SUPPLEMENTAL SITE INVESTIGATION REPORT

5/05

BP Oil Company
Service Station No. 11107
18501 Hesperian Boulevard
San Lorenzo, California

Project No. 10-060

April 1995

SUPPLEMENTAL SITE INVESTIGATION REPORT

BP Oil Company Service Station No. 11107
18501 Hesperian Boulevard
San Lorenzo, California

Project No. 10-060

Prepared for:

BP Oil Company
Environmental Resources Management
295 SW 41st Street
Building 13, Suite N
Renton, Washington

Prepared by:

Alisto Engineering Group
1777 Oakland Boulevard, Suite 200
Walnut Creek, California
295-1650

April 27, 1995

John DeGeorge
Geologist

Al Sevilla, P.E.
Principal

Bill Howell new Project Manager as of 10/2/95 call.

REGISTERED PROFESSIONAL ENGINEER
ALBERTO SANCHEZ SEVILLA
26332
Exp. Date 3/31/96
CIVIL
STATE OF CALIFORNIA

TABLE OF CONTENTS

1.0 INTRODUCTION

Alisto Engineering Group was retained by BP Oil Company to perform a supplemental site investigation at BP Oil Company Service Station No. 11107, 18501 Hesperian Boulevard, San Lorenzo, California. The work was performed under BP Oil Contract Release No. F937601 dated February 25, 1993. A site vicinity map is shown in Figure 1.

1.1 Purpose and Scope of Work

This work was performed to further assess the nature and extent of petroleum hydrocarbons in the subsurface soil and/or groundwater at the site and comply with applicable regulations of the governing regulatory agencies. The scope of work for this investigation included the following:

- Procured permits to install groundwater monitoring wells.
- Drilled and logged exploratory soil borings and collected soil samples.
- Installed three groundwater monitoring wells, MW-5, MW-6, and MW-7.
- Developed and surveyed the additional monitoring wells.
- Monitored and sampled Wells MW-1 through MW-7.
- Analyzed the soil and groundwater samples for specific hydrocarbon constituents.
- Evaluated the data and analytical results and prepared this report.

The above tasks and related field and sampling activities were performed in accordance with the requirements of the Alameda County Flood Control and Water Conservation District (Zone 7), Alameda County Health Care Services Agency (ACHCSA), and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB).

1.2 Site Description

BP Oil Company Service Station No. 11107 is on the southwest corner of the intersection of Hesperian Boulevard and Bockman Road, San Lorenzo, California. The site is a service station with three underground fuel storage tanks and one underground used oil tank. Figure 2 shows the layout of the site and the locations of the storage tanks.

The properties in the immediate vicinity of the site are a mixture of residential and commercial developments. To the west and adjacent to the site is the Kwik Milady Dry Cleaners. Approximately 500 feet to the north is a Unocal service station. To the north of the Unocal service station and approximately 1000 feet to the north of the BP Oil service station is an ARCO Products Company service station with groundwater monitoring wells.

1.3 Project Background

On October 22, 1992, four exploratory soil borings (B-1 through B-4) were drilled to depths ranging from approximately 25 to 30 feet and converted to groundwater Monitoring Wells MW-1 through MW-4.

Analysis of soil samples collected from Boring B-3 at 21 feet below grade and B-4 at 16 and 20 feet below grade detected up to 51 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPH-G) and 0.4 mg/kg benzene (Alisto, 1993). The results of soil sample analysis are presented in Table 1.

Analysis of groundwater samples collected from MW-1 has detected total petroleum hydrocarbons as diesel (TPH-D) up to 50 micrograms per liter (ug/l), and tetrachloroethene (PCE) and 1,1,1-trichloroethane (1,1,1-TCA) up to 2.8 ug/l. Petroleum hydrocarbons have not been detected at or above reported detection limits in samples collected from MW-2. Analysis of groundwater samples collected from MW-3 and MW-4 has detected up to 900 ug/l TPH-G and 150 ug/l benzene (Alisto, 1994). The results of groundwater analysis are presented in Tables 2 and 3.

2.0 FIELD METHODS

Following are field methods used during this investigation including soil sampling; well construction; and well development, sampling, and surveying. A permit to install monitoring wells was acquired from Zone 7 and an encroachment permit to install a well in the public right-of-way was acquired from Alameda County Public Works. A copy of both permits is presented in Appendix A.

2.1 Drilling and Soil Sampling

On February 15, 1995, three exploratory soil borings were drilled to approximately 25 feet below grade. Drilling was performed by Soils Exploration Services, Benicia, California, using a CME'75 drilling rig equipped with 8-inch-diameter, hollow-stem augers. Soil samples were collected at 5-foot intervals and field-screened using an organic vapor meter. Drilling and soil sampling procedures are presented in Appendix B. Soil samples were transported in an iced cooler to a state-certified laboratory following chain of custody procedures.

Boring logs were prepared using the Unified Soil Classification System including a description of soil characteristics such as color, moisture, consistency, and grain size. The boring logs generated during this and previous investigations are presented in Appendix C.

2.2 Monitoring Well Installation and Construction

The three soil borings were converted into Monitoring Wells MW-5, MW-6, and MW-7 in accordance with the field procedures for groundwater monitoring well installation presented in Appendix B. The wells were constructed of 2-inch-diameter, flush-threaded, Schedule 40

PVC casing. Blank casing was installed from ground surface to approximately 12 feet below grade and 0.010-inch slotted casing from approximately 12 to 25 feet below grade. Well construction details are included on the boring logs in Appendix C.

2.3 Monitoring Well Development and Sampling

Well development and sampling was performed in accordance with the guidelines of the ACHCSA and RWQCB. Field procedures for groundwater monitoring well development and sampling are presented in Appendix D.

Monitoring Wells MW-5, MW-6, and MW-7 were developed on February 16, 1995 by removing at least 10 casing volumes while alternately using a surge block and pump. The well development data are presented in the field survey forms in Appendix E.

On March 1, 1995, groundwater samples were collected from Monitoring Wells MW-1 through MW-7. The wells were purged of at least 3 well casing volumes before sample collection, while monitoring pH, specific conductivity, and temperature. The samples were transported in an iced cooler to a state-certified laboratory following chain of custody procedures. The groundwater sampling data are presented in the field survey forms in Appendix E.

2.4 Groundwater Level Monitoring and Well Surveying

Monitoring Wells MW-5, MW-6, and MW-7 were surveyed to the top of well casing by a licensed land surveyor, Andreas P. Deak, Alameda, California, in reference to an established benchmark. On March 1, 1995, the depth to groundwater in Wells MW-1 through MW-7 was measured from the top of well casing to the nearest 0.01 foot, using an electronic sounder. The survey data and relative groundwater elevation measurements are presented in Table 2, and a graphical interpretation of the groundwater gradient beneath the site is shown in Figure 3. Well elevation survey maps for the monitoring wells are included in Appendix F.

3.0 SITE GEOLOGY AND HYDROGEOLOGY

The site is in the Coast Range Geomorphic Province, on the eastern side of San Francisco Bay, approximately 4 miles to the west of the Hayward Fault. The uppermost geologic member consists primarily of Quaternary alluvial deposits. The Quaternary alluvium is composed of unconsolidated to semi-consolidated bay mud, silt, sand, and gravel. The site is approximately 40 feet above mean sea level. The topography of the vicinity slopes gently to the west, toward San Francisco Bay (Page, Ben M., 1966).

Soil types encountered in MW-5, MW-6, and MW-7 generally consisted of silty sand and sandy silt to approximately 8 feet below grade, underlain by sand to approximately 13 feet below grade. Sandy silt and sand with silt and clay was encountered from approximately 13 to 23 feet below grade. A clayey silt, clayey sand, and sandy clay were encountered from approximately 23 feet below grade to the total depth of each boring at approximately 25 feet.

Hydrogeologic cross sections prepared using boring logs generated during this and previous investigations are shown in Figure 4.

During drilling, groundwater was noted at approximately 15.0 feet below grade. During sampling, groundwater was measured to be between 15.5 and 17.5 feet below the top of casing in Wells MW-1 through MW-7. Groundwater elevations as measured on March 1, 1995 were used to develop the groundwater potentiometric surface map shown in Figure 3. The groundwater elevation data indicate a gradient of approximately 0.005 foot per foot in a west-northwesterly direction across the site.

4.0 ANALYTICAL METHODS

Analytical Technologies, Inc., a state-certified laboratory, analyzed the soil and groundwater samples using standard test methods of the U.S. Environmental Protection Agency (EPA) and the California Department of Health Services (DHS). The soil and groundwater samples were analyzed for the following:

- TPH-G using EPA Method 8015
- Benzene, toluene, ethylbenzene, and total xylenes using EPA Method 8020

The groundwater sample from Well MW-1 was additionally analyzed for the following:

- TPH-D using EPA Method 8015
- Total oil and grease (TOG) using EPA Method 413.2
- Halogenated volatile organic compounds (HVOCs) using EPA Method 601
- Semi-volatile organic compounds (SVOCs) using EPA Method 8270
- Polychlorinated biphenyls (PCBs) using EPA Method 8080
- Metals including cadmium, chromium, nickel, lead, and zinc using EPA Method 6010

Laboratory results for soil and groundwater samples are summarized in Tables 1, 2, and 3, and the laboratory reports and chain of custody records are included in Appendix G. The concentrations of petroleum hydrocarbons in the groundwater are shown in Figure 5.

5.0 DISCUSSION OF RESULTS

Following are the results of this supplemental site investigation including field observations and laboratory analysis:

- Soil types encountered in MW-5, MW-6, and MW-7 generally consisted of silty sand and sandy silt to approximately 8 feet below grade, underlain by sand to approximately 13 feet below grade. Sandy silt and sand with silt and clay was encountered from approximately 13 to 23 feet below grade, overlying a clayey silt, clayey sand, or sandy clay to the total depth of each boring at approximately 25 feet.

- Groundwater was encountered during installation of Wells MW-5, MW-6, and MW-7 at approximately 15 feet below grade. During sampling, groundwater was measured to be between 15.5 and 17.5 feet below the top of casing in Wells MW-1 through MW-7.

- Liquid-phase hydrocarbons were not observed in Monitoring Wells MW-1 through MW-7.

- Groundwater elevation data indicate a gradient of approximately 0.005 foot per foot in a west-northwesterly direction across the site.

- Petroleum hydrocarbons were not detected at or above reported detection limits in selected soil samples collected from borings MW-5, MW-6, and MW-7.

- TPH-G and benzene were detected in the groundwater samples collected from Wells MW-4, MW-5, MW-6, and MW-7 at concentrations up to 9400 ug/l TPH-G (MW-5) and 1800 ug/l benzene (MW-4).

- Analysis of the groundwater sample collected from MW-1 for additional organic constituents detected 420 ug/l TOG, 0.47 ug/l chloroform, 0.30 ug/l PCE, and 0.54 ug/l 1,1,1-TCA. TPH-D, PCBs, and SVOCs including polynuclear aromatics, pentachlorophenol, and creosote were not detected at or above reported detection limits.

- Analysis of the groundwater sample collected from MW-1 for metals detected 1.1 ug/l cadmium, 30 ug/l chromium, 40 ug/l nickel, 11 ug/l lead, and 70 ug/l zinc.

REFERENCES

Alisto, 1993. Preliminary Site Assessment Report, BP Oil Company Service Station No. 11107. Prepared for BP Oil Company. January.

Alisto, 1994. Groundwater Monitoring and Sampling Report, BP Oil Company Service Station No. 11107. Prepared for BP Oil Company. December.

Page, Ben M., 1966. Geology of the Coastal Ranges of California. California Division of Mines and Geology, Bulletin 190, pp. 255-276.

TABLE 1 - RESULTS OF SOIL SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD, SAN LORENZO, CALIFORNIA

ALISTO PROJECT NO. 10-060

WELL ID	SAMPLE DEPTH (feet)	DATE OF SAMPLING	TPH-G (mg/kg)	TPH-D (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	HVOC (mg/kg)	TOG (mg/kg)	LAB
MW-1	14.5 to 15.0	10/22/92	ND<1.0	ND<5.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND (a)	ND<50	PACE
MW-1	21.0 to 21.5	10/22/92	ND<1.0	ND<5.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND (a)	ND<50	PACE
MW-2	11.0 to 11.5	10/22/92	ND<1.0	—	ND<0.005	ND<0.005	ND<0.005	ND<0.005	---	---	PACE
MW-2	16.0 to 16.5	10/22/92	ND<1.0	—	ND<0.005	ND<0.005	ND<0.005	ND<0.005	---	---	PACE
MW-3	10.0 to 10.5	10/22/92	ND<1.0	---	ND<0.005	ND<0.005	ND<0.005	ND<0.005	—	—	PACE
MW-3	21.0 to 21.5	10/22/92	51	---	0.21	0.38	0.76	3	---	---	PACE
MW-4	16.0 to 16.5	10/22/92	1.8	---	0.31	0.009	0.051	0.1	---	—	PACE
MW-4	20.0 to 20.5	10/22/92	24	---	0.4	0.42	0.35	1.5	---	—	PACE
MW-5	15.5 to 16.0	02/15/95	ND<2.5	—	ND<0.025	ND<0.025	ND<0.025	ND<0.050	---	---	ATI
MW-5	20.5 to 21.0	02/15/95	ND<2.5	—	ND<0.025	ND<0.025	ND<0.025	ND<0.050	---	---	ATI
MW-5	25.5 to 26.0	02/15/95	ND<2.5	—	ND<0.025	ND<0.025	ND<0.025	ND<0.050	—	---	ATI
MW-6	15.5 to 16.0	02/15/95	ND<2.5	—	ND<0.025	ND<0.025	ND<0.025	ND<0.050	---	---	ATI
MW-7	5.5 to 6.0	02/15/95	ND<2.5	—	ND<0.025	ND<0.025	ND<0.025	ND<0.050	---	---	ATI
MW-7	10.5 to 11.0	02/15/95	ND<2.5	---	ND<0.025	ND<0.025	ND<0.025	ND<0.050	—	---	ATI
MW-7	15.5 to 16.0	02/15/95	ND<2.5	—	ND<0.025	ND<0.025	ND<0.025	ND<0.050	---	—	ATI

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
TPH-D	Total petroleum hydrocarbons as diesel
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
HVOC	Halogenated volatile organic compounds
TOG	Total oil and grease
mg/kg	Milligrams per kilogram
ND	Not detected at or above reported detection limit
---	Not analyzed
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.

NOTE:

(a) Various detection limits; see laboratory report.

TABLE 2 - RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD, SAN LORENZO, CALIFORNIA

ALISTO PROJECT NO. 10-060

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (feet)	DEPTH TO WATER (feet)	GROUNDWATER ELEVATION (b) (feet)	TPH-G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	DO (ppm)	LAB
MW-1	11/04/92	41.07	20.78	20.29	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	PACE
QC-1 (c)	11/04/92	—	—	—	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	PACE
MW-1	02/24/94	41.07	20.70	20.37	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	PACE
MW-1	05/12/94	41.07	18.12	22.95	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.0	PACE
MW-1	09/09/94	41.07	21.74	19.33	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.3	PACE
MW-1	11/03/94	41.07	20.01	21.06	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.3	PACE
MW-1	03/01/95	41.07	17.44	23.63	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	2.3	ATI
MW-2	11/04/92	40.56	20.16	20.40	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	PACE
MW-2	02/24/94	40.56	20.12	20.44	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	PACE
MW-2	05/12/94	40.56	17.49	23.07	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.4	PACE
MW-2	09/09/94	40.56	21.12	19.44	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.1	PACE
MW-2	11/03/94	40.56	19.36	21.20	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	4.2	PACE
MW-2	03/01/95	40.56	16.83	23.73	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	2.2	ATI
MW-3	11/04/92	40.45	20.23	20.22	760	3.7	15	1.9	57	—	PACE
MW-3	02/24/94	40.45	20.24	20.21	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	—	PACE
MW-3	05/12/94	40.45	17.61	22.84	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	7.3	PACE
MW-3	09/09/94	40.45	21.22	19.23	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	2.0	PACE
MW-3	11/03/94	40.45	19.48	20.97	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	3.6	PACE
MW-3	03/01/95	40.45	17.08	23.37	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	1.9	ATI
MW-4	11/04/92	39.24	19.18	20.06	900	150	4.1	0.8	53	—	PACE
MW-4	02/24/94	39.24	19.22	20.02	240	110	3.8	1.8	11	—	PACE
QC-1 (c)	02/24/94	—	—	—	310	95	5.3	2.2	17	—	PACE
MW-4	05/12/94	39.24	16.62	22.62	ND<50	2.2	1.0	ND<0.5	ND<0.5	7.3	PACE
QC-1 (c)	05/12/94	—	—	—	430	2.6	1.3	ND<0.5	ND<0.5	—	PACE
MW-4	09/09/94	39.24	20.27	18.97	240	9.1	1.3	0.6	2.5	2.2	PACE
QC-1 (c)	09/09/94	—	—	—	57	1.7	ND<0.5	ND<0.5	0.5	—	PACE
MW-4	11/03/94	39.24	18.46	20.78	250	3.1	2.8	1.0	3.3	3.2	PACE
QC-1 (c)	11/03/94	—	—	—	110	2.4	ND<0.5	ND<0.5	ND<0.5	—	PACE
MW-4	03/01/95	39.24	16.15	23.09	8900	1800	26	450	400	2.0	ATI
QC-1 (c)	03/01/95	—	—	—	7600	1700	25	410	370	—	ATI
MW-5	03/01/95	39.07	16.00	23.07	9400	150	ND<5.0	45	390	1.2	ATI
MW-6	03/01/95	38.46	15.66	22.80	270	11	ND<0.50	ND<0.50	ND<1.0	1.6	ATI
MW-7	03/01/95	39.50	16.21	23.29	1400	14	ND<1.0	14	27	1.8	ATI

TABLE 2 - RESULTS OF GROUNDWATER SAMPLING
BP OIL COMPANY SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD, SAN LORENZO, CALIFORNIA

ALISTO PROJECT NO. 10-060

WELL ID	DATE OF SAMPLING/ MONITORING	CASING ELEVATION (a) (feet)	DEPTH TO WATER (feet)	GROUNDWATER ELEVATION (b) (feet)	TPH-G (ug/l)	B (ug/l)	T (ug/l)	E (ug/l)	X (ug/l)	DO (ppm)	LAB
QC-2 (d)	11/04/92	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	PACE
QC-2 (d)	11/04/92	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	PACE
QC-2 (d)	05/12/94	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	PACE
QC-2 (d)	09/09/94	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	PACE
QC-2 (d)	11/03/94	--	--	--	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	--	PACE
QC-2 (d)	03/01/95	--	--	--	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	--	ATI

ABBREVIATIONS:

TPH-G	Total petroleum hydrocarbons as gasoline
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total xylenes
DO	Dissolved oxygen
ug/l	Micrograms per liter
ppm	Parts per million
ND	Not detected at or above reported detection limit
--	Not measured/not analyzed
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.

