EXXON COMPANY, U.S.A.
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ENVIRONMENTAL ENGINEERING
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July 14, 1993

Ms. Juliet Shin
Alameda County Department of Environmental Health
Hazardous Materials Division
80 Swan Way, Room 200
Oakland, CA 94621

RE: Exxon RAS #7-0104, 1725 Park Street, Alameda, CA

Dear Ms. Shin:

As requested, attached for your review and comment is a report entitled **Problem Assessment Report** for the above referenced site. This report, prepared by RESNA Industries, Inc., of Novato, California, details the results of the installation of three downgradient offsite groundwater monitoring wells.

The second quarter monitoring report will be forwarded to your office in the near future. Exxon will continue to operate the groundwater remediation system and continue with its quarterly monitoring program at the site.

If you have any questions or comments, or require additional information, please contact me at the above listed phone number.

Sincerely,

Marla D. Guensler
Senior Environmental Engineer

MDG/mdg

enclosure: RESNA Problem Assessment Report dated July 13, 1993

cc: w/attachment:
Mr. John Margowski - Wickland Oil Co.
Mr. Richard Hiett - San Francisco Bay RWQCB

w/o attachment:
Mr. Gary Pischke - RESNA
Novato

RESNA
Working To Restore Nature

73 Digital Drive
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July 1993

PROBLEM ASSESSMENT REPORT
for
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

RESNA Report No. 170077.05

Report Prepared for

Exxon Company , U.S.A.
P.O. Box 4032
Concord, California 94524

by
RESNA Industries, Inc.

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No. 1501
CERTIFIED
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STATE OF CALIFORNIA

Gary Pischke
Sr. Project Geologist CEG

Keith A. Romstad
Branch Manager

July 13, 1993

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for
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

for

Exxon Company , U.S.A.

INTRODUCTION

At the request of Exxon Company, U.S.A. (Exxon), RESNA Industries, Inc. (RESNA) conducted an environmental investigation to evaluate the extent of petroleum hydrocarbons in soil and groundwater adjacent to Exxon Service Station No. 7-0104 in Alameda, California. Gasoline hydrocarbons were detected in soil and groundwater during previous investigations at the site. Work conducted during this investigation included drilling three soil borings adjacent to the site, installing groundwater monitoring wells in the borings, and collecting and analyzing soil and groundwater samples.

BACKGROUND

Site Description

Exxon Station No. 7-0104 is an operating retail gasoline station located at the western corner of Park Street and Eagle Avenue in Alameda, California, as depicted on the Site Vicinity Map (Plate 1). The site is at an elevation of approximately 17 feet above mean sea level and the surrounding topography is relatively flat (U.S. Geological Survey, 1980). Structures at the site include a building with a convenience store, two multi-pump fuel-dispenser islands, and three underground gasoline storage tanks. The site is in a commercial district; however, a high school is within 1,000 feet. The approximate locations of the station facilities, existing underground storage tanks and pump islands, and other pertinent site features are shown on the Generalized Site Plan (Plate 2). There are existing or former retail service station sites at each corner of the intersection (see Area Map, Plate 3).

Previous Environmental Investigations

Previous work at the site has included the replacement of three underground storage tanks in 1989. Harding Lawson Associates (Harding Lawson) of Novato, California, performed an initial investigation which included drilling six soil borings and constructing six groundwater monitoring wells at the site. Gasoline hydrocarbons were detected in soil and groundwater (Harding Lawson Associates, March 21, 1989). Harding Lawson subsequently drilled seven shallow soil borings and one deep boring, constructed one groundwater monitoring well onsite, installed five groundwater extraction wells, and conducted a series of aquifer slug tests (Harding Lawson Associates, May 1, 1990). Exxon began groundwater monitoring at the site in 1988: monitoring has been conducted by Harding Lawson and RESNA Industries. The locations of the wells are shown on Plate 2.

In September 1992, Harding Lawson performed an offsite groundwater survey to evaluate the horizontal extent of petroleum hydrocarbons in groundwater that are related to an onsite release and whether potential offsite sources contributed to dissolved hydrocarbons in the vicinity of the site. Harding Lawson concluded that petroleum hydrocarbons from onsite sources appear to be generally limited to the site with possible restricted offsite migration. Harding Lawson further concluded that additional sources of petroleum hydrocarbons are present to the southeast and southwest of the site. During the field investigation, groundwater monitoring wells were noted at the former service station across Park Street southeast of the site, which is likely the source of petroleum hydrocarbons southeast of the Exxon site. Additionally, results indicated a release of petroleum hydrocarbons may have occurred southwest upgradient of the site. A possible source of petroleum hydrocarbons to the southwest of the Exxon site is a Shell service station on Park Street (although no documentation exists; Harding Lawson Associates, October 30, 1992).

