.3
2	MW-2	6.5	ND<0.3	ND<0.3	ND<0.3
3	MW-3	ND<0.3	ND<0.3	ND<0.3	ND<0.3

ug/L - parts per billion (ppb)

ug/kg - parts per billion (ppb)

Method Detection Limit in Soil: 3 ug/kg

Method Detection Limit in Water: 0.3 ug/L

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15%

MS/MSD Average Recovery = 90% : Duplicate RPD = <8%

Edward R. Morales



Laboratory Manager

SAN FRANCISCO

MARTINEZ

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORY INC.

825 ARNOLD, STE. 2 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 80244
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-063

DATE RECEIVED: 11/10/89
DATE REPORTED: 11/17/89

ANALYSIS FOR TOTAL OIL AND GREASE
by Method 503E

LAB #	Sample Identification	Concentration (mg/L) Oil & Grease
1	MW-1	ND<5

mg/L - parts per million (ppm)

Method Detection Limit for Oil and Grease in Soil: 20mg/kg
Method Detection Limit for Oil and Grease in Water: 5mg/L

QAQC Summary: Duplicate RPD : 0%

Edward R. Morales



Laboratory Manager

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SUPERIOR ANALYTICAL LABORATORY INC.

825 ARNOLD, STE. 2 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 80244
CLIENT: Alton Geoscience
CLIENT JOB NO.: 30-063

DATE RECEIVED: 11/10/89
DATE REPORTED: 11/17/89

ANALYSIS FOR TOTAL OIL AND GREASE
by Method 503E

LAB #	Sample Identification	Concentration (mg/L) Oil & Grease
1	MW-1	ND<5

mg/L - parts per million (ppm)

Method Detection Limit for Oil and Grease in Soil: 20mg/kg
Method Detection Limit for Oil and Grease in Water: 5mg/L

QAQC Summary: Duplicate RPD : 0%

Edward R. Morales



Laboratory Manager

SUPERIOR ANALYTICAL LABORATORY, INC.

1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

C E R T I F I C A T E O F A N A L Y S I S

LABORATORY NO.: 51359
 CLIENT: Alton Geoscience
 JOB NO.: 30-063

DATE SAMPLED: 11/10/89
 DATE RECEIVED: 11/10/89
 DATE ANALYZED: 11/17/89

EPA SW-846 METHOD 8010
 HALOGENATED VOLATILE ORGANICS
 SAMPLE: MW-1

Compound	MDL (ug/L)	RESULTS (ug/l)
Chloromethane	0.5	ND <0.5
Bromomethane	0.5	ND <0.5
Vinyl chloride	1.0	ND <1.0
Dichlorodifluoromethane	0.5	ND <0.5
Chloroethane	0.5	ND <0.5
Methylene chloride	4.0	ND <4.0
Trichlorofluoromethane	0.5	ND <0.5
1,1-Dichloroethene	0.2	ND <0.2
1,1-Dichloroethane	0.5	ND <0.5
trans-1,2-Dichloroethene	0.5	ND <0.5
Chloroform	0.5	ND <0.5
<u>1,2-Dichloroethane</u>	0.5	<u>0.9</u>
1,1,1-Trichloroethane	0.5	ND <0.5
Carbon tetrachloride	0.5	ND <0.5
Bromodichloromethane	0.5	ND <0.5
1,2-Dichloropropane	0.5	ND <0.5
cis-1,3-Dichloropropene	0.5	ND <0.5
Trichloroethylene	0.5	ND <0.5
1,1,2-Trichloroethane	0.5	ND <0.5
trans-1,3-Dichloropropene	0.5	ND <0.5
Dibromochloromethane	0.5	ND <0.5
2-Chloroethylvinyl ether	1.0	ND <1.0
Bromoform	0.5	ND <0.5
Tetrachloroethene /		
1,1,2,2-Tetrachloroethane	0.5	ND <0.5
Chlorobenzene	0.5	ND <0.5
1,3-Dichlorobenzene	0.5	ND <0.5
1,2-Dichlorobenzene	0.5	ND <0.5
1,4-Dichlorobenzene	0.5	ND <0.5
1,1,2-Trichlorotrifluoroethane	0.5	ND <0.5

MDL = Method Detection Limit
 ug/l = parts per billion (ppb)

QA/QC Summary: Daily Standard RPD = <15%

MS/MSD average recovery = 110 % : MS/MSD RPD = < 7%

Richard Srna, Ph.D.

Richard Srna
 Laboratory Director