NOTES:

(a) Top of casing elevations surveyed relative to an established benchmark with an elevation of 39.95 feet above mean sea level.

(b) Groundwater elevations in feet above mean sea level.

(c) Blind duplicate.

(d) Travel blank.

TABLE 3 - RESULTS OF ADDITIONAL GROUNDWATER ANALYSIS OF MW-1
BP OIL COMPANY SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD, SAN LORENZO, CALIFORNIA

ALISTO PROJECT NO. 10-060

WELL ID	DATE OF SAMPLING/ MONITORING	TPH-D (ug/l)	TOG (ug/l)	CF (ug/l)	PCE (ug/l)	1,1,1-TCA (ug/l)	SVOCs (ug/l)	PCBs (ug/l)	Cadmium (ug/l)	Chromium (ug/l)	Nickel (ug/l)	Lead (ug/l)	Zinc (ug/l)	LAB
MW-1	11/04/92	ND<50	ND<5000	ND<0.5	ND<0.5	2.8	---	---	---	---	---	---	---	PACE
MW-1	02/24/94	ND<50	ND<5000	ND<0.5	0.9	1.5	---	---	---	---	---	---	---	PACE
MW-1	05/12/94	ND<50	ND<5000	ND<0.5	ND<0.5	1.0	---	---	---	---	---	---	---	PACE
MW-1	09/09/94	ND<50	ND<5000	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	---	---	PACE
MW-1	11/03/94	50	ND<5000	ND<0.5	ND<0.5	ND<0.5	---	---	---	---	---	---	---	PACE
MW-1	03/01/95	ND<500	420	0.47	0.30	0.54	ND (a,b)	ND<0.50	1.1	30	40	11	70	ATI

MCL 100. 5.0 200.

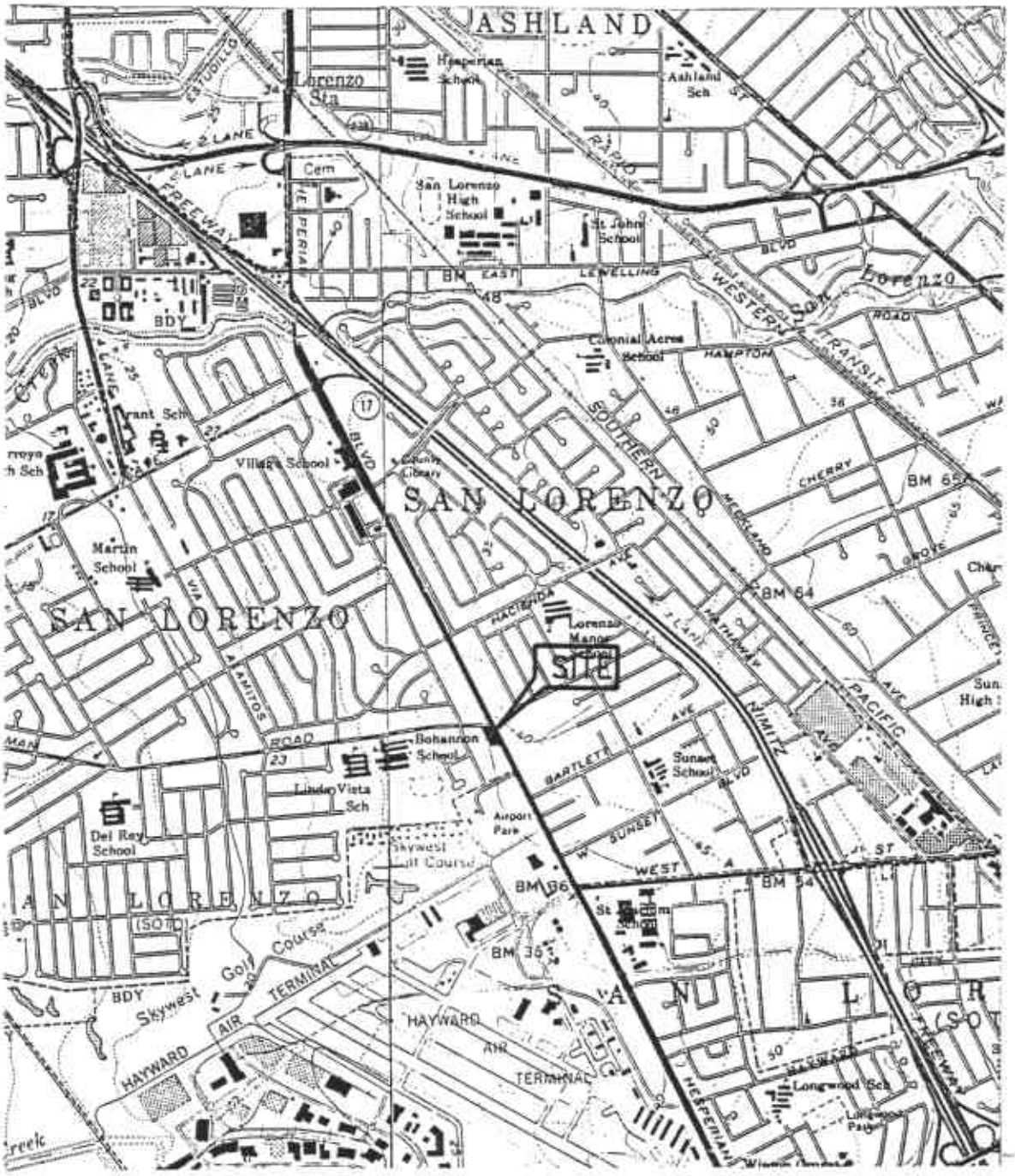
ABBREVIATIONS:

TPH-D	Total petroleum hydrocarbons as diesel
TOG	Total oil and grease
CF	Chloroform
PCE	Tetrachloroethene
1,1,1-TCA	1,1,1-Trichloroethane
SVOCs	Semi-volatile organic compounds
PCBs	Polychlorinated biphenyls
ug/l	Micrograms per liter
ND	Not detected at or above reported detection limit
---	Not analyzed
PACE	Pace, Inc.
ATI	Analytical Technologies, Inc.

NOTES:

(a) Various detection limits; see laboratory reports.

(b) SVOCs including polynuclear aromatics, pentachlorophenol, and creosote, not detected at or above reported detection limits.



SOURCE:
USGS MAP, HAYWARD & SAN LEANDRO QUADRANGLES,
7.5 MINUTE SERIES. 1959.
PHOTOREVISED 1980.

FIGURE 1

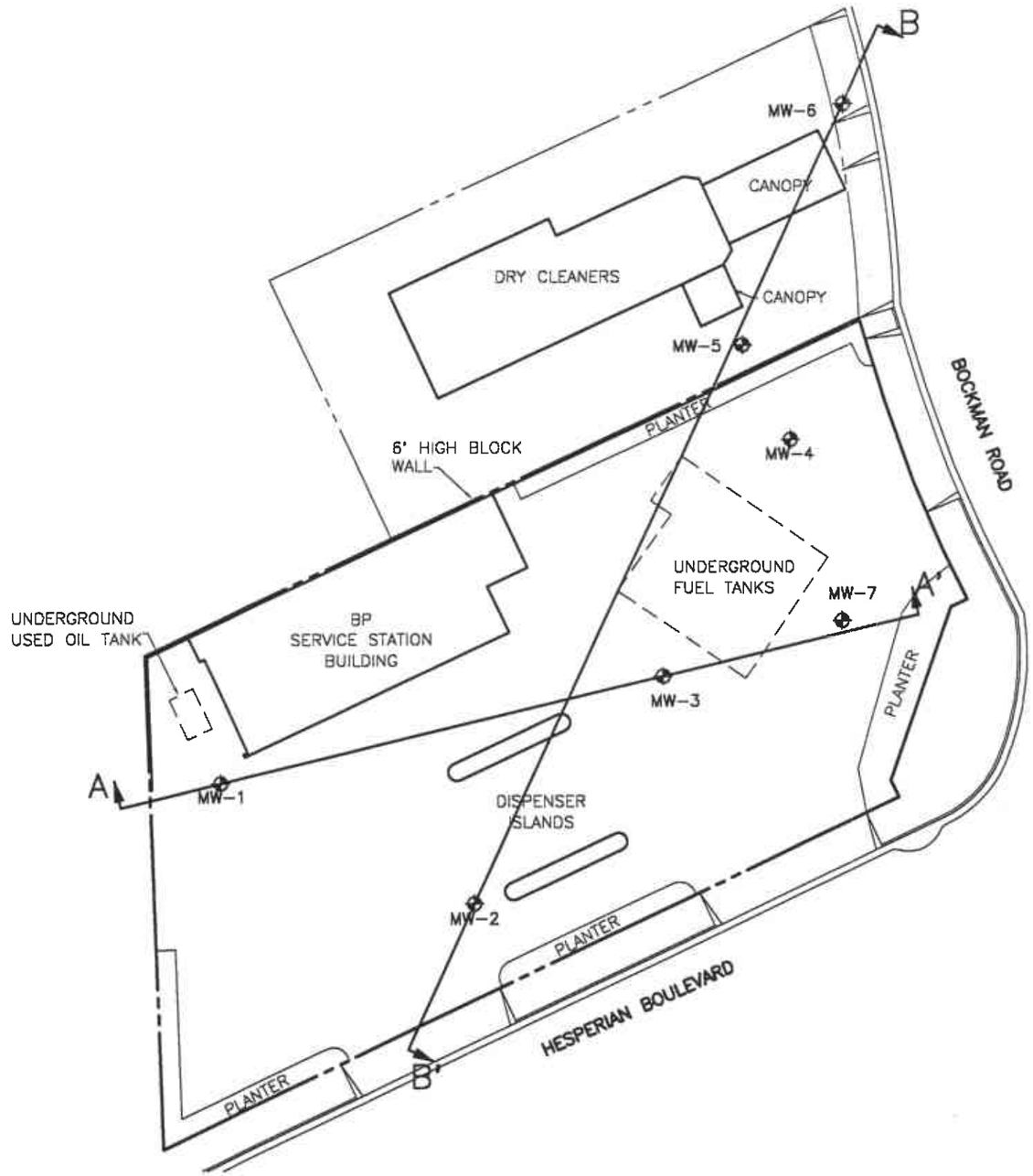
VICINITY MAP

BP OIL SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

PROJECT NO. 10-060

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10060—DWG 3-12-84 BW 1-1



N

0 30 60

SCALE IN FEET

LEGEND

- GROUNDWATER MONITORING WELL
- A—A' LINE OF HYDROGEOLOGIC CROSS SECTION

FIGURE 2

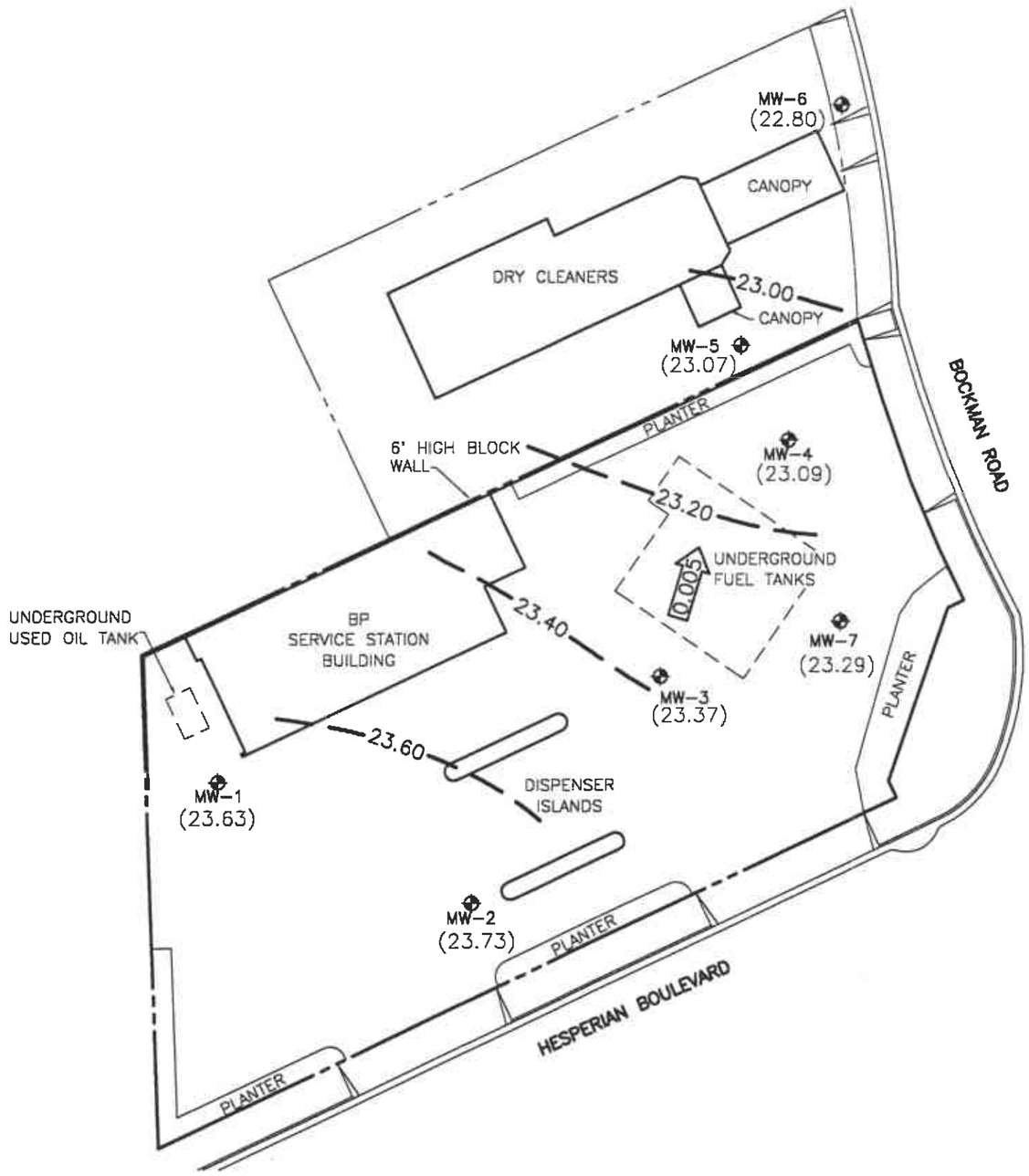
SITE PLAN

BP OIL SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

PROJECT NO. 10-060-02

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10060CA-DWG 4-12-05 RVW 1=30



N

0 30 60

SCALE IN FEET

LEGEND

◆	GROUNDWATER MONITORING WELL
(23.63)	GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL
23.60	GROUNDWATER ELEVATION CONTOUR IN FEET ABOVE MEAN SEA LEVEL (CONTOUR INTERVAL–0.20 FOOT)
0.005	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 3

POTENTIOMETRIC GROUNDWATER ELEVATION CONTOUR MAP

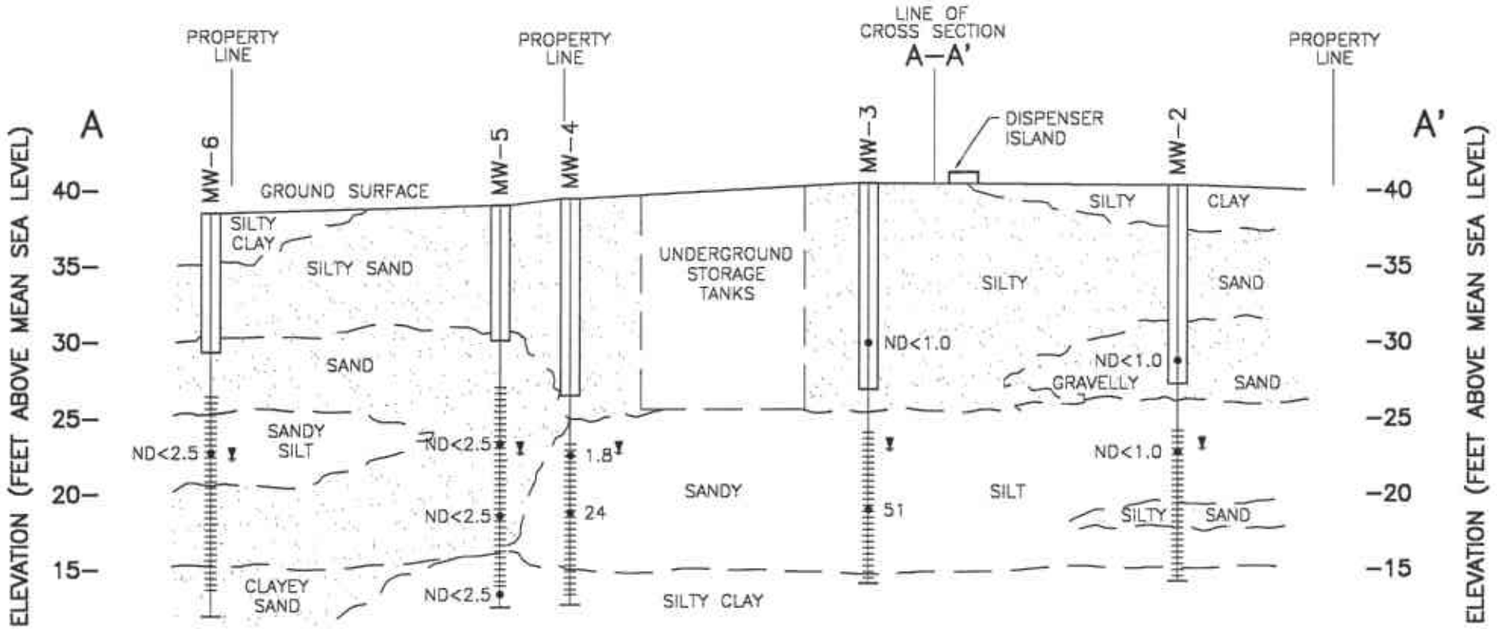
MARCH 1, 1995

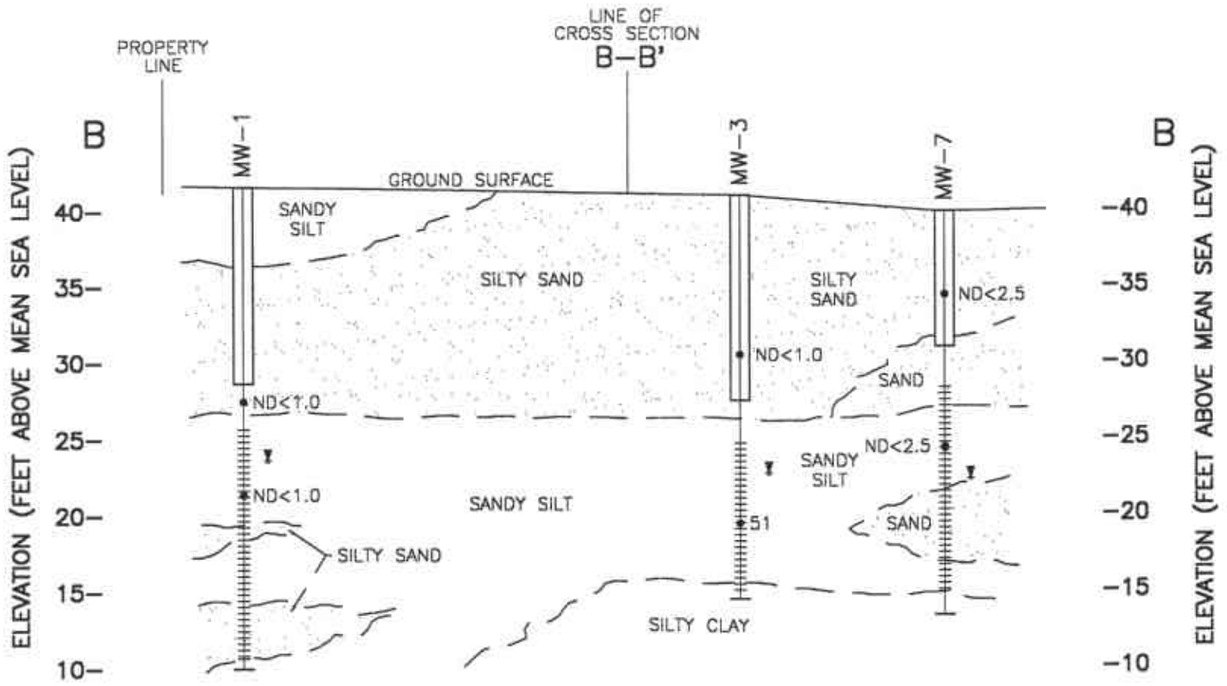
BP OIL SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