In October 1992, Harding Lawson performed a vapor-extraction test, which included six individual short-term tests. Results of the test indicated soil-vapor extraction appears to be a viable technology for removing hydrocarbons from soil; however, existing wells do not have sufficient open length to allow adequate air flow. During the tests, the air flow rates from the wells generally did not increase with applied vacuum, indicating that the air flow paths to the wells did not develop significantly during short-term operation. Air flow rates were generally low (between 1 and 6.5 cubic feet per minute)

except for well MW-7, which achieved a flow rate of 26 cubic feet per minute. The induced vacuum created a radius of influence generally between 30 and 50 feet (Harding Lawson, December 28, 1992).

In December 1992, Harding Lawson began construction of a groundwater removal and treatment system at the site. The system removes groundwater from the existing extraction wells to an aboveground bioreactor tank, through activated carbon canisters, and to the sanitary sewer system. Harding Lawson began operation of the system in March 1993.

Harding Lawson concluded that onsite groundwater extraction could potentially alter the migration path of offsite plumes and make differentiation of plume boundaries difficult (Harding Lawson, October 30, 1992). Additionally, the potential contribution of petroleum hydrocarbons from offsite sources could impact the duration of remediation unless measures are taken by the other respective responsible parties to prevent migration of petroleum hydrocarbons to the Exxon site.

REGIONAL GEOLOGY AND HYDROGEOLOGY

The site is on the eastern edge of the San Francisco Bay on the island of Alameda. Sediments in the area of the site generally consist of fill comprised of gravelly clay and clayey gravel that extends to approximately 5 feet below grade. The fill is underlain by the Quaternary age Merrit Sand and Posey Formations that extend to 30 to 40 feet below grade. These formations consist of sand, silt, silty and clayey sand, and sandy clay. These formations are underlain by the San Antonio Formation, consisting of silty clay with thin lenses of fine gravel. The silty clay reportedly extends to 120 feet below grade and serves as a confining layer for the overlying aquifer. The San Antonio Formation overlies the Alameda Formation which is a 10- to 200-feet thick water-bearing unit. The depth of this formation is unknown.

CURRENT INVESTIGATION

Work at the site was performed in accordance with our Work Plan No.170077.02W (RESNA, February 25, 1993). The well drilling was performed under permit from Alameda County Flood Control and Water Conservation District, Zone 7. A copy of the permit is in Appendix A. RESNA's standard methods for field work are also described in Appendix A.

Assessment of Soil

On May 5, 1993, RESNA's field geologist observed PC Exploration, Inc. of Fremont, California (PC) drill three soil borings (B-8, B-9, and B-10) adjacent to the site. The borings were terminated at 19 to 21.5 feet below grade. Groundwater was encountered at approximately 6.5 feet below grade. Boring locations are shown on Plate 2.

RESNA's geologist collected soil samples from the borings for possible laboratory analyses (Field Methods, Appendix A). Sediments were identified using visual and manual methods and classified according to the Unified Soil Classification System (Appendix B). The geologist also analyzed the soil samples with a field photoionization detector to characterize the relative levels of hydrocarbons in the samples. The sediments encountered and the photoionization detector readings are presented on the Boring Logs (Appendix B).

Drill cuttings were stored in drums onsite pending receipt of analytical results to evaluate proper disposal. At the request of Exxon, RESNA will coordinate with Exxon's selected contractor for removal of the cuttings to an appropriate disposal facility.

Assessment of Groundwater

RESNA observed PC construct groundwater monitoring wells MW-8, MW-9, and MW-10 in borings B-8, B-9, and B-10, respectively. The wells were developed on May 14, 1993. After the wells were purged, our representative measured the depths to groundwater and collected groundwater samples from the wells for subjective and laboratory analyses (Appendix A). Well locations are shown on Plate 2. Details on the construction of the wells are shown on the Boring Logs (Appendix B).

Water purged during development was placed in Department of Transportation 17E drums and subsequently directed into the on-site groundwater treatment system.

On May 6, 1993, Ron Archer Civil Engineer, Inc. of Pleasanton, California (Registered Professional Engineer No. 23721) surveyed the elevations of the top of the well casing of wells MW-8, MW-9, and MW-10.