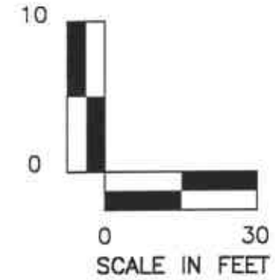
PROJECT NO. 10–060–02

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

10060-4.DWG 4-12-95 1"=30'







LEGEND

- GROUNDWATER MONITORING WELL SHOWING SEAL AND SCREENED INTERVAL
- GEOLOGIC CONTACT (APPROXIMATE)
- • 1.8 SOIL SAMPLE AND TOTAL PETROLEUM HYDROCARBONS AS GASOLINE CONCENTRATION IN MILLIGRAMS PER KILOGRAM
- ND NOT DETECTED ABOVE REPORTED DETECTION LIMIT
- GROUNDWATER ELEVATION AS MEASURED ON MARCH 1, 1995
- SANDS
- CLAYS AND SILTS

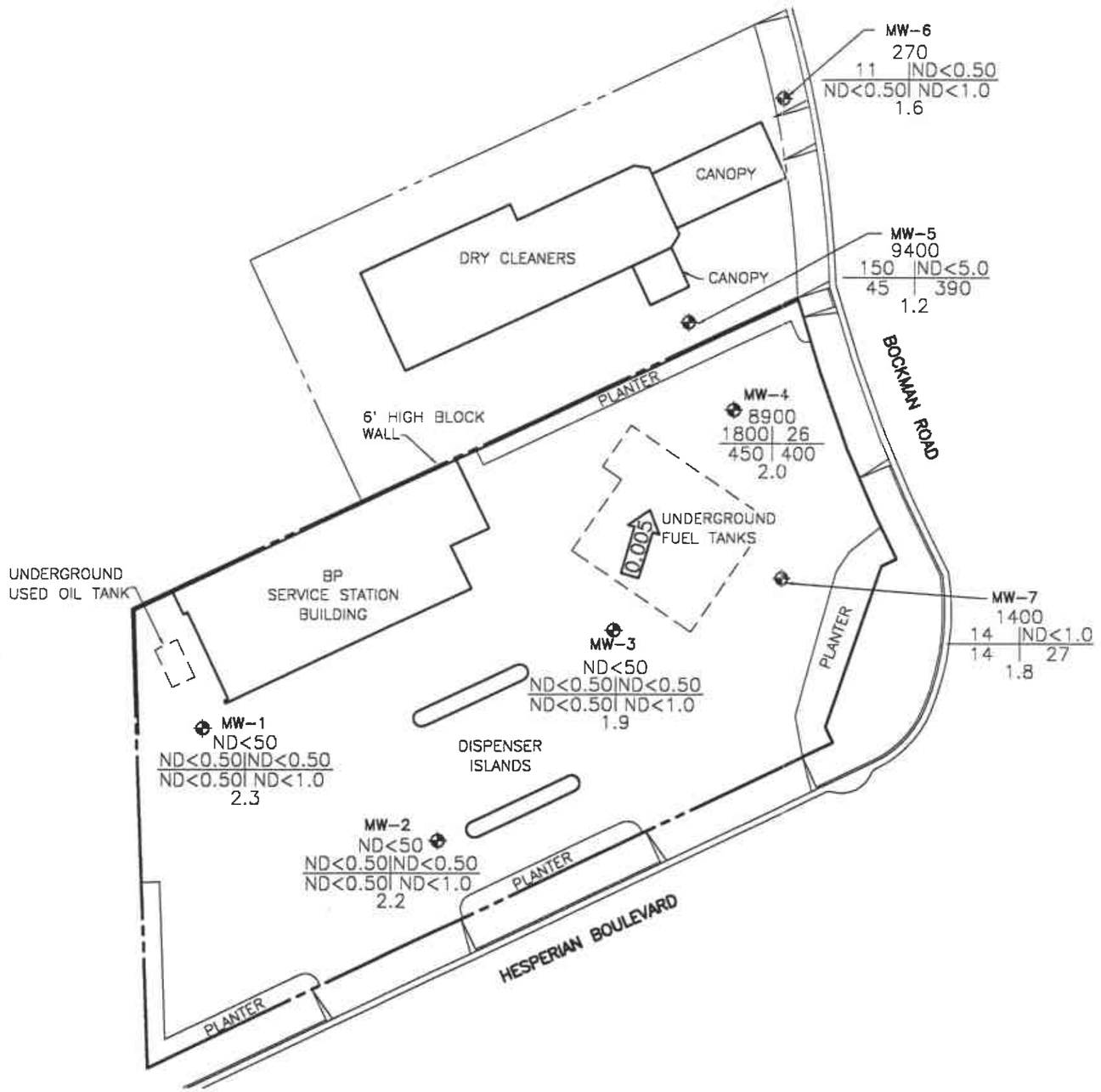
FIGURE 4

HYDROGEOLOGIC CROSS SECTIONS A–A' AND B–B'

BP OIL SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

PROJECT NO. 10–060–02

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA



N

0 30 60

SCALE IN FEET

LEGEND

⊕	GROUNDWATER MONITORING WELL
TPH-G / B | T / E | X / DO	CONCENTRATION OF CONSTITUENTS IN MICROGRAMS PER LITER, EXCEPT DISSOLVED OXYGEN, WHICH IS IN PARTS PER MILLION
TPH-G	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
DO	DISSOLVED OXYGEN
ND	NOT DETECTED ABOVE REPORTED DETECTION LIMIT
⟸ 0.005	CALCULATED GROUNDWATER GRADIENT DIRECTION AND MAGNITUDE IN FOOT PER FOOT

FIGURE 5

CONCENTRATIONS OF PETROLEUM HYDROCARBONS IN GROUNDWATER

MARCH 1, 1995

BP OIL SERVICE STATION NO. 11107
18501 HESPERIAN BOULEVARD
SAN LORENZO, CALIFORNIA

PROJECT NO. 10-060-02

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

APPENDIX A

WELL INSTALLATION AND ENCROACHMENT PERMITS

ZONE 7 WATER AGENCY

5997 PARKSIDE DRIVE PLEASANTON, CALIFORNIA 94588 VOICE (510) 484-2600
FAX (510) 462-3914

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 18501 Hesperian Blvd
San Lorenzo, California

CLIENT
Name BP Oil Company
Address 16400 Southcenter Voice
City Tukwila, WA Zip 98188

APPLICANT
Name John DeGeorge
Alisto Engineering Fax 510-295-1823
Address 1777 Oakland Blvd Voice 510-295-1650
City Walnut Creek CA Zip 94596

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	✓	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE

Domestic	___	Industrial	___	Other	___
Municipal	___	Irrigation	___		

DRILLING METHOD:

Mud Rotary	___	Air Rotary	___	Auger	✓
Cable	___	Other	___		

DRILLER'S LICENSE NO. C57610487

WELL PROJECTS

Drill Hole Diameter	8	in.	Maximum		
Casing Diameter	2	in.	Depth	35	ft.
Surface Seal Depth	5	ft.	Number	3	

GEOTECHNICAL PROJECTS

Number of Borings	___		Maximum		
Hole Diameter	___	in.	Depth	___	ft.

ESTIMATED STARTING DATE 3/1/95
ESTIMATED COMPLETION DATE ___

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

APPLICANT'S SIGNATURE John DeGeorge Date 1/3/95

FOR OFFICE USE

PERMIT NUMBER 95004
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(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 logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(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 and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

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.

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 5 Jan 95
Wyman Hong

91992

ALAMEDA COUNTY PUBLIC WORKS
399 ELMHURST STREET, HAYWARD, CALIFORNIA 94544
ROAD ENCROACHMENT PERMIT

(In accordance with Chapter 1 of Title 5, Streets and Highways, Ordinance Code, County of Alameda, an ordinance providing for the protection of Public Highways and rights of way thereof regulating the use thereof; and the manner in which the same may be altered, excavated under, obstructed or encroached upon; and providing penalties for the violation of the provisions thereof)

Issued To: ALISTO ENGR. GROUP
1777 OAKLAND BOULEVARD
WALNUT CREEK, CA 94596
Phone: 295-1650

Permit Number: R00-930856
Issue Date: 10/28/1993
Expiration Date: ~~10/28/94~~ 10/28/95 JR
Permit Issue Receipt: 004926
Assessor Number: - - -
Work Order Number: 85367

Job Site: 16501 HESPERIAN BL.
Township: SLZ

in compliance with and subject to all the terms, conditions and restrictions contained in Chapter 1 of Title 5 of said Ordinance Code and as stated below or printed as general or special provisions on any part of or attached to and made a part of this encroachment permit.

THE ABOVE APPLICANT HEREBY REQUESTS PERMISSION TO:
INSTALL A GROUNDWATER MONITORING WELL IN THE RIGHT-OF-WAY OF BOCKMAN ROAD, WEST OF HESPERIAN BOULEVARD.

Attention is directed to the general provisions printed on the attached sheets of this permit and to the special provisions attached hereto and made a part hereof.

ALL MISCELLANEOUS GENERAL PROVISIONS AND THE FOLLOWING SPECIAL PROVISIONS:

C, K, L, P, Q, R, S (SEE BELOW)

S. THE BOND FURNISHED WITH THIS PERMIT WILL BE HELD PENDING FINAL DESTRUCTION OF THE WELL.

THIS PERMIT AUTHORIZES INSTALLATION AND OPERATION OF THE WELL FOR THE PERIOD OF ONE YEAR; CONTINUING OPERATION WILL REQUIRE RENEWAL.

IF POSSIBLE, THE WELL SHOULD BE INSTALLED EITHER IN THE SIDEWALK OR IN THE ROADWAY ADJACENT TO THE GUTTER. TRAFFIC CONTROLS FOR INSTALLATION OR FOR WELL OPERATION SHALL COMPLY WITH THE REQUIREMENTS OF THE CALTRANS MANUAL OF TRAFFIC CONTROLS FOR CONSTRUCTION AND MAINTENANCE WORK ZONES; ALL INSTALLATION AND OPERATION ACTIVITIES SHALL BE SCHEDULED BETWEEN 9 AM AND 3 PM ON NON-HOLIDAY WEEKDAYS.

ALL FLUIDS REMOVED FROM THE WELL SHALL BE DISPOSED OF IN AN AUTHORIZED DISPOSAL SITE.

THIS PERMIT DOES NOT AUTHORIZE WELL REMOVAL OR PLUGGING.

This permit does not authorize, and it shall not [illegible] property rights of owners of the fee title of the [illegible] and other required notices shall be given to the [illegible] Phone (510) 670-5762

Post-it™ brand fax transmittal memo 7671 | # of pages ▸ 1

To TED MOISE	From J. ROGERS
Co.	Co. AL CTY
Dept.	Phone #
Fax #	Fax #

Other Required Permits: ZONE 7 #93209
Bond Information: $3000.00 PERMIT BOND
Permit ~~Deposit~~ Fee: $ 150 CASH

Charging and Billing Instructions:
Bill the Permittee for actual review and inspection cost: (Y) (N)

By SEE APP Applicant Reviewed By: JKR
Work Completed: __/__/__

APPENDIX B

FIELD PROCEDURES FOR DRILLING, SOIL SAMPLING, AND GROUNDWATER MONITORING WELL INSTALLATION

FIELD PROCEDURES
FOR
DRILLING, SOIL SAMPLING,
AND GROUNDWATER MONITORING WELL INSTALLATION

Drilling Procedures

The soil borings were drilled using 8-inch-diameter, continuous-flight, hollow-stem augers. To avoid cross-contamination, drilling equipment in contact with potentially contaminated material was decontaminated by steam cleaning before and after each use. Decontamination fluids were placed into DOT-approved drums for disposal.

Soil Sampling Procedures

During drilling, samples were collected beginning at 5 feet below grade and terminating at the total depth of each boring. Before and after each use, the sampler was washed using a phosphate-free detergent followed by tap water and deionized water rinses. Soil sampling was accomplished using a California-modified split-spoon sampler lined with brass tubes. A 140-pound slide hammer falling 30 inches was used to advance the sampler 18 inches ahead of the hollow-stem augers into undisturbed soil, and blow counts were recorded for every 6 inches of penetration to evaluate the consistency of the soil.

After retrieval from the augers, the sampler was split, the sample tubes removed, and a soil sample was selected for possible chemical analysis. The sample was retained within the brass tube, and both ends were immediately covered with Teflon sheeting and polyurethane caps. The caps were sealed with tape and labeled with the following information: Alisto Engineering project number, boring number, sample depth interval, sampler's initials, and date of collection. The soil sample was immediately placed in a waterproof plastic bag and stored in a cooler containing blue or dry ice. Possession of the soil samples was documented from the field to a state-certified analytical laboratory by using a chain of custody form.

Soil samples and, when representative, drill cuttings were described by Alisto personnel using the Unified Soil Classification System, and field estimates of soil type, color, moisture, density, and consistency were noted on the boring logs. The logs were reviewed by a civil engineer registered in the State of California.

Groundwater Monitoring Well Installation

Construction of the groundwater monitoring wells was based on the stratigraphy encountered in the soil borings. The well construction materials were introduced into the boring through the hollow-stem augers to centralize the well casing and minimize the possibility of native material entering the annular space of the well.

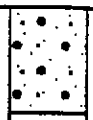
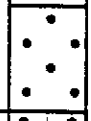
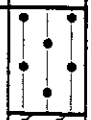
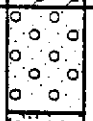
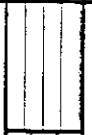
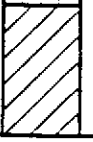
The 2-inch-diameter PVC well casing consisted of 0.010-inch slotted casing from the bottom of the boring to a depth interval above the highest anticipated water level, and solid casing was installed from the top of the slotted casing to approximately 6 inches below grade.

The annular space surrounding the screened portion was backfilled with No. 2/12 Lonestar sand (filter pack) to approximately 1 foot above the top of the screened section. An approximately 1-foot-thick interval of bentonite pellets was added to the annulus above the filter pack and hydrated with approximately 5 gallons of deionized water to minimize intrusion of well seal into the filter pack. The remaining annulus was sealed with a neat cement grout to the surface. A traffic-rated utility box was installed around the top of the well casing, and set in concrete. An expanding, watertight well cap and lock were installed on the top of the well casing to secure the well from surface fluid and tampering.

APPENDIX C

BORING LOGS AND WELL CONSTRUCTION DETAILS

GEOLOGIC LEGEND

COARSE-GRAINED SOILS	GRAVELS more than 1/2 of coarse fraction > No. 4 Sieve	LITTLE OR NO FINES		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures
		APPRECIABLE NO FINES		GM	Silty gravels, gravel-sand-silt mixtures
				GC	Clayey gravels, gravel-sand-clay mixtures
	SANDS more than 1/2 of coarse fraction < No. 4 Sieve	LITTLE OR NO FINES		SW	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sands, little or no fines
		APPRECIABLE NO FINES		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS	SILTS AND CLAYS Liquid limit < 50			ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays

SYMBOL LEGEND:


Cement


Sand


Bentonite Pellets


Driven Interval of Soil Sample


Sample preserved for possible analysis

Stabilized water level

Groundwater level encountered during drilling

LEGEND TO BORING LOGS

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

GEO-LEG.DWG 9-30-93 RKW 1=1

ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING B-1/MW-1

Page 1 of 1

SEE SITE PLAN

ALISTO PROJECT NO: 10-060 DATE DRILLED: 10/22/92

CLIENT: BP Oil Company

LOCATION: 18501 Hesperian Boulevard, San Loenzo, California

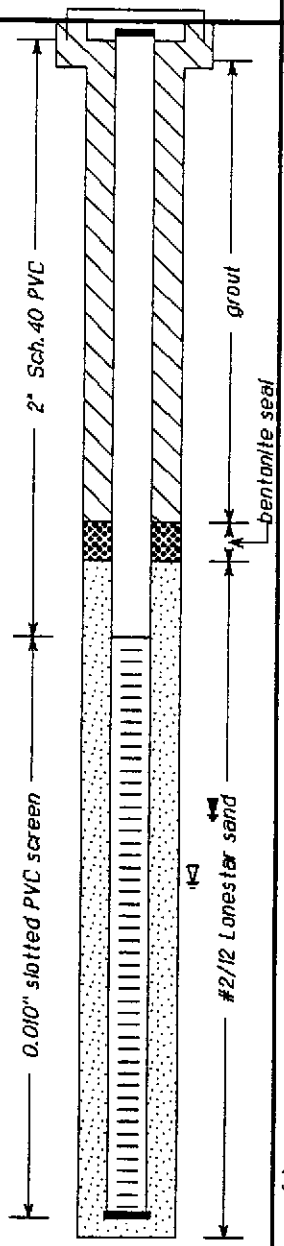
DRILLING METHOD: Hollow-stem Auger (8")

DRILLING COMPANY: Great Sierra Exploration CASING ELEVATION: 41.07 ' MSL

LOGGED BY: Ted Moise APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SOIL CLASS	GEOLOGIC DESCRIPTION
			SW	2" Asphalt
				gravelly SAND: gray/green, damp, loose; fine- to coarse-grained sand.
			ML	sandy SILT: dark brown, damp, medium firm; very fine- to medium-grained sand.
6,6,8	1.0	5	SM	silty SAND: tan/red, damp, loose; very fine- to medium-grained sand.
6,8,12	1.4			Same: fine-grained sand; gray/green from 7.75 to 8'.
6,7,8	1.2	10		Same.
7,9,10	0.9			Same.
8,8,10	1.1	15	ML	sandy SILT: tan, moist, stiff; very fine-grained sand; trace clay.
12,15,22	1.3			Same: no clay.
4,4,4	1.8	20		Same: consistency change to firm; trace clay.
7,5,8			SM	silty SAND: brown, wet loose, fine- to medium-grained sand.
			ML	sandy SILT: tan, wet, stiff; very fine to fine-grained sand; trace clay.
5,8,12		25		clayey SILT: 25.5 to 28 feet.
7,10,12			SM	silty SAND: brown, wet, medium dense; very fine to fine-grained sand; trace clay.
8,8,11		30	ML	clayey SILT: brown, wet, very stiff; trace very fine-grained sand.
				Stabilized water level measured on November 4, 1994.

WELL DIAGRAM



ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING B-2/MW-2

SEE SITE PLAN

ALISTO PROJECT NO: 10-060 DATE DRILLED: 10/22/92

CLIENT: BP Oil Company

LOCATION: 18501 Hesperian Boulevard, San Loenzo, California

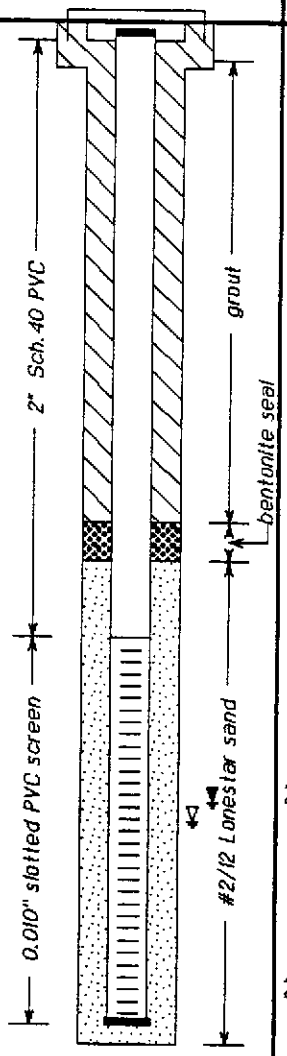
DRILLING METHOD: Hollow-stem Auger (8")

DRILLING COMPANY: Great Sierra Exploration CASING ELEVATION: 40.58 'MSL

LOGGED BY: Ted Moise APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SAMPLES	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
					ML	2" Asphalt silty CLAY: black, damp, medium firm; trace very fine- to fine-grained sand.
8,7,9	0.1	5			SM	silty SAND: brown, damp, medium dense; fine- to medium-grained sand.
8,9,10	0.2	10			SW	gravelly SAND: tan, damp, medium dense; fine- to medium-grained sand; angular gravel to 1".
8,8,9	1.4	15			ML	sandy SILT: tan, damp, stiff; very fine- to fine-grained sand; trace clay.
10,11,15	1.4	20			SM	silty SAND: brown, wet, medium dense; very fine- to fine-grained sand; trace clay.
9,15,18					ML	clayey SILT: tan, wet, very stiff; trace very fine- to fine-grained sand.
20,20,30		25			CL	silty CLAY: tan, wet, hard.
		30				Stabilized water level measured on November 4, 1994.

WELL DIAGRAM



ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING B-3/MW-3

SEE SITE PLAN

ALISTO PROJECT NO: 10-060 DATE DRILLED: 10/22/92

CLIENT: BP Oil Company

LOCATION: 18501 Hesperian Boulevard, San Loenzo, California

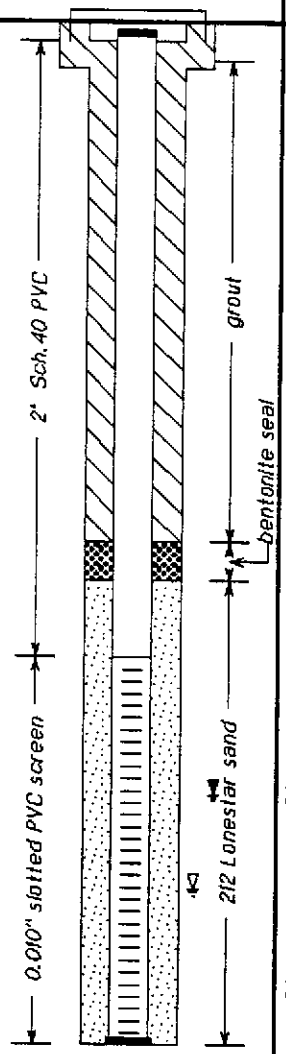
DRILLING METHOD: Hollow-stem Auger (8")

DRILLING COMPANY: Great Sierra Exploration CASING ELEVATION: 40.45 ' MSL

LOGGED BY: TM APPROVED BY: AS

BLOWS/6 IN.	PID VALUES	DEPTH feet	SOIL CLASS	GEOLOGIC DESCRIPTION
			SM	2" Asphalt silty SAND: brown/red, damp, loose; very fine- to medium-grained sand.
7,9,13	1.0	5		Same.
4,4,5	1.2	10		Same.
6,7,8	3.0	15	ML	sandy SILT: tan/gray, damp, stiff; very fine-grained sand; trace clay.
7,9,10	14	20		clayey SILT: tan/gray, moist, stiff; trace very fine-grained sand.
8,12,17				Same: wet.
15,17,23		25	CL	silty CLAY: tan, damp, very stiff.
		30		Stabilized water level measured on November 4, 1994.

WELL DIAGRAM



ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

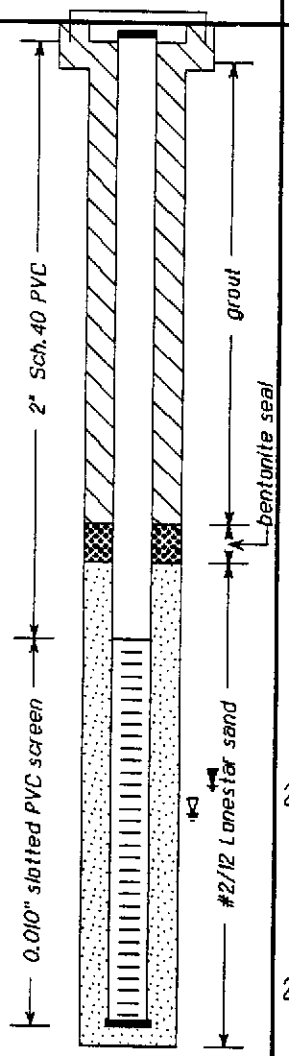
LOG OF BORING B-4/MW-4

SEE SITE PLAN

ALISTO PROJECT NO: 10-060 DATE DRILLED: 10/23/92
CLIENT: BP Oil Company
LOCATION: 18501 Hesperian Boulevard, San Loenzo, California
DRILLING METHOD: Hollow-stem Auger (8")
DRILLING COMPANY: Great Sierra Exploration CASING ELEVATION: 39.24 'MSL
LOGGED BY: Ted Moise APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SOIL CLASS	GEOLOGIC DESCRIPTION
			SM	3"Asphalt
4,4,6	1.4	5		silty SAND: brown/red, damp, loose; fine- to medium-grained sand.
6,7,7	1.8	10		Same.
4,4,4	20	15	ML	sandy SILT: gray, damp, medium firm; very fine- to fine-grained sand; trace clay.
3,4,8	187	20		Same: brown/gray, very moist to wet.
7,10,11				Same: brown; with clay.
10,20,23		25	CL	silty CLAY: brown, damp, hard; trace very fine-grained sand.
		30		Stabilized water level measured on November 4, 1994.

WELL DIAGRAM



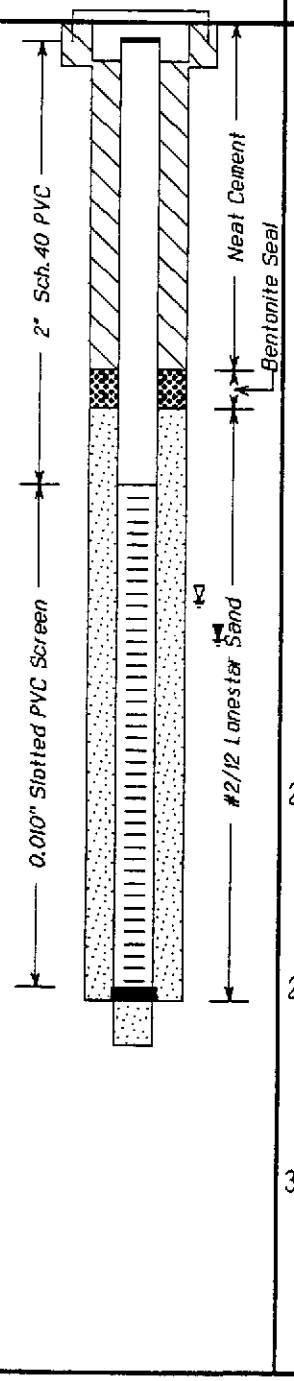
ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-5

SEE SITE PLAN

ALISTO PROJECT NO: 10-060-02 DATE DRILLED: 02/15/95
CLIENT: BP Oil Company
LOCATION: 18501 Hesperian Boulevard, San Lorenzo, California
DRILLING METHOD: Hollow-Stem Auger (8")
DRILLING COMPANY: Soils Exploration Srv. CASING ELEVATION: 39.07 '
LOGGED BY: J.D. APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SOIL CLASS	GEOLOGIC DESCRIPTION
				3" Asphlat
4,5,7	0	5	ML	sandy SILT: black/brown, slightly moist, stiff; fine- to medium- grained sand; trace fine angular gravel.
2,3,4	0	10	SP	SAND: light brown, slightly moist, loose; fine-grained; trace silt.
1,2,2	8	15	SP	SAND with silt and clay: light brown, very moist to wet, loose (soft); very fine-grained sand.
				Same: color change to olive/green at 18.5'.
4,5,8	274	20		
			CL	
4,6,8	1	25		sandy CLAY with silt: light brown, moist, stiff; very fine- to fine-grained sand.
		30		Stabilized water level measured on March 1, 1995.



ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

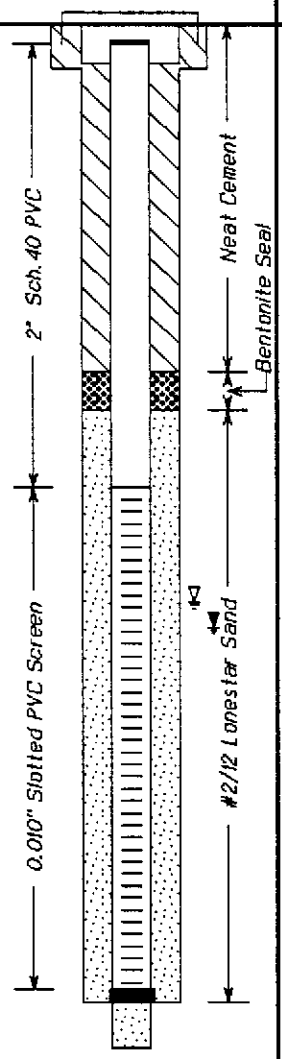
LOG OF BORING MW-6

SEE SITE PLAN

ALISTO PROJECT NO: 10-060-02 DATE DRILLED: 02/15/95
CLIENT: BP Oil Company
LOCATION: 18501 Hesperian Boulevard, San Lorenzo, California
DRILLING METHOD: Hollow-Stem Auger (8")
DRILLING COMPANY: Soils Exploration Srv. CASING ELEVATION: 38.46 '
LOGGED BY: J.D. APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SOIL CLASS	GEOLOGIC DESCRIPTION
				8" Concrete
			CL	silty CLAY: dark brown, slightly moist, firm.
3,4,4	0	5	SM	silty SAND: light brown, slightly moist, loose; fine-grained sand.
3,4,3	28	10	SP	SAND: light brown, slightly moist, loose; fine-grained; trace silt.
1,1,2	5	15	ML	sandy SILT with clay: olive/brown, very moist to wet, soft; very fine-grained sand.
2,2,2	3	20	SP	SAND with silt: light brown, wet, loose (soft); very fine- to fine-grained sand.
2,2,2	1	25	SC	clayey SAND with silt: light brown, very moist, loose (firm); very fine-grained sand.
		30		Stabilized water level measured on March 1, 1995.

WELL DIAGRAM



ALISTO ENGINEERING GROUP
WALNUT CREEK, CALIFORNIA

LOG OF BORING MW-7

SEE SITE PLAN

ALISTO PROJECT NO: 10-060-02 DATE DRILLED: 02/15/95

CLIENT: BP Oil Company

LOCATION: 18501 Hesperian Boulevard, San Lorenzo, California

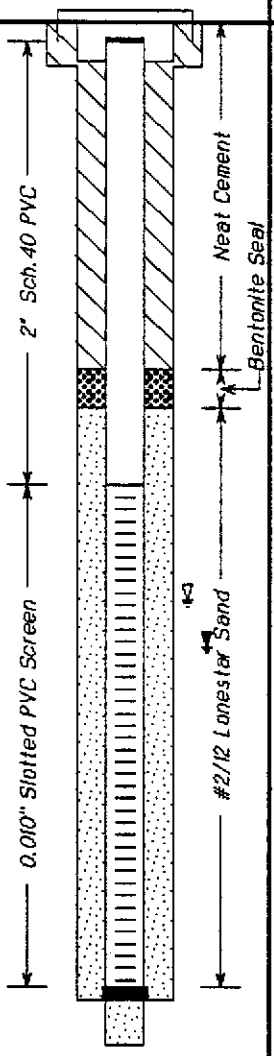
DRILLING METHOD: Hollow-Stem Auger (8")

DRILLING COMPANY: Soils Exploration Srv. CASING ELEVATION: 39.50 '

LOGGED BY: J.D. APPROVED BY: Al Sevilla

BLOWS/6 IN.	PID VALUES	DEPTH feet	SOIL CLASS	GEOLOGIC DESCRIPTION
				3" Asphlat
			SM	silty SAND: dark brown, slightly moist, medium dense; fine-grained sand.
				Same: color change to light brown.
4,7,8	>1000	5		
			SP	SAND: light brown, slightly moist, loose; fine-grained; trace silt.
3,4,4	>1000	10		
			ML	sandy SILT with clay: olive/brown, very moist to wet, soft; very fine-grained sand.
2,2,2	57	15		
			SP	SAND with silt: olive/brown, wet, loose (soft); very fine- to fine-grained sand.
3,2,3	15	20		
			ML	clayey SILT with sand: light brown, moist, stiff; very fine-grained sand.
5,8,7	0	25		
				Stabilized water level measured on March 1, 1995.
		30		

WELL DIAGRAM



APPENDIX D

FIELD PROCEDURES FOR GROUNDWATER MONITORING WELL DEVELOPMENT AND SAMPLING

FIELD PROCEDURES
FOR
GROUNDWATER MONITORING WELL DEVELOPMENT AND SAMPLING

Groundwater Monitoring Well Development

The groundwater monitoring wells were developed to consolidate and stabilize the filter pack to optimize well production and reduce the turbidity of subsequent groundwater samples. Additionally, monitoring wells were developed by alternately using a surge block and pump to evacuate the water and sediments. Development continued until the groundwater was relatively free of sediments and/or stabilization of pH, electrical conductivity, and temperature parameters was achieved. Well development fluids were placed into DOT-approved drums for disposal.

Groundwater Level Measurement

Before groundwater sampling, groundwater levels in each well were measured from the permanent survey reference point at the top of the well casing. Groundwater in each well was monitored for free-floating product or sheen. The depth to groundwater was measured to an accuracy of 0.01 foot from the top of the PVC well casing using an electronic sounder.

Groundwater Monitoring Well Sampling

To ensure that the groundwater sample was representative of the aquifer, the wells were purged of 3 casing volumes, using a bailer, while monitoring stabilization of pH, electrical conductivity, and temperature.

The groundwater samples were collected using a disposable bailer, and were carefully transferred into laboratory-supplied containers. The samples were labeled with well number, site identification, date of collection, and sampler's initials, and transported in an iced cooler to a state-certified laboratory following preservation and chain of custody protocol. The sampling technician wore nitrile gloves during purging and well sampling.