Laboratory Analyses

Selected soil samples from the borings were analyzed for total petroleum hydrocarbons as gasoline (TPHg) using Environmental Protection Agency Method 5030/8015M, total petroleum hydrocarbons as diesel (TPHd) using EPA Method 3550/8015, and benzene, toluene, ethylbenzene, and total xylene isomers (BTEX) using EPA Method 5030/8020M. Groundwater samples were analyzed for TPHg and BTEX using modified EPA Methods 8015 and 8020. Soil and water samples were analyzed at Pace Inc., a California-certified laboratory in Novato, California. The Reports of Laboratory Analysis and Chain of Custody Records are in Appendix C.

SITE CONDITIONS

Site Geology

Sediments encountered beneath the site during the initial and current investigations consisted of silty sand, sandy gravel, sand, and clayey sand. From surface grade to approximately 1 feet below grade is a layer of sandy gravel with some silty sand. Beneath this layer in borings B-1, B-4 and B-5, is a layer of clayey sand to 10 to 15 feet. Below the surface grade and clayey sand layer to the total depth of the borings (41 feet below grade), sediments consist of silty sand, sand, and sand with some clay. Groundwater was encountered in the silty sand. Descriptions of sediments are shown on the Boring Logs in Appendix B.

Site Hydrogeology

Groundwater was encountered at 6.5 to 7 feet below grade in the onsite and offsite soil borings. The static water level measured in the wells ranged from 4.1 to 7.5 feet below grade. During the last monitoring event in May 1993, the static water level was 6.5 to 7.3 feet below grade.

RESNA compiled potentiometric data to evaluate the general direction of groundwater flow beneath and adjacent to the site. Depth-to-water measurements taken on May 14, 1993, were used to calculate the groundwater elevation in each well, with the exception of the extraction wells. Based on these data, the evaluated groundwater flow direction was to the southeast with an approximate gradient of 0.011 (Plate 4). The groundwater flow direction is generally consistent with the previous groundwater flow directions interpreted for this site. Cumulative depth-to-water and groundwater elevation data are presented in Table 1.

Results of the slug test performed in February 1990 by Harding Lawson resulted in hydraulic conductivity and transmissivity values ranging from 0.49 to 1.04 feet per day and 14 to 30 square feet per day, respectively (Harding Lawson, May 1, 1990). Harding Lawson reported that the mean hydraulic conductivity and transmissivity values are representative of silty sand of the uppermost aquifer beneath the site.

Residual Hydrocarbons in Soil

The results of laboratory analyses of soil samples collected from the onsite and offsite borings were used to evaluate the lateral and vertical extent of residual petroleum hydrocarbons in soil. The sample locations and the concentrations of TPHg and benzene are presented on Plate 5. Table 2 shows the summary of analytical results for soil samples.

Residual gasoline hydrocarbons were not detected in soil borings drilled offsite (B-8 through B-10). Soil containing gasoline hydrocarbons was found in onsite wells with the highest concentrations detected in soil at approximately 5 feet below grade, in the capillary fringe. Diesel hydrocarbons were not detected in the offsite soil borings; soil samples collected during previous investigations were not analyzed for diesel.

Separate Phase Product in Groundwater

Results of subjective analyses of groundwater from wells MW-1 through MW-10 indicated separate phase product was reported in the sample from well MW-2 at 0.01 foot in the February 1993 groundwater monitoring event, and a hydrocarbon sheen was observed in previous monitoring events in wells MW-1, MW-2, MW-4, and MW-5 and once in well MW-6. Cumulative results of subjective analyses are shown in Table 1.

Dissolved Hydrocarbons in Groundwater

The results of laboratory analyses of groundwater samples collected from the monitoring wells during groundwater monitoring were used to evaluate the extent of dissolved gasoline hydrocarbons in groundwater. Cumulative results of analyses are shown on Table 1 . Concentrations of TPHg and benzene in samples collected in April and May 1993 are shown on Plate 6.

Gasoline hydrocarbons (TPHg and BTEX) have been detected in groundwater samples from all the onsite wells. Concentrations of TPHg and BTEX were below detection limits in samples from offsite wells MW-8, MW-9, and MW-10 except for 97 parts per billion (ppb) TPHg detected in well MW-10, east and downgradient of the site. Concentrations of TPHg in the onsite wells have ranged from 540 ppb (MW-1) to 30,000 ppb (MW-5), and concentrations of benzene have ranged from 9.0 ppb (MW-1) to 12,000 ppb (MW-6).

SUMMARY AND CONCLUSIONS

RESNA's findings from field observations and interpretations of laboratory analyses are as follows:

- Sediments beneath the site consist of silty sand, sandy gravel, sand, and clayey sand.
- Groundwater was encountered in silty sand at 6.5 to 7 feet below grade. The static water level has ranged from 4.1 to 7.5 feet below grade. The static water level is currently 6.5 to 7.3 feet below grade. The groundwater flow direction, excluding the extraction wells, during May 1993 was to the southeast with an approximate gradient of 0.011; the flow direction has generally been southeast to east since the investigation began.