APPENDIX E

GROUNDWATER MONITORING WELL DEVELOPMENT AND SAMPLING FIELD SURVEY FORMS

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-060-02-001
Service Station No: 11107

Date: 2/16/95
Field Personnel: DC
Address: 18501 Hesperian Blvd San Lorenzo CA

Well ID: MW-5 Field Activity: ✓ Well Development ___ Well Sampling ___ Product Bailing

Casing Diameter:

✓ 2 Inch (0.16 Gal/foot)
___ 3 Inch (0.37 Gal/foot)
___ 4 Inch (0.65 Gal/Foot)
___ 4.5 Inch (0.83 Gal/foot)
___ 6 Inch (1.47 Gal/foot)

Purge Method:

✓ Pump (dispos. Poly Tubing)
___ Disposable Bailers
___ Other
___ 1.66 PVC Standard Bailer
___ 3.50 PVC Standard Bailer

Well Data:

0 Depth to Product
0 Product Thickness
15.73 Depth to Water

Sampling Method:

___ Disposable Bailer
___ Pump

Decontamination Method:

___ Triple Rinse (Liquinox)
___ Steam Cleaned

Calculated Purge Volume

24.58 (Total Depth of Well) - 15.73 (Depth to Water) = 8.85 ft (Water Column) X .16 (Conversion Factor) Gal/Ft = 1.42 Gal (Casing Vol) X 10 (Vols to Purge) = 14.20 (Total Volume)

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv.
1433	66.6	7.52	1.12	5	murky tan medium fines	TPH-G/BTEX	VOA	HCL
1440	67.7	7.41	0.94	10	light tan, less fines	TPH-Diesel	Amber Liter	Solvent Rinsed
1448	67.4	7.49	0.89	15.5	clear	EPA 601	VOA	
						TOG 5520BF	Amber Liter	H_2SO_4

-rechecked Total Depth and it was 24.57'

FORM: FS3/121592

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-CBC-02-001
Service Station No: 11107

Date: 2/14/95
Field Personnel: DC
Address: 18501 Hesperian Blvd San Lorenzo CA

Well ID: MW-6 Field Activity: ✓ Well Development ___ Well Sampling ___ Product Bailing

Casing Diameter:

✓ 2 Inch (0.16 Gal/foot)
___ 3 Inch (0.37 Gal/foot)
___ 4 Inch (0.65 Gal/Foot)
___ 4.5 Inch (0.83 Gal/foot)
___ 6 Inch (1.47 Gal/foot)

Purge Method:

✓ Pump (dispos. Poly Tubing)
___ Disposable Bailers
___ Other
___ 1.66 PVC Standard Bailer
___ 3.50 PVC Standard Bailer

Well Data:

Ø Depth to Product
Ø Product Thickness
15.43 Depth to Water

Sampling Method:

___ Disposable Bailer
___ Pump

Decontamination Method:

___ Triple Rinse (Liquinox)
___ Steam Cleaned

Calculated Purge Volume

24.95 (Total Depth of Well) − 15.43 (Depth to Water) = 9.52 ft (Water Column) × .16 Gal/Ft (Conversion Factor) = 1.52 Gal (Casing Vol) × 10 (Vols to Purge) = 15.23 (Total Volume)

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv.
1400	67.1	7.68	1.35	5	Brown, lots of fines	TPH-G/BTEX	VOA	HCL
1407	67.5	7.55	0.94	10	Tan, fines clearing	TPH-Diesel	Amber Liter	Solvent Rinsed
1420	66.9	7.50	0.90	16	light tan almost clear	EPA 601	VOA	
						TOG 5520BF	Amber Liter	H_2SO_4

rechecked Total depth and it was still at 24.95'

FORM: FS3/121592

ALISTO ENGINEERING GROUP
Groundwater Development and Sampling Form

Client: BP
Alisto Project No: 10-060-02-001
Service Station No: 11107

Date: 2/16/95
Field Personnel: DC
Address: 17501 Hesperian Blvd San Lorenzo CA

Well ID: MW-7 Field Activity: ✓ Well Development ___ Well Sampling ___ Product Bailing

Casing Diameter:

/ 2 Inch (0.16 Gal/foot)
___ 3 Inch (0.37 Gal/foot)
___ 4 Inch (0.65 Gal/Foot)
___ 4.5 Inch (0.83 Gal/foot)
___ 6 Inch (1.47 Gal/foot)

Purge Method:

/ Pump (dispos. Poly Tubing)
___ Disposable Bailers
___ Other
___ 1.66 PVC Standard Bailer
___ 3.50 PVC Standard Bailer

Well Data:

9 Depth to Product
0 Product Thickness
15.95 Depth to Water

Sampling Method:

___ Disposable Bailer
___ Pump

Decontamination Method:

___ Triple Rinse (Liquinox)
___ Steam Cleaned

Calculated Purge Volume

24.45 (Total Depth of Well) - 15.95 (Depth to Water) = 8.5 ft (Water Column) X .16 Gal/Ft (Conversion Factor) = 1.36 Gal (Casing Vol) X 10 (Vols to Purge) = 13.60 (Total Volume)

Well Development/Sampling Parameters

Time	Temp °F	pH	Cond. (umhos /cm)	Purge Vol (Gal)	Comments/ Turbidity	Analysis Required	Container Type	Preserv.
1501	67.3	7.65	0.99	5	murky tan/ medium fines	TPH-G/BTEX	VOA	HCL
1510	67.9	7.47	0.93	10	lighter tan	TPH-Diesel	Amber Liter	Solvent Rinsed
1518	67.9	7.41	0.91	15	almost clear very light tan	EPA 601	VOA	
						TOG 5520BF	Amber Liter	H_2SO_4

- rechecked total depth
cond it was 24.47'

FORM: FS3/121592

ALISTO

ENGINEERING GROUP

1777 OAKLAND BLVD, STE 200

WALNUT CREEK CA 94596 (510) 295-1650 FAX 295-1823

Field Report / Sampling Data Sheet

⊗ Groundwater Sampling

Barometric pres. 760

Date: 3-1-95 Project No. 10-060-02-001

Day: M T (W) Th F Facility No. 11107

Temp. 67 Address 18501 Hesperian

SAMPLER: M. Killoran San Lorenzo, CA

Well ID	SAMPLE #	WATER, time	Well ID	SAMPLE #	WATER/ time	Well ID	SAMPLE	WATER / time
MW-1	S-1	17.44/12:50	MW-7	S-6	16.21/1:00			
MW-2	S-2	16.83/12:52	MW-4	S-7, S-8	16.15/1:05			
MW-3	S-3	17.08/12:54						
MW-5	S-4	16.00/12:56						
MW-6	S-5	15.66/12:58						

FIELD INSTRUMENT CALIBRATION DATA

Ph METER _____ 4.00 _____ 7.00 ✓ 10.00 _____ TIME 1:15 TEMPERATURE COMPENSATED (Y) N

TURBIDI METER _____ 5.0 NTU STANDARD _____ OTHER _____

CONDUCTIVITY METER _____ 10,000 ✓ OTHER _____

⊗ PCP
⊗ PCB's ⊗ Metals
⊗ PNA, Creosote

Well ID MW-1 | Depth to Water 17.44 | Diam 2" | Cap/Lock OK | Depth to prod. None | Iridescence Y (N)

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.

30.70 - 17.44 = 13.33 x 0.16 = 2.13 x 3 = 6.4 gal

Purge Method: OSurface Pump ODisp.Tube OWinch ⊗Disp. Bailer(s) 1 OSys Port

Comments:

Gal.	Time	Temp °F	pH	E.C.	D.O.
2	2:13	67.6	7.98	880	2.3
4	2:17	67.4	7.96	900	2.3
6	2:20	67.1	7.92	900	2.3

⊗ EPA 601 ____
⊗ TPH-G/BTEX HCl
⊗ TPH Diesel ____
⊗ TOG 5520 ____
Time/Sample 2:25/S-1

Well ID MW2 | Depth to Water 16.83 | Diam 2" | Cap/Lock OK | Depth to prod. None | Iridescence Y (N)

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.

25.00 - 16.83 = 8.17 x 0.16 = 1.30 x 3 = 3.9 gal

Purge Method: OSurface Pump ODisp.Tube OWinch ⊗Disp. Bailer(s) 1 OSys Port

Comments:

Gal.	Time	Temp °F	pH	E.C.	D.O.
1	3:20	67.3	7.75	880	2.3
2	3:25	67.3	7.58	900	2.2
3	3:29	67.0	7.50	880	2.2

O EPA 601 ____
⊗ TPH-G/BTEX HCl
O TPH Diesel ____
O TOG 5520 ____
Time/ Sample 3:35/S-2

Well ID MW3 | Depth to Water 17.08 | Diam 2" | Cap/Lock OK | Depth to prod. None | Iridescence Y (N)

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.

25.20 - 17.08 = 8.12 x 0.16 = 1.30 x 3 = 3.9 gal

Purge Method: OSurface Pump ODisp.Tube OWinch ⊗Disp. Bailer(s) 1 OSys Port

Comments:

Gal.	Time	Temp °F	pH	E.C.	D.O.
1	3:37	65.8	7.61	880	1.6
2	3:40	66.0	7.88	890	1.8
3	3:43	66.6	7.92	890	1.9

O EPA 601 ____
⊗ TPH-G/BTEX HCl
O TPH Diesel ____
O TOG 5520 ____
Time /Sample 3:45/S-3

ALISTO

ENGINEERING
GROUP
1777 OAKLAND BLVD, STE 200
WALNUT CREEK CA 94596 (510) 295-1650 FAX 295-1823

Field Report / Sampling Data Sheet

Groundwater Sampling

Date: 3-1-95 Project No. 10-060-02-001
Day: Weds Station No. 11107
Weather: Rainy Address 18501 Hesperian
SAMPLER: M. Killoran San Lorenzo, CA

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness
MW-5	16.00	2"	OK	None	None

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.
24.58-16.00 = 8.58 x 0.16 = 1.37 x 3 = 4.1 gal

Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) 1 OSys Port
Comments:

Gal.	Time	Temp *F	pH	E.C.	D.O.
2	3:50	66.8	9.10	900	1.2
3	3:53	66.2	9.07	900	1.2
4	3:56	66.5	9.00	900	1.2

O EPA 601 ___
O TPH-G/BTEX HCl
O TPH Diesel ___
O TOG 5520 ___
Time Sampled: 4:05 / S-4

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness
MW 6	15.66	2"	OK	None	None

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.
24.95-15.66 = 9.29 x 0.16 = 1.49 x 3 = 4.5 gal

Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) 1 OSys Port
Comments:

Gal.	Time	Temp *F	pH	E.C.	D.O.
2	4:09	66.5	9.04	880	1.6
3	4:12	66.0	9.04	880	1.5
4	4:15	66.4	9.03	890	1.6

O EPA 601 ___
O TPH-G/BTEX HCl
O TPH Diesel ___
O TOG 5520 ___
Time Sampled: 4:20 / S-5

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness
MW 7	16.21	2"	OK	None	None

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.
24.45-16.21 = 8.24 x 0.16 = 1.32 x 3 = 4.0 gal

Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) ___ OSys Port
Comments:

Gal.	Time	Temp *F	pH	E.C.	D.O.
2	4:23	66.8	8.80	880	2.5
3	4:27	66.4	8.11	900	1.7
4	4:30	66.2	8.09	900	1.8

O EPA 601 ___
O TPH-G/BTEX HCl
O TPH Diesel ___
O TOG 5520 ___
Time Sampled: 4:35 / S-6

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness
MW 4	16.15	2"	OK	None	None

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.
25.32-16.15 = 9.17 x 0.16 = 1.46 x 3 = 4.4 gal

Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) ___ OSys Port
Comments:

Gal.	Time	Temp *F	pH	E.C.	D.O.
2	4:43	67.0	9.04	870	1.2
3	4:46	67.1	9.02	910	2.1
4	4:49	66.5	9.13	900	2.0

O EPA 601 ___
O TPH-G/BTEX HCl
O TPH Diesel ___
O TOG 5520 ___
Time Sampled: 4:55 / S-7, S-8 (5:00)

Well ID	Depth to Water	Diam	Cap/Lock	Product Depth	Thickness

Total Depth - Water Level = x Well Vol. Factor = x#vol. to Purge = PurgeVol.

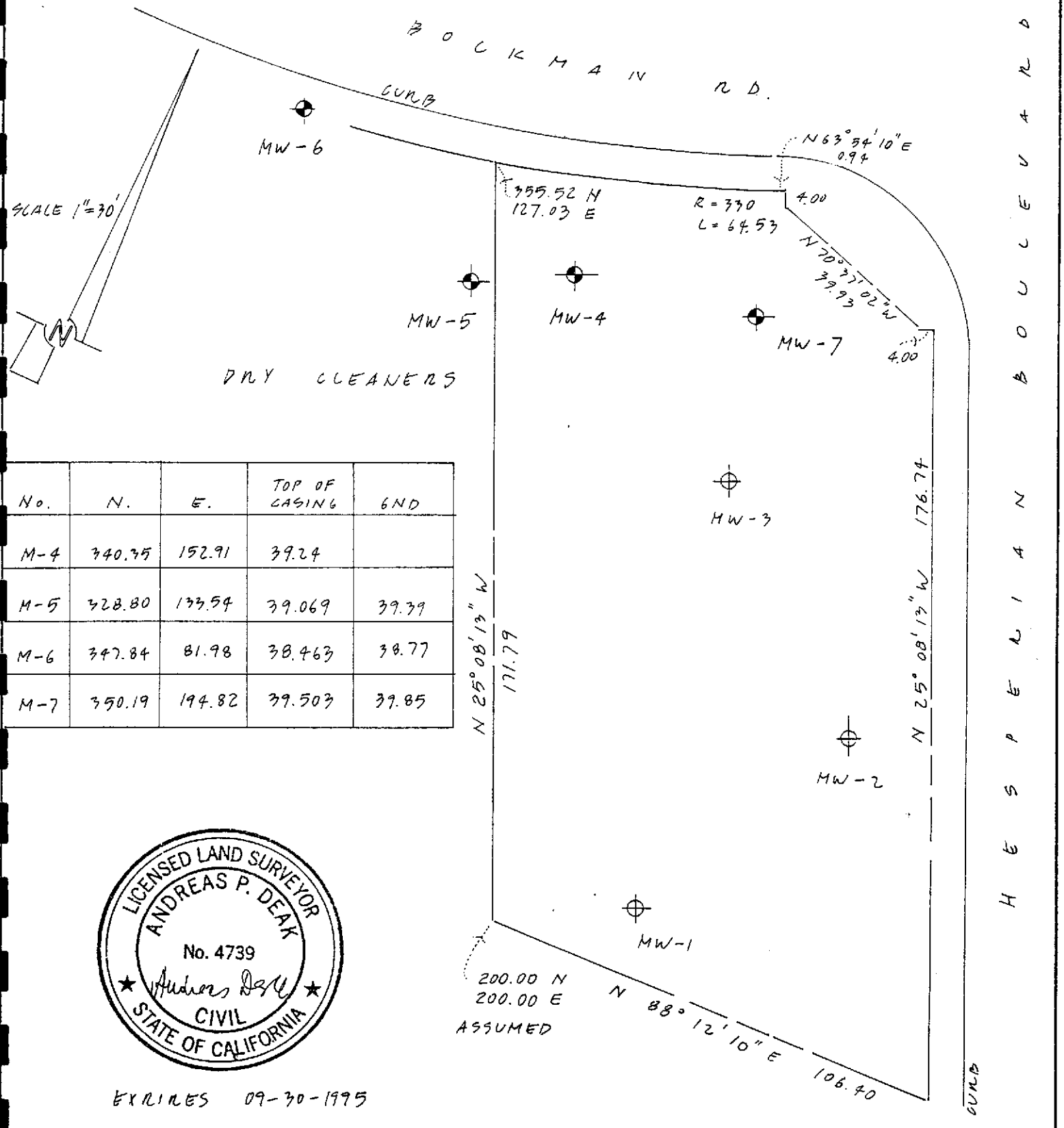
Purge Method: OSurface Pump ODisp.Tube OWinch ODisp. Bailer(s) ___ OSys Port
Comments:

Gal.	Time	Temp *F	pH	E.C.	D.O.

O EPA 601 ___
O TPH-G/BTEX ___
O TPH Diesel ___
O TOG 5520 ___
Time Sampled:

APPENDIX F

WELL ELEVATION SURVEY MAPS



No.	N.	E.	TOP OF CASING	GND
M-4	340.35	152.91	39.24	
M-5	328.80	133.54	39.069	39.39
M-6	347.84	81.98	38.463	38.77
M-7	350.19	194.82	39.503	39.85

LICENSED LAND SURVEYOR
ANDREAS P. DEAK
No. 4739
CIVIL
STATE OF CALIFORNIA

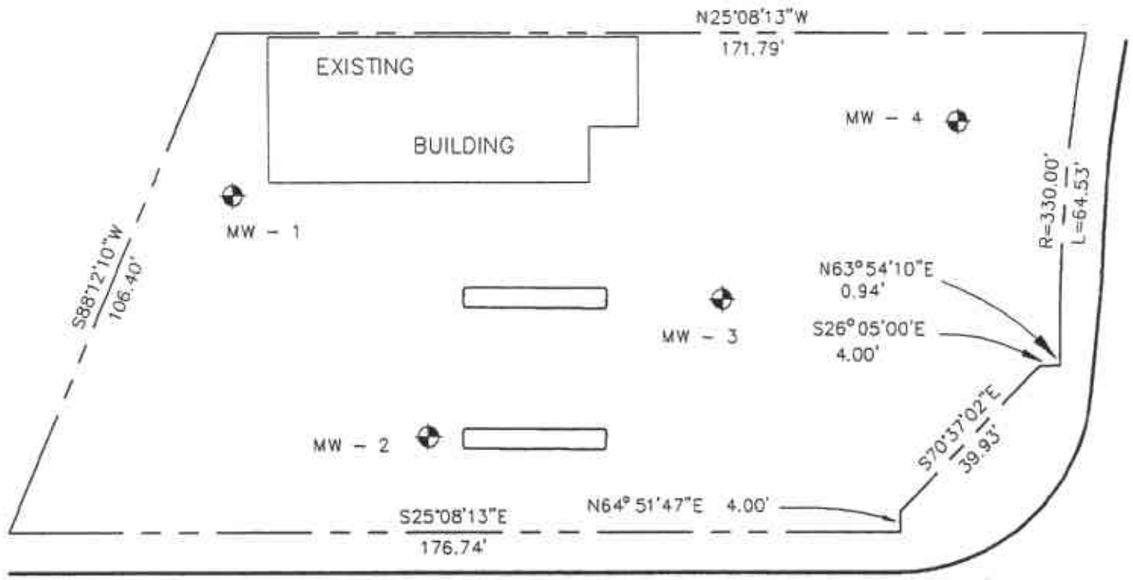
EXPIRES 09-30-1995

MONITORING WELLS, B.P. STATION
No 11107 SAN LORENZO CALIFORNIA.

CLIENT: ALISTO ENGINEERING GROUP

ANDREAS DEAK
LICENSED LAND SURVEYOR
2116 BUENA VISTA AVENUE ALAMEDA CA 94501
PHONE: 865-4289

DATE 03-11-1995
SCALE 1"=30'
SURVEY DEAK
PLAT DEAK
P.O. No 39510
JOB NO.



BOCKMAN ROAD

HESPERIAN BOULEVARD

NOTE:
THIS IS NOT A SURVEY OF THE BOUNDARY.
ALL REPRESENTATIONS HEREIN ARE BASED
UPON RECORD INFORMATION.

LICENSED LAND SURVEYOR
ELLIOTT V. INGRAM
NO. 6357
EXPIRES 12/31/94
STATE OF CALIFORNIA

NORTH

SCALE: 1" = 30'

MONITORING WELL ELEVATIONS

MW – 1	41.07
MW – 2	40.56
MW – 3	40.45
MW – 4	39.24

LEGEND

MONITORING WELL

BENCHMARK
BRASS DISK ON TOP OF CURB AT S.W. RETURN OF HESPERIAN BLVD. AND BOCKMAN RD. ELEV. = 39.95

BP STATION NO. 11107
SAN LORENZO CALIF

MONITORING WELL LOCATIONS

NOVEMBER 18, 1992

ELLIOTT V. INGRAM
LAND SURVEYOR
1310 LA VISTA CONCORD, CA. 94521
(510) 689 - 4578

ALISTO ENGINEERING GROUP
CONCORD, CALIFORNIA

APPENDIX G

FIELD PROCEDURES FOR CHAIN OF CUSTODY DOCUMENTATION, LABORATORY REPORTS, AND CHAIN OF CUSTODY RECORDS

FIELD PROCEDURES
FOR
CHAIN OF CUSTODY DOCUMENTATION

Samples collected were handled in accordance with the California Department of Health Services guidelines. Each sample was labeled in the field and immediately stored in a cooler and preserved with blue or dry ice for transport to a state-certified laboratory for analysis.

A chain of custody record accompanied the samples and included the site and sample identification, date of collection, analysis requested, and the name and signature of the sampling technician. When transferring possession of the samples, the transferee signed and dated the chain of custody record.

Analytical**Technologies,** Inc. Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

ATI I.D.: 502227

February 22, 1995

ALISTO ENGINEERING
1777 OAKLAND BOULEVARD, SUITE 200
WALNUT CREEK, CA 94596

Project Name: BP SITE #11107/18501 HESPERIAN BLVD., SAN LORENZO
Project # : F937601/10-060-02-01

Attention: JOHN DEGEORGE

Analytical Technologies, Inc. has received the following sample(s):

Date Received	Quantity	Matrix
February 17, 1995	15	SOIL

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. If any flags appear next to the analytical data in this report, please see the attached list of flag definitions.

The results of these analyses and the quality control data are enclosed. Please note that the Sample Condition Upon Receipt Checklist is included at the end of this report.

GARY STEWART
VOLATILES SUPERVISOR

ALAN J. KLEINSCHMIDT
LABORATORY MANAGER

RECEIVED
FEB 27 1995

Analytical Technologies, Inc.

SAMPLE CROSS REFERENCE

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-01
Project Name: BP SITE #11107/18501 HESPERIAN BLVD., SAN LORENZO

Report Date: February 22, 1995
ATI I.D. : 502227

ATI #	Client Description	Matrix	Date Collected
1	MW-5 5.5-6	SOIL	15-FEB-95
2	MW-5 10.5-11	SOIL	15-FEB-95
3	MW-5 15.5-16	SOIL	15-FEB-95
4	MW-5 20.5-21	SOIL	15-FEB-95
5	MW-5 25.5-26	SOIL	15-FEB-95
6	MW-6 5.5-6	SOIL	15-FEB-95
7	MW-6 10.5-11	SOIL	15-FEB-95
8	MW-6 15.5-16	SOIL	15-FEB-95
9	MW-6 20.5-21	SOIL	15-FEB-95
10	MW-6 25.5-26	SOIL	15-FEB-95
11	MW-7 5.5-6	SOIL	15-FEB-95
12	MW-7 10.5-11	SOIL	15-FEB-95
13	MW-7 15.5-16	SOIL	15-FEB-95
14	MW-7 20.5-21	SOIL	15-FEB-95
15	MW-7 25.5-26	SOIL	15-FEB-95

---TOTALS---

Matrix	# Samples
SOIL	15

ATI STANDARD DISPOSAL PRACTICE

The sample(s) from this project will be disposed of in twenty-one (21) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ANALYTICAL SCHEDULE

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-01
Project Name: BP SITE #11107/18501 HESPERIAN BLVD., SAN LORENZO

ATI I.D.: 502227

Analysis	Technique/Description
MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C6-C12/BTXE)	GC/FLAME ION./PHOTO IONIZATION DETECTOR

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C6-C12/BTXE)
Client : ALISTO ENGINEERING ATI I.D. : 502227
Project # : F937601/10-060-02-01
Project Name: BP SITE #11107/18501 HESPERIAN BLVD., SAN LORENZO

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
3	MW-5 15.5-16	SOIL	15-FEB-95	21-FEB-95	21-FEB-95	1.00
4	MW-5 20.5-21	SOIL	15-FEB-95	21-FEB-95	21-FEB-95	1.00
5	MW-5 25.5-26	SOIL	15-FEB-95	21-FEB-95	21-FEB-95	1.00

Parameter	Units	3	4	5
BENZENE	MG/KG	<0.025	<0.025	<0.025
TOLUENE	MG/KG	<0.025	<0.025	<0.025
ETHYLBENZENE	MG/KG	<0.025	<0.025	<0.025
XYLENES (TOTAL)	MG/KG	<0.050	<0.050	<0.050
FUEL HYDROCARBONS	MG/KG	<2.5	<2.5	<2.5
HYDROCARBON RANGE		C6-C12	C6-C12	C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE	GASOLINE	GASOLINE
SURROGATES				
TRIFLUOROTOLUENE	%	90	91	91

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C6-C12/BTXE)
Client : ALISTO ENGINEERING
ATI I.D. : 502227
Project # : F937601/10-060-02-01
Project Name: BP SITE #11107/18501 HESPERIAN BLVD., SAN LORENZO

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
8	MW-6 15.5-16	SOIL	15-FEB-95	21-FEB-95	21-FEB-95	1.00
11	MW-7 5.5-6	SOIL	15-FEB-95	21-FEB-95	22-FEB-95	1.00
12	MW-7 10.5-11	SOIL	15-FEB-95	21-FEB-95	22-FEB-95	1.00

Parameter	Units	8	11	12
BENZENE	MG/KG	<0.025	<0.025	<0.025
TOLUENE	MG/KG	<0.025	<0.025	<0.025
ETHYLBENZENE	MG/KG	<0.025	<0.025	<0.025
XYLENES (TOTAL)	MG/KG	<0.050	<0.050	<0.050
FUEL HYDROCARBONS	MG/KG	<2.5	<2.5	<2.5
HYDROCARBON RANGE		C6-C12	C6-C12	C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE	GASOLINE	GASOLINE
SURROGATES				
TRIFLUOROTOLUENE	%	90	95	92

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C6-C12/BTXE)
Client : ALISTO ENGINEERING
ATI I.D. : 502227
Project # : F937601/10-060-02-01
Project Name: BP SITE #11107/18501 HESPERIAN BLVD., SAN LORENZO

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
13	MW-7 15.5-16	SOIL	15-FEB-95	21-FEB-95	22-FEB-95	1.00

Parameter	Units	13
BENZENE	MG/KG	<0.025
TOLUENE	MG/KG	<0.025
ETHYLBENZENE	MG/KG	<0.025
XYLENES (TOTAL)	MG/KG	<0.050
FUEL HYDROCARBONS	MG/KG	<2.5
HYDROCARBON RANGE		C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE
SURROGATES		
TRIFLUOROTOLUENE	%	88

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

REAGENT BLANK

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)
Blank I.D. : 34426
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-01
Project Name: BP SITE #11107/18501 HESPERIAN BLVD., SAN LORENZO

ATI I.D. : 502227
Date Extracted: 21-FEB-95
Date Analyzed : 21-FEB-95
Dil. Factor : 1.00

Parameters	Units	Results
BENZENE	MG/KG	<0.025
TOLUENE	MG/KG	<0.025
ETHYLBENZENE	MG/KG	<0.025
XYLENES (TOTAL)	MG/KG	<0.050
FUEL HYDROCARBONS	MG/KG	<2.5
HYDROCARBON RANGE		C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE
SURROGATES		
TRIFLUOROTOLUENE	%	86

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

MSMSD

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)
MSMSD # : 73248
Client : ALISTO ENGINEERING

Project # : F937601/10-060-02-01
Project Name: BP SITE #11107/18501 HESPERIAN BLVD., SAN LORENZO

ATI I.D. : 502227
Date Extracted: 21-FEB-95
Date Analyzed : 21-FEB-95
Sample Matrix : SOIL
REF I.D. : 502227-05

Parameters	Units	Sample Result	Conc Spike	Spiked Sample	% Rec	Dup Spike	Dup % Rec	RPD
BENZENE	MG/KG	<0.025	0.50	0.38	76	0.39	78	3
TOLUENE	MG/KG	<0.025	0.50	0.38	76	0.39	78	3

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample Result - Duplicate Spike Result)*100/Average Result

ATI # [illegible]

BP

CHAIN OF CUSTODY

No. 055637 Page 1 of 2

CONSULTANT'S NAME	ADDRESS	CITY	STATE	ZIP CODE
Alisto Engineering	1777 Oakland Blvd Ste 200	Walnut Creek	CA	94596

BP SITE NUMBER	BP CORNER ADDRESS/CITY	CONSULTANT PROJECT NUMBER
11107	18501 Hesperian Blvd San Lorenzo	10-060-02-01

CONSULTANT PROJECT MANAGER	PHONE NUMBER	FAX NUMBER	CONSULTANT CONTRACT NUMBER
John DeGeorge	510-295-1650	510-295-1823	F937601

BP CONTACT	BP ADDRESS	PHONE NUMBER	FAX NO.
Scott Hooton	Renton, WA	206-251-0689	

LAB CONTACT	LABORATORY ADDRESS	PHONE NUMBER	FAX NO.
Gary Stuart	San Diego, CA		

SAMPLED BY (Please Print Name)	SAMPLED BY (Signature)	SHIPMENT DATE	SHIPMENT METHOD
John DeGeorge	[signature]	2-16-95	Fed Ex

AIRBILL NUMBER:

TAT: ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☒ Standard 2 Weeks

ANALYSIS REQUIRED

SAMPLE DESCRIPTION	COLLECTION DATE / COLLECTION TIME	MATRIX SOIL/WATER	CONTAINERS NO.	TYPE (VOL.)	PRESERVATIVE / LAB SAMPLE #	TPH-G/BTEX/TPH-D									COMMENTS
MW-5 5.5-6	2-15-95	S	1		01										Hold
MW-5 10.5-11	↓	↓	↓		02										Hold
MW-5 15.5-16	↓	↓	↓		03	X									
MW-5 20.5-21	↓	↓	↓		04	X									
MW-5 25.5-26	↓	↓	↓		05	X									
MW-6 5.5-6	↓	↓	↓		06										Hold
MW-6 10.5-11	↓	↓	↓		07										Hold
MW-6 15.5-16	↓	↓	↓		08	X									
MW-6 20.5-21	↓	↓	↓		09										Hold
MW-6 25.5-26	↓	↓	↓		10										Hold
MW-7 5.5-6	↓	↓	↓		11	X									
MW-7 10.5-11	↓	↓	↓		12	X									

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	ADDITIONAL COMMENTS
[signature] Alisto	2/16/95	1500	[signature] (ATI)	2-17-95	08:50	4.6°C

CLV 16722

Distribution: White - Original (with Data) Yellow - BP Pink - Lab Blue - Consultant Field Staff

ATTH 52227

CHAIN OF CUSTODY

No. 052498

CONSULTANT'S NAME	ADDRESS	CITY	STATE	ZIP CODE
Alisto Engineering	1777 Oakland Blvd Ste 200	Walnut Creek	CA	94596

BP SITE NUMBER	BP CORNER ADDRESS/CITY	CONSULTANT PROJECT NUMBER
11107	18501 Hesperian Blvd San Lorenzo	10-060-02-01

CONSULTANT PROJECT MANAGER	PHONE NUMBER	FAX NUMBER	CONSULTANT CONTRACT NUMBER
John DeGeorge	510-295-1650	510-295-1823	F9376001

BP CONTACT	BP ADDRESS	PHONE NUMBER	FAX NO.
Scott Hooton	Renton, WA	206-251-0689	

LAB CONTACT	LABORATORY ADDRESS	PHONE NUMBER	FAX NO.
Gary Stuart	San Diego, CA		

SAMPLED BY (Please Print Name)	SAMPLED BY (Signature)	SHIPMENT DATE	SHIPMENT METHOD
John DeGeorge	John DeGeorge	2-16-95	Fed Ex

TAT: ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☒ Standard 2 Weeks

ANALYSIS REQUIRED

AIRBILL NUMBER

SAMPLE DESCRIPTION	COLLECTION DATE / TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	TPH GAS	BTEX	COMMENTS
MW-7 15.5-16	2-15-95	S	1		13	X		
MW-7 20.5-21	↓	↓	↓		14			Hold
MW-7 25.5-26	↓	↓	↓		15			Hold

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
John DeGeorge Alisto	2/16/95	1500	[illegible] (LATL)	2/17/95	08:50

ADDITIONAL COMMENTS

4 °C

CLV-16722

Distribution: White - Original (with Data)
Yellow - BP
Pink - Lab
Blue - Consultant Field Staff

Analytical Technologies, Inc. Corporate Offices: 5550 Morehouse Drive San Diego, CA 92121 (619) 458-9141

ATI I.D.: 503089

March 21, 1995

ALISTO ENGINEERING
1777 OAKLAND BOULEVARD, SUITE 200
WALNUT CREEK, CA 94596

Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA
Project # : F937601/10-060-02-001

Attention: BRADY NAGLE

Analytical Technologies, Inc. has received the following sample(s):

Date Received	Quantity	Matrix
March 07, 1995	9	WATER

The sample(s) were analyzed with EPA methodology or equivalent methods as specified in the enclosed analytical schedule. The symbol for "less than" indicates a value below the reportable detection limit. If any flags appear next to the analytical data in this report, please see the attached list of flag definitions.

The results of these analyses and the quality control data are enclosed. Please note that the Sample Condition Upon Receipt Checklist is included at the end of this report.

For GARY STEWART
VOLATILES SUPERVISOR

ALAN J. KLEINSCHMIDT
LABORATORY MANAGER

RECEIVED
MAR 27 1995

Analytical Technologies, Inc.

SAMPLE CROSS REFERENCE

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

Report Date: March 21, 1995
ATI I.D. : 503089

ATI #	Client Description	Matrix	Date Collected
1	S-1	WATER	01-MAR-95
2	S-2	WATER	01-MAR-95
3	S-3	WATER	01-MAR-95
4	S-4	WATER	01-MAR-95
5	S-5	WATER	01-MAR-95
6	S-6	WATER	01-MAR-95
7	S-7	WATER	01-MAR-95
8	S-8	WATER	01-MAR-95
9	S-9	WATER	01-MAR-95

---TOTALS---

Matrix	# Samples
WATER	9

ATI STANDARD DISPOSAL PRACTICE

The sample(s) from this project will be disposed of in twenty-one (21) days from the date of this report. If an extended storage period is required, please contact our sample control department before the scheduled disposal date.

Analytical Technologies, Inc.

ANALYTICAL SCHEDULE

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D.: 503089

Analysis	Technique/Description
EPA 413.2 (OIL & GREASE)	INFRARED SPECTROMETER
EPA 601 (HALOGENATED VOLATILE ORGANICS)	GC/ELECTROLYTIC CONDUCTIVITY DETECTOR
EPA 6010 (CHROMIUM)	INDUCTIVELY COUPLED ARGON PLASMA
EPA 6010 (NICKEL)	INDUCTIVELY COUPLED ARGON PLASMA
EPA 6010 (ZINC)	INDUCTIVELY COUPLED ARGON PLASMA
EPA 6010 (CADMIUM)	INDUCTIVELY COUPLED ARGON PLASMA
EPA 6010 (LEAD)	INDUCTIVELY COUPLED ARGON PLASMA
EPA 8080 (POLYCHLORINATED BIPHENYLS)	GC/ELECTRON CAPTURE DETECTOR
EPA 8270 (GC/MS FOR SEMIVOLATILE ORGANICS)	GC/MASS SPECTROMETER
MOD EPA 8015-CDOHS (FUEL HYDROCARBONS: C6-C24)	GC/FLAME IONIZATION DETECTOR
MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C6-C12/BTXE)	GC/FLAME ION./PHOTO IONIZATION DETECTOR

Analytical Technologies, Inc.

GENERAL CHEMISTRY RESULTS

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D.: 503089

Sample #	Client ID	Matrix	Date Sampled	Date Received
1	S-1	WATER	01-MAR-95	07-MAR-95

Parameter	Units	1
OIL AND GREASE	MG/L	0.42

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

DUP/MS

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089

Parameters	REF I.D.	Units	Sample Result	Dup Result	RPD	Spiked Sample	Spike Conc	% Rec
OIL AND GREASE	503099-01	MG/L	0.31	0.32	3	4.9	5.0	92

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

Analytical Technologies, Inc.

GENERAL CHEMISTRY - QUALITY CONTROL

BLANK SPIKE

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089

Parameters	Blank Spike ID#	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
OIL AND GREASE	55032	MG/L	<0.05	4.5	5.0	90

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

Analytical Technologies, Inc.

METALS RESULTS

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D.: 503089

Sample #	Client ID	Matrix	Date Sampled	Date Received
1	S-1	WATER	01-MAR-95	07-MAR-9

Parameter	Units	1
CADMIUM	MG/L	0.0011
CHROMIUM	MG/L	0.03
NICKEL	MG/L	0.04
LEAD	MG/L	0.011
ZINC	MG/L	0.07

METALS - QUALITY CONTROL

DUP/MS

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089

Parameters	REF I.D.	Units	Sample Result	Dup Result	RPD	Spiked Sample	Spike Conc	% Rec
CADMIUM	503059-01	MG/L	<0.0005	<0.0005	0	1.82	2.00	91
CHROMIUM	503059-01	MG/L	<0.01	<0.01	0	2.05	2.00	103
LEAD	503059-01	MG/L	<0.002	0.002	N/A@S	1.80	2.00	90
NICKEL	503059-01	MG/L	<0.01	<0.01	0	2.06	2.00	103
ZINC	503059-01	MG/L	<0.05	<0.05	0	2.07	2.00	104

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

Analytical Technologies, Inc.

METALS - QUALITY CONTROL

BLANK SPIKE

Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089

Parameters	Blank Spike ID#	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
CADMIUM	54995	MG/L	<0.0005	1.90	2.00	95
CHROMIUM	55014	MG/L	<0.01	1.97	2.00	99
LEAD	54995	MG/L	<0.002	1.89	2.00	95
NICKEL	55014	MG/L	<0.01	1.98	2.00	99
ZINC	55012	MG/L	<0.05	2.01	2.00	101

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Sample Result - Duplicate Result)*100/Average Result

GAS CHROMATOGRAPHY RESULTS

Test : EPA 601 (HALOGENATED VOLATILE ORGANICS)
Client : ALISTO ENGINEERING ATI I.D. : 503089
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
1	S-1	WATER	01-MAR-95	N/A	10-MAR-95	1.00

Parameter	Units	1
BROMODICHLOROMETHANE	UG/L	<0.20
BROMOFORM	UG/L	<1.0
BROMOMETHANE	UG/L	<1.0
CARBON TETRACHLORIDE	UG/L	<0.20
CHLOROBENZENE	UG/L	<0.50
CHLOROETHANE	UG/L	<1.0
CHLOROFORM	UG/L	0.47
CHLOROMETHANE	UG/L	<1.0
DIBROMOCHLOROMETHANE	UG/L	<0.20
1,2-DICHLOROBENZENE	UG/L	<0.50
1,3-DICHLOROBENZENE	UG/L	<0.50
1,4-DICHLOROBENZENE	UG/L	<0.50
DICHLORODIFLUOROMETHANE	UG/L	<1.0
1,1-DICHLOROETHANE	UG/L	<0.20
1,2-DICHLOROETHANE	UG/L	<0.20
1,1-DICHLOROETHENE	UG/L	<0.20
CIS-1,2-DICHLOROETHENE	UG/L	<0.20
TRANS-1,2-DICHLOROETHENE	UG/L	<0.20
1,2-DICHLOROPROPANE	UG/L	<0.20
CIS-1,3-DICHLOROPROPENE	UG/L	<0.20
TRANS-1,3-DICHLOROPROPENE	UG/L	<0.20
METHYLENE CHLORIDE	UG/L	<2.0
1,1,2,2-TETRACHLOROETHANE	UG/L	<0.50
TETRACHLOROETHENE	UG/L	0.30
1,1,1-TRICHLOROETHANE	UG/L	0.54
1,1,2-TRICHLOROETHANE	UG/L	<0.20
TRICHLOROETHENE	UG/L	<0.20
TRICHLOROFLUOROMETHANE	UG/L	<2.0
VINYL CHLORIDE	UG/L	<0.20
SURROGATES		
BROMOFLUOROBENZENE (ELCD)	%	85
BROMOFLUOROBENZENE (PID)	%	78

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

REAGENT BLANK

Test : EPA 601 (HALOGENATED VOLATILE ORGANICS)
Blank I.D. : 34648
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: N/A
Date Analyzed : 10-MAR-95
Dil. Factor : 1.00

Parameters	Units	Results
BROMODICHLOROMETHANE	UG/L	<0.20
BROMOFORM	UG/L	<1.0
BROMOMETHANE	UG/L	<1.0
CARBON TETRACHLORIDE	UG/L	<0.20
CHLOROBENZENE	UG/L	<0.50
CHLOROETHANE	UG/L	<1.0
CHLOROFORM	UG/L	<0.20
CHLOROMETHANE	UG/L	<1.0
DIBROMOCHLOROMETHANE	UG/L	<0.20
1,2-DICHLOROBENZENE	UG/L	<0.50
1,3-DICHLOROBENZENE	UG/L	<0.50
1,4-DICHLOROBENZENE	UG/L	<0.50
DICHLORODIFLUOROMETHANE	UG/L	<1.0
1,1-DICHLOROETHANE	UG/L	<0.20
1,2-DICHLOROETHANE	UG/L	<0.20
1,1-DICHLOROETHENE	UG/L	<0.20
CIS-1,2-DICHLOROETHENE	UG/L	<0.20
TRANS-1,2-DICHLOROETHENE	UG/L	<0.20
1,2-DICHLOROPROPANE	UG/L	<0.20
CIS-1,3-DICHLOROPROPENE	UG/L	<0.20
TRANS-1,3-DICHLOROPROPENE	UG/L	<0.20
METHYLENE CHLORIDE	UG/L	<2.0
1,1,2,2-TETRACHLOROETHANE	UG/L	<0.50
TETRACHLOROETHENE	UG/L	<0.20
1,1,1-TRICHLOROETHANE	UG/L	<0.20
1,1,2-TRICHLOROETHANE	UG/L	<0.20
TRICHLOROETHENE	UG/L	<0.20
TRICHLOROFLUOROMETHANE	UG/L	<2.0
VINYL CHLORIDE	UG/L	<0.20
SURROGATES		
BROMOFLUOROBENZENE (ELCD)	%	75
BROMOFLUOROBENZENE (PID)	%	77

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

MSMSD

Test : EPA 601 (HALOGENATED VOLATILE ORGANICS)
MSMSD # : 73825
Client : ALISTO ENGINEERING

Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: N/A
Date Analyzed : 09-MAR-95
Sample Matrix : WATER
REF I.D. : 503058-05

Parameters	Units	Sample Result	Conc Spike	Spiked Sample	% Rec	Dup Spike	Dup % Rec	RPD
CHLOROBENZENE	UG/L	<0.50	2.0	2.2	110	2.2	110	0
CHLOROFORM	UG/L	<0.20	2.0	2.2	110	2.2	110	0
1,1-DICHLOROETHENE	UG/L	<0.20	2.0	2.2	110	2.2	110	0
TETRACHLOROETHENE	UG/L	<0.20	2.0	2.2	110	2.3	115	4
TRICHLOROETHENE	UG/L	<0.20	2.0	2.0	100	2.0	100	0

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample Result - Duplicate Spike Result)*100/Average Result

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

BLANK SPIKE

Test : EPA 601 (HALOGENATED VOLATILE ORGANICS)
Blank Spike #: 55104
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name : BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: N/A
Date Analyzed : 10-MAR-95
Sample Matrix : WATER

Parameters	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
CHLOROBENZENE	UG/L	<0.50	3.7	4.0	93
CHLOROFORM	UG/L	<0.20	1.9	2.0	95
1,1-DICHLOROETHENE	UG/L	<0.20	2.0	2.0	100
TETRACHLOROETHENE	UG/L	<0.20	2.0	2.0	100
TRICHLOROETHENE	UG/L	<0.20	2.0	2.0	100

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample - Blank Result)*100/Average Result

GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS: C6-C24)
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
1	S-1	WATER	01-MAR-95	08-MAR-95	09-MAR-95	1.00

Parameter	Units	1
FUEL HYDROCARBONS	MG/L	<0.50
HYDROCARBON RANGE		-
HYDROCARBONS QUANTITATED USING		-
SURROGATES		
BIS(2-ETHYLHEXYL)PHTHALATE	%	116

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

REAGENT BLANK

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS)
Blank I.D. : 34590
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: 08-MAR-95
Date Analyzed : 08-MAR-95
Dil. Factor : 1.00

Parameters	Units	Results
FUEL HYDROCARBONS	MG/L	<0.50
HYDROCARBON RANGE		C6-C14
HYDROCARBONS QUANTITATED USING		GASOLINE

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

MSMSD

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS)
MSMSD # : 73745
Client : ALISTO ENGINEERING

Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: 08-MAR-95
Date Analyzed : 08-MAR-95
Sample Matrix : WATER
REF I.D. : 503084-03

Parameters	Units	Sample Result	Conc Spike	Spiked Sample	% Rec	Dup Spike	Dup % Rec	RPD
FUEL HYDROCARBONS	MG/L	<0.50	10	9.2	92	8.9	89	3

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample Result - Duplicate Spike Result)*100/Average Result

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

BLANK SPIKE

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS)
Blank Spike #: 54979
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name : BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: 08-MAR-95
Date Analyzed : 08-MAR-95
Sample Matrix : WATER

Parameters	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
FUEL HYDROCARBONS	MG/L	<0.50	10	10	100

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample - Blank Result)*100/Average Result

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C6-C12/BTXE)
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
1	S-1	WATER	01-MAR-95	N/A	13-MAR-95	1.00
2	S-2	WATER	01-MAR-95	N/A	13-MAR-95	1.00
3	S-3	WATER	01-MAR-95	N/A	13-MAR-95	1.00

Parameter	Units	1 MW1	2 MW2	3 MW3
BENZENE	UG/L	<0.50	<0.50	<0.50
TOLUENE	UG/L	<0.50	<0.50	<0.50
ETHYLBENZENE	UG/L	<0.50	<0.50	<0.50
XYLENES (TOTAL)	UG/L	<1.0	<1.0	<1.0
FUEL HYDROCARBONS	UG/L	<50	<50	<50
HYDROCARBON RANGE		C6-C12	C6-C12	C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE	GASOLINE	GASOLINE
SURROGATES				
TRIFLUOROTOLUENE	%	99	106	107

GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C6-C12/BTXE)
Client : ALISTO ENGINEERING ATI I.D. : 503089
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
4	S-4	WATER	01-MAR-95	N/A	13-MAR-95	10.00
5	S-5	WATER	01-MAR-95	N/A	13-MAR-95	1.00
6	S-6	WATER	01-MAR-95	N/A	13-MAR-95	2.00

Parameter	Units	4 MW5	5 MW6	6 MW7
BENZENE	UG/L	150	11	14
TOLUENE	UG/L	<5.0	<0.50	<1.0
ETHYLBENZENE	UG/L	45	<0.50	14
XYLENES (TOTAL)	UG/L	390	<1.0	27
FUEL HYDROCARBONS	UG/L	9400@C	270@C	1400
HYDROCARBON RANGE		C6-C12	C6-C12	C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE	GASOLINE	GASOLINE
SURROGATES				
TRIFLUOROTOLUENE	%	108	103	124

@C SAMPLE CONTAINS MTBE PEAK

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY RESULTS

Test : MOD EPA 8015-CDOHS/8020 (HYDROCARBONS C6-C12/BTXE)
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
7	S-7	WATER	01-MAR-95	N/A	14-MAR-95	25.00
8	S-8	WATER	01-MAR-95	N/A	13-MAR-95	25.00
9	S-9	WATER	01-MAR-95	N/A	13-MAR-95	1.00

Parameter	Units	7 ← MW4 →	8	9
BENZENE	UG/L	1800	1700	<0.50
TOLUENE	UG/L	26	25	<0.50
ETHYLBENZENE	UG/L	450	410	<0.50
XYLENES (TOTAL)	UG/L	400	370	<1.0
FUEL HYDROCARBONS	UG/L	8900@C	7600@C	<50
HYDROCARBON RANGE		C6-C12	C6-C12	C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE	GASOLINE	GASOLINE
SURROGATES				
TRIFLUOROTOLUENE	%	99	97	79

@C SAMPLE CONTAINS MTBE PEAK

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

REAGENT BLANK

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)
Blank I.D. : 34635
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: N/A
Date Analyzed : 13-MAR-95
Dil. Factor : 1.00

Parameters	Units	Results
BENZENE	UG/L	<0.50
TOLUENE	UG/L	<0.50
ETHYLBENZENE	UG/L	<0.50
XYLENES (TOTAL)	UG/L	<1.0
FUEL HYDROCARBONS	UG/L	<50
HYDROCARBON RANGE		C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE
SURROGATES		
TRIFLUOROTOLUENE	%	109

GAS CHROMATOGRAPHY - QUALITY CONTROL

REAGENT BLANK

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)
Blank I.D. : 34644
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: N/A
Date Analyzed : 14-MAR-95
Dil. Factor : 1.00

Parameters	Units	Results
BENZENE	UG/L	<0.50
TOLUENE	UG/L	<0.50
ETHYLBENZENE	UG/L	<0.50
XYLENES (TOTAL)	UG/L	<1.0
FUEL HYDROCARBONS	UG/L	<50
HYDROCARBON RANGE		C6-C12
HYDROCARBONS QUANTITATED USING		GASOLINE
SURROGATES		
TRIFLUOROTOLUENE	%	98

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

MSMSD

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)
MSMSD # : 73901
Client : ALISTO ENGINEERING

Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: N/A
Date Analyzed : 13-MAR-95
Sample Matrix : WATER
REF I.D. : 503089-01

Parameters	Units	Sample Result	Conc Spike	Spiked Sample	% Rec	Dup Spike	Dup % Rec	RPD
BENZENE	UG/L	<0.50	5.0	4.5	90	4.8	96	6
TOLUENE	UG/L	<0.50	5.0	4.6	92	4.9	98	6

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample Result - Duplicate Spike Result)*100/Average Result

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

BLANK SPIKE

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)
Blank Spike #: 55063
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name : BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: N/A
Date Analyzed : 13-MAR-95
Sample Matrix : WATER

Parameters	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
BENZENE	UG/L	<0.50	4.7	5.0	94
TOLUENE	UG/L	<0.50	4.7	5.0	94

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample - Blank Result)*100/Average Result

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

BLANK SPIKE

Test : MOD EPA 8015-CDOHS (FUEL HYDROCARBONS/BTXE)
Blank Spike #: 55097
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name : BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: N/A
Date Analyzed : 14-MAR-95
Sample Matrix : WATER

Parameters	Units	Blank Result	Spiked Sample	Spike Conc.	% Rec
BENZENE	UG/L	<0.50	4.6	5.0	92
TOLUENE	UG/L	<0.50	4.9	5.0	98

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample - Blank Result)*100/Average Result

GAS CHROMATOGRAPHY RESULTS

Test : EPA 8080 (POLYCHLORINATED BIPHENYLS)
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
1	S-1	WATER	01-MAR-95	08-MAR-95	16-MAR-95	1.00

Parameter	Units	1
AROCLOR-1016	UG/L	<0.50
AROCLOR-1221	UG/L	<0.50
AROCLOR-1232	UG/L	<0.50
AROCLOR-1242	UG/L	<0.50
AROCLOR-1248	UG/L	<0.50
AROCLOR-1254	UG/L	<0.50
AROCLOR-1260	UG/L	<0.50
SURROGATES		
TCMX	%	70

AnalyticalTechnologies, Inc.

GAS CHROMATOGRAPHY - QUALITY CONTROL

REAGENT BLANK

Test : EPA 8080 (POLYCHLORINATED BIPHENYLS)
Blank I.D. : 34693
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: 08-MAR-95
Date Analyzed : 14-MAR-95
Dil. Factor : 1.00

Parameters	Units	Results
AROCLOR-1016	UG/L	<0.50
AROCLOR-1221	UG/L	<0.50
AROCLOR-1232	UG/L	<0.50
AROCLOR-1242	UG/L	<0.50
AROCLOR-1248	UG/L	<0.50
AROCLOR-1254	UG/L	<0.50
AROCLOR-1260	UG/L	<0.50
SURROGATES		
TCMX	%	86

GAS CHROMATOGRAPHY - QUALITY CONTROL

MSMSD

Test : EPA 8080 (POLYCHLORINATED BIPHENYLS)
MSMSD # : 73998
Client : ALISTO ENGINEERING

Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: 08-MAR-95
Date Analyzed : 14-MAR-95
Sample Matrix : WATER
REF I.D. : REAGENT WATER

Parameters	Units	Sample Result	Conc Spike	Spiked Sample	% Rec	Dup Spike	Dup % Rec	RPD
AROCLOR-1260	UG/L	<0.50	10	11	110	10	100	10

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample Result - Duplicate Spike Result)*100/Average Result

GAS CHROMATOGRAPHY/MASS SPECTROSCOPY RESULTS

Test : EPA 8270 (GC/MS FOR SEMIVOLATILE ORGANICS)
Client : ALISTO ENGINEERING ATI I.D. : 503089
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
1	S-1	WATER	01-MAR-95	08-MAR-95	11-MAR-95	1.00

Parameter	Units	1
N-NITROSODIMETHYLAMINE	UG/L	<15
PYRIDINE	UG/L	<10
PHENOL	UG/L	<10
ANILINE	UG/L	<10
BIS(2-CHLOROETHYL)ETHER	UG/L	<10
2-CHLOROPHENOL	UG/L	<10
1,3-DICHLOROBENZENE	UG/L	<10
1,4-DICHLOROBENZENE	UG/L	<10
BENZYL ALCOHOL	UG/L	<10
1,2-DICHLOROBENZENE	UG/L	<10
2-METHYLPHENOL	UG/L	<10
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	<15
4-METHYLPHENOL	UG/L	<10
N-NITROSO-DI-N-PROPYLAMINE	UG/L	<15
HEXACHLOROETHANE	UG/L	<10
NITROBENZENE	UG/L	<10
ISOPHORONE	UG/L	<10
2-NITROPHENOL	UG/L	<10
2,4-DIMETHYLPHENOL	UG/L	<10
BENZOIC ACID	UG/L	<50
BIS(2-CHLOROETHOXY)METHANE	UG/L	<10
2,4-DICHLOROPHENOL	UG/L	<10
1,2,4-TRICHLOROBENZENE	UG/L	<10
NAPHTHALENE	UG/L	<10
4-CHLOROANILINE	UG/L	<10
HEXACHLOROBUTADIENE	UG/L	<10
4-CHLORO-3-METHYLPHENOL	UG/L	<10
2-METHYLNAPHTHALENE	UG/L	<10
HEXACHLOROCYCLOPENTADIENE	UG/L	<10
2,4,6-TRICHLOROPHENOL	UG/L	<10
2,4,5-TRICHLOROPHENOL	UG/L	<50
2-CHLORONAPHTHALENE	UG/L	<10
2-NITROANILINE	UG/L	<50
DIMETHYLPHTHALATE	UG/L	<10
ACENAPHTHYLENE	UG/L	<10
2,6-DINITROTOLUENE	UG/L	<10
3-NITROANILINE	UG/L	<50
ACENAPHTHENE	UG/L	<10

GAS CHROMATOGRAPHY/MASS SPECTROSCOPY RESULTS

Test : EPA 8270 (GC/MS FOR SEMIVOLATILE ORGANICS)
Client : ALISTO ENGINEERING ATI I.D. : 503089
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

Sample #	Client ID	Matrix	Date Sampled	Date Extracted	Date Analyzed	Dil. Factor
1	S-1	WATER	01-MAR-95	08-MAR-95	11-MAR-95	1.00

Parameter	Units	1
2,4-DINITROPHENOL	UG/L	<50
4-NITROPHENOL	UG/L	<50
DIBENZOFURAN	UG/L	<10
2,4-DINITROTOLUENE	UG/L	<10
DIETHYLPHTHALATE	UG/L	<10
4-CHLOROPHENYL-PHENYLETHER	UG/L	<10
FLUORENE	UG/L	<10
4-NITROANILINE	UG/L	<50
2-METHYL-4,6-DINITROPHENOL	UG/L	<50
N-NITROSODIPHENYLAMINE	UG/L	<10
4-BROMOPHENYL-PHENYLETHER	UG/L	<10
HEXACHLOROBENZENE	UG/L	<10
PENTACHLOROPHENOL	UG/L	<50
PHENANTHRENE	UG/L	<10
ANTHRACENE	UG/L	<10
DI-N-BUTYLPHTHALATE	UG/L	<10
FLUORANTHENE	UG/L	<10
PYRENE	UG/L	<10
BUTYLBENZYLPHTHALATE	UG/L	<10
3,3'-DICHLOROBENZIDINE	UG/L	<20
BENZO(a)ANTHRACENE	UG/L	<10
CHRYSENE	UG/L	<10
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	<10
DI-N-OCTYLPHTHALATE	UG/L	<10
BENZO(b)FLUORANTHENE	UG/L	<10
BENZO(k)FLUORANTHENE	UG/L	<10
BENZO(a)PYRENE	UG/L	<10
INDENO(1,2,3-cd)PYRENE	UG/L	<10
DIBENZ(a,h)ANTHRACENE	UG/L	<10
BENZO(g,h,i)PERYLENE	UG/L	<10
SURROGATES		
NITROBENZENE-D5	%	80
2-FLUOROBIPHENYL	%	92
TERPHENYL-D14	%	63
PHENOL-D6	%	89
2-FLUOROPHENOL	%	79
2,4,6-TRIBROMOPHENOL	%	86

ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

Method : EPA 8270 (GC/MS FOR SEMIVOLATILE ORGANICS)
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D.: 503089

Sample	Parameters	Units	Results
1	NONE DETECTED	N/A	N/A

GAS CHROMATOGRAPHY/MASS SPECTROSCOPY - QUALITY CONTROL

REAGENT BLANK

Test : EPA 8270 (GC/MS FOR SEMIVOLATILE ORGANICS)
Blank I.D. : 34667
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: 08-MAR-95
Date Analyzed : 14-MAR-95
Dil. Factor : 1.00

Parameters	Units	Results
N-NITROSODIMETHYLAMINE	UG/L	<15
PYRIDINE	UG/L	<10
PHENOL	UG/L	<10
ANILINE	UG/L	<10
BIS(2-CHLOROETHYL)ETHER	UG/L	<10
2-CHLOROPHENOL	UG/L	<10
1,3-DICHLOROBENZENE	UG/L	<10
1,4-DICHLOROBENZENE	UG/L	<10
BENZYL ALCOHOL	UG/L	<10
1,2-DICHLOROBENZENE	UG/L	<10
2-METHYLPHENOL	UG/L	<10
BIS(2-CHLOROISOPROPYL)ETHER	UG/L	<15
4-METHYLPHENOL	UG/L	<10
N-NITROSO-DI-N-PROPYLAMINE	UG/L	<15
HEXACHLOROETHANE	UG/L	<10
NITROBENZENE	UG/L	<10
ISOPHORONE	UG/L	<10
2-NITROPHENOL	UG/L	<10
2,4-DIMETHYLPHENOL	UG/L	<10
BENZOIC ACID	UG/L	<50
BIS(2-CHLOROETHOXY)METHANE	UG/L	<10
2,4-DICHLOROPHENOL	UG/L	<10
1,2,4-TRICHLOROBENZENE	UG/L	<10
NAPHTHALENE	UG/L	<10
4-CHLOROANILINE	UG/L	<10
HEXACHLOROBUTADIENE	UG/L	<10
4-CHLORO-3-METHYLPHENOL	UG/L	<10
2-METHYLNAPHTHALENE	UG/L	<10
HEXACHLOROCYCLOPENTADIENE	UG/L	<10
2,4,6-TRICHLOROPHENOL	UG/L	<10
2,4,5-TRICHLOROPHENOL	UG/L	<50
2-CHLORONAPHTHALENE	UG/L	<10
2-NITROANILINE	UG/L	<50
DIMETHYLPHTHALATE	UG/L	<10
ACENAPHTHYLENE	UG/L	<10
2,6-DINITROTOLUENE	UG/L	<10
3-NITROANILINE	UG/L	<50
ACENAPHTHENE	UG/L	<10
2,4-DINITROPHENOL	UG/L	<50
4-NITROPHENOL	UG/L	<50
DIBENZOFURAN	UG/L	<10
2,4-DINITROTOLUENE	UG/L	<10
DIETHYLPHTHALATE	UG/L	<10
4-CHLOROPHENYL-PHENYLETHER	UG/L	<10
FLUORENE	UG/L	<10
4-NITROANILINE	UG/L	<50

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY/MASS SPECTROSCOPY - QUALITY CONTROL

REAGENT BLANK

Test : EPA 8270 (GC/MS FOR SEMIVOLATILE ORGANICS)
Blank I.D. : 34667
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: 08-MAR-95
Date Analyzed : 14-MAR-95
Dil. Factor : 1.00

Parameters	Units	Results
2-METHYL-4,6-DINITROPHENOL	UG/L	<50
N-NITROSODIPHENYLAMINE	UG/L	<10
4-BROMOPHENYL-PHENYLETHER	UG/L	<10
HEXACHLOROBENZENE	UG/L	<10
PENTACHLOROPHENOL	UG/L	<50
PHENANTHRENE	UG/L	<10
ANTHRACENE	UG/L	<10
DI-N-BUTYLPHTHALATE	UG/L	<10
FLUORANTHENE	UG/L	<10
PYRENE	UG/L	<10
BUTYLBENZYLPHTHALATE	UG/L	<10
3,3'-DICHLOROBENZIDINE	UG/L	<20
BENZO(a)ANTHRACENE	UG/L	<10
CHRYSENE	UG/L	<10
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L	<10
DI-N-OCTYLPHTHALATE	UG/L	<10
BENZO(b)FLUORANTHENE	UG/L	<10
BENZO(k)FLUORANTHENE	UG/L	<10
BENZO(a)PYRENE	UG/L	<10
INDENO(1,2,3-cd)PYRENE	UG/L	<10
DIBENZ(a,h)ANTHRACENE	UG/L	<10
BENZO(g,h,i)PERYLENE	UG/L	<10
SURROGATES		
NITROBENZENE-D5	%	83
2-FLUOROBIPHENYL	%	89
TERPHENYL-D14	%	79
PHENOL-D6	%	87
2-FLUOROPHENOL	%	76
2,4,6-TRIBROMOPHENOL	%	83

GAS CHROMATOGRAPHY/MASS SPECTROSCOPY - QUALITY CONTROL

REAGENT BLANK
ADDITIONAL COMPOUNDS (SEMI-QUANTITATED)

Test : EPA 8270 (GC/MS FOR SEMIVOLATILE ORGANICS)
Blank I.D. : 34667 ATI I.D. : 503089
Client : ALISTO ENGINEERING
Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

Parameters	Units	Results
NONE DETECTED	N/A	N/A

Analytical Technologies, Inc.

GAS CHROMATOGRAPHY/MASS SPECTROSCOPY - QUALITY CONTROL

MSMSD

Test : EPA 8270 (GC/MS FOR SEMIVOLATILE ORGANICS)
MSMSD # : 73963
Client : ALISTO ENGINEERING

Project # : F937601/10-060-02-001
Project Name: BP SITE #11107/18501 HESPERIAN, SAN LORENZO, CA

ATI I.D. : 503089
Date Extracted: 08-MAR-95
Date Analyzed : 15-MAR-95
Sample Matrix : WATER
REF I.D. : REAGENT WATER

Parameters	Units	Sample Result	Conc Spike	Spiked Sample	% Rec	Dup Spike	Dup % Rec	RPD
PHENOL	UG/L	<10	150	110	73	120	80	9
2-CHLOROPHENOL	UG/L	<10	150	120	80	120	80	0
1,4-DICHLOROBENZENE	UG/L	<10	100	72	72	74	74	3
N-NITROSO-DI-N-PROPYLAMINE	UG/L	<15	100	92	92	96	96	4
1,2,4-TRICHLOROBENZENE	UG/L	<10	100	76	76	79	79	4
4-CHLORO-3-METHYLPHENOL	UG/L	<10	150	120	80	130	87	8
ACENAPHTHENE	UG/L	<10	100	84	84	87	87	4
4-NITROPHENOL	UG/L	<50	150	140	93	150	100	7
2,4-DINITROTOLUENE	UG/L	<10	100	77	77	78	78	1
PENTACHLOROPHENOL	UG/L	<50	150	140	93	150	100	7
PYRENE	UG/L	<10	100	86	86	89	89	3

% Recovery = (Spike Sample Result - Sample Result)*100/Spike Concentration
RPD (Relative % Difference) = (Spiked Sample Result - Duplicate Spike Result)*100/Average Result

ANALYTICAL TECHNOLOGIES, INC.
SAN DIEGO
FLAGS

INORGANICS

FLAG	MESSAGE DESCRIPTION
B	ABSOLUTE VALUE OF ANALYTE CONCENTRATION IS < CRDL BUT ≥ THE IDL
BB	RESULT BETWEEN IDL AND LOQ
D	POST DIGESTION SPIKE FOR GFAA OUTSIDE LIMITS AFTER 1:25 DILUTION. SAMPLE REPORTED AT ORIGINAL CONCENTRATION.
E	ESTIMATED VALUE DUE TO INTERFERENCE
M	DUPLICATE INJECTION PRECISION NOT MET
N	SPIKED SAMPLE RECOVERY NOT WITHIN CONTROL LIMITS
S	REPORTED VALUE WAS DETERMINED BY METHOD OF STANDARD ADDITIONS
U	COMPOUND WAS ANALYZED FOR BUT NOT DETECTED
W	POST DIGESTION SPIKE OUT OF CONTROL LIMITS; SAMPLE ABSORBANCE < 50% OF SPIKE ABSORBANCE FOR GF/AA
X	ABSOLUTE VALUE OF ANALYTE CONCENTRATION IS LESS THAN 3 TIMES THE MDL
*	DUPLICATE ANALYSIS NOT WITHIN CONTROL LIMITS
+	CORRELATION COEFFICIENT FOR MSA IS LESS THAN 0.995
*H	RESULTS OUTSIDE OF LIMITS DUE TO SAMPLE MATRIX INTERFERENCE
*Q	INSUFFICIENT SAMPLE FOR ANALYSIS
*R	DATA IS NOT USABLE
*V	SAMPLE RESULT IS >4X SPIKED CONCENTRATION, THEREFORE SPIKE IS NOT DETECTABLE
*Y	RESULT NOT ATTAINABLE DUE TO SAMPLE MATRIX INTERFERENCE
@C	*VARIABLE MESSAGE*
@H	DETECTION LIMIT ELEVATED DUE TO MATRIX INTERFERENCE
@Q	DETECTION LIMIT ELEVATED DUE TO LIMITED SAMPLE FOR ANALYSIS
@R	RPD LIMIT IS 67% FOR INORGANIC RESULTS LESS THAN TEN TIMES THE REPORTING DETECTION LIMIT
@S	RPD: ONE RESULT ABOVE AND ONE RESULT BELOW REPORTING LIMIT (RL). RESULT ABOVE SHOULD BE < 5 TIMES RL TO BE IN CONTROL.
@V	PRE-DIGEST SPIKE OUT OF LIMITS. POST DIGESTION SPIKE YIELDED ACCEPTABLE RESULTS
@W	DETECTION LIMIT ELEVATED DUE TO REDUCED SAMPLE WEIGHT
@Y	ION BALANCE OUTSIDE OF ATI'S ACCEPTANCE LIMITS; REANALYSIS CONFIRMED ORIGINAL RESULT
@X	RESULTS VERIFIED BY REDIGESTION AND REANALYSIS

ANALYTICAL TECHNOLOGIES, INC.
SAN DIEGO
FLAGS

ORGANICS

FLAG	MESSAGE DESCRIPTION
A	A TIC IS A SUSPECTED ALDOL-CONDENSATION PRODUCT
B	ANALYTE FOUND IN THE ASSOCIATED REAGENT BLANK
C	PESTICIDE, WHERE THE IDENTIFICATION WAS CONFIRMED BY GC/MS
CO	THESE COMPOUNDS CO-ELUTE AND ARE QUANTITATED AS ONE PEAK
D	COMPOUND IDENTIFIED IN AN ANALYSIS AT SECONDARY DILUTION
E	ANALYTE AMOUNT EXCEEDS THE CALIBRATION RANGE
J	ESTIMATED VALUE
H	QUANTIFIED AS DIESEL BUT CHROMATOGRAPHIC PATTERN DOES NOT MATCH THAT OF DIESEL
K	QUANTIFIED AS KEROSENE BUT CHROMATOGRAPHIC PATTERN DOES NOT MATCH THAT OF KEROSENE
L	QUANTIFIED AS GASOLINE BUT CHROMATOGRAPHIC PATTERN DOES NOT MATCH THAT OF GASOLINE
N	PRESUMPTIVE EVIDENCE OF A COMPOUND
P	PESTICIDE/AROCLOR TARGET ANALYTE, WHERE THERE IS GREATER THAN 25% DIFFERENCE FOR DETECTED CONCENTRATION BETWEEN 2 GC COLUMNS
TR	COMPOUND DETECTED AT AN UNQUANTIFIABLE TRACE LEVEL
U	COMPOUND WAS ANALYZED FOR BUT NOT DETECTED
X	SEE CASE NARRATIVE
Y	SEE CASE NARRATIVE
Z	SEE CASE NARRATIVE
*	OUTSIDE OF QUALITY CONTROL LIMITS
*D	COMPOUND ANALYZED FROM A SECONDARY ANALYSIS
*F	RESULT OUTSIDE OF ATI'S QUALITY CONTROL LIMITS
*G	RESULT OUTSIDE QUALITY CONTROL LIMITS. INSUFFICIENT SAMPLE FOR RE-EXTRACTION/ANALYSIS
*H	RESULT OUTSIDE OF LIMITS DUE TO SAMPLE MATRIX INTERFERENCE
*I	BECAUSE OF NECESSARY SAMPLE DILUTION, VALUE WAS OUTSIDE QC LIMITS
*K	DUE TO THE NECESSARY DILUTION OF THE SAMPLE, RESULT WAS NOT ATTAINABLE
*L	ANALYTE IS A SUSPECTED LAB CONTAMINANT
*P	A STANDARD WAS USED TO QUANTITATE THIS VALUE
*R	DATA IS NOT USABLE
*T	SURROGATE RECOVERY IS OUTSIDE QC CONTROL LIMITS. NO CORRECTIVE ACTION INDICATED BY METHOD
*V	SAMPLE RESULT IS >4X SPIKED CONCENTRATION, THEREFORE SPIKE IS NOT DETECTABLE
*Y	RESULT NOT ATTAINABLE DUE TO SAMPLE MATRIX INTERFERENCE
@A	RESULTS OUT OF LIMITS DUE TO SAMPLE NON-HOMOGENEITY
@C	*VARIABLE MESSAGE*
@D	RESULT COULD NOT BE CONFIRMED DUE TO MATRIX INTERFERENCE ON THE CONFIRMATION COLUMN
@E	RESULT MAY BE FALSELY ELEVATED DUE TO SAMPLE MATRIX INTERFERENCE
@F	RESULT OUTSIDE OF CONTRACT SPECIFIED QUALITY CONTROL LIMITS
@G	RESULT OUTSIDE OF CONTRACT SPECIFIED ADVISORY LIMITS
@H	DETECTION LIMIT ELEVATED DUE TO MATRIX INTERFERENCE
@M	RESULT NOT CONFIRMED BY U.V. DUE TO SAMPLE MATRIX INTERFERENCE
@N	RESULT NOT CONFIRMED BY FLUORESCENCE DUE TO SAMPLE MATRIX INTERFERENCE
@P	RESULT QUANTITATED USING FLUORESCENCE ONLY DUE TO THE LOW CONCENTRATION
@Q	DETECTION LIMIT ELEVATED DUE TO LIMITED SAMPLE FOR ANALYSIS
@T	RESULT DUE TO TCLP EXTRACTION MATRIX INTERFERENCE. NO QC LIMITS HAVE BEEN ESTABLISHED
@U	SAMPLE CHROMATOGRAM DOES NOT RESEMBLE COMMON FUEL HYDROCARBON FINGERPRINTS
@Z	SAMPLE CHROMATOGRAM DOES NOT RESEMBLE A FUEL HYDROCARBON

AII # 502089

CHAIN OF CUSTODY

No. 03523

Page ____ of ____

CONSULTANT'S NAME: Alisto Engineering	ADDRESS: 1777 Oakland Blvd	CITY: Walnut Creek	STATE: CA ZIP CODE: 94596
BP SITE NUMBER: 11107	BP CORNER ADDRESS/CITY: 18581 Hesperian, San Lorenzo, CA		CONSULTANT PROJECT NUMBER: 10-060-5X-001
CONSULTANT PROJECT MANAGER: BRADY MABLE	PHONE NUMBER: (510) 295-1650	FAX NUMBER: (510) 295-1823	CONSULTANT CONTRACT NUMBER: ~~S463056~~
BP CONTACT: Scott Heaton	BP ADDRESS: Renton, WA	PHONE NUMBER	FAX NO.: F9376001
LAB CONTACT: Corey Stewart	LABORATORY ADDRESS: San Diego, CA	PHONE NUMBER	FAX NO.
SAMPLED BY (Please Print Name): Michael J. Killoran	SAMPLED BY (Signature): Michael J. Killoran	SHIPMENT DATE	SHIPMENT METHOD: UPS
			AIRBILL NUMBER

TAT: ☐ 24 Hours ☐ 48 Hours ☐ 1 Week ☒ Standard 2 Weeks

ANALYSIS REQUIRED

SAMPLE DESCRIPTION	COLLECTION DATE / TIME	MATRIX SOIL/WATER	CONTAINERS NO.	CONTAINERS TYPE (VOL.)	PRESERVATIVE LAB SAMPLE #	TPH-G & BTEX	EPA 601	TPH D	TOG	8310 PNA + Creosote	8040 PCB	RCRA Metals	COMMENTS
S-1 3-1-95	2:25	Water	10	various	01	✓	✓	✓	✓	✓	✓	✓	
S-2	3:35		2	VOA	02	✓							
S-3	3:45				03	✓							
S-4	4:05				04	✓							
S-5	4:20				05	✓							
S-6	4:35				06	✓							
S-7	4:55				07	✓							
S-8	5:00				08	✓							
S-9	5:05				09	✓							

RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME
Michael J. Killoran	3/3/95	4:15	(ATI)	3/4/95	09:00

ADDITIONAL COMMENTS

cooler # 10-8 = 2.0°C

CLV-16722

Distribution: White - Original (with Data)
Yellow - BP
Pink - Lab
Blue - Consultant Field Staff