- Soil containing residual gasoline hydrocarbons exists onsite. The highest concentrations were detected at approximately 5 feet below grade, in the capillary fringe. The maximum concentrations of TPHg and benzene reported in soil samples were 2,600 ppm and 6.9 ppm, respectively. Residual gasoline and diesel hydrocarbons were not detected in offsite soil borings.

- Separate phase product has been observed in the subjective analyses from well MW-2 during the February 1993 sampling event, and hydrocarbon sheen was historically observed in wells MW-1, MW-2, MW-4, MW-5, and MW-6, during previous monitoring events from June 1988 through February 1993.

- Dissolved gasoline hydrocarbons were detected in groundwater samples from the onsite wells but were not detected in the offsite wells except for 97 ppb TPHg detected in well MW-10, east and downgradient of the site. The maximum concentration of TPHg was 30,000 ppb, and the maximum concentration of benzene was 12,000 ppb.

On the basis of results of the investigation, RESNA concludes that dissolved hydrocarbons are delineated in groundwater, and residual hydrocarbons are delineated and limited to onsite soil. Because residual hydrocarbons are concentrated in the capillary fringe, hydrocarbons in soil were adsorbed from groundwater. Furthermore, based on the results of analyses of groundwater samples collected west of the site along Park Avenue and concentrations of hydrocarbons detected onsite in upgradient wells, RESNA believes an upgradient hydrocarbon source is present.

LIMITATIONS

This report was prepared in accordance with generally accepted standards of environmental geological practice in California at the time it was prepared. The investigations were conducted solely for the purpose of evaluating environmental conditions of the soil and groundwater with respect to hydrocarbon product. No soil engineering or geotechnical references are implied or should be inferred. Evaluation of the geologic conditions at the site for the purpose of these investigations is made from a limited number of observation points. Subsurface conditions may vary away from the data points available. Additional work, including further subsurface investigation, can reduce the inherent uncertainties associated with these types of investigations.

REFERENCES

Harding Lawson Associates, March 21, 1989. Phase II Evaluation of Petroleum Hydrocarbons, Exxon Service Station R/S 7-0104, 1725 Park Street, Alameda, California.

Harding Lawson Associates, May 1, 1990. Phase III Evaluation of Petroleum Hydrocarbons, Exxon Service Station R/S 7-0104, 1725 Park Street, Alameda, California.

Harding Lawson Associates, October 30, 1992. Offsite Groundwater Survey, Exxon Station 7-0104, Alameda, California. 10495 579.

Harding Lawson Associates, December 28, 1992. Pilot Soil Vapor Extraction Test Report, Exxon Service Station 7-0104, 1725 Park Street, Alameda, California.

RESNA Industries, Inc. February 25, 1993. Work Plan: Supplemental Environmental Investigation at Exxon Service Station No. 7-0104, 1725 Park Street, Alameda, California. Work Plan No. 17077.2W

United States Geological Survey, 1980. Oakland-East, California, 7.5-Minute Topographic Quadrangle Map.

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 1 of 8)

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.-W	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-1	06/07/88	---	---	---	27,000	5,000	77	1,100	2,700
(17.35)	06/10/88	NP	6.35	11.00	---	---	---	---	---
	01/17/89	NP	5.81	11.54	6,800	2,000	91	800	1,600
	01/24/89	NP	5.16	12.19	---	---	---	---	---
	06/01/89	sheen	6.27	11.08	1,700	170	6.9	13	230
	09/18/89	NP	7.11	10.24	2,100	9.0	53	18	130
	10/20/89	NP	7.28	10.07	---	---	---	---	---
	11/22/89	NP	7.02	10.33	---	---	---	---	---
	12/11/89	NP	6.60	10.75	5,800	200	42	290	330
	02/13/90	NP	6.02	11.33	---	---	---	---	---
	03/07/90 (a)	---	---	---	---	---	---	---	---
	03/13/90	NP	5.91	11.44	2,300	430	14	16	220
	04/18/90	NP	6.18	11.17	---	---	---	---	---
	05/23/90	NP	6.29	11.06	---	---	---	---	---
	06/14/90	NP	6.19	11.28	32,000	1,400	19	<5	120
	08/21/90	NP	7.03	10.32	---	---	---	---	---
	09/19/90	NP	7.26	10.09	950	290	2.9	<0.5	27
	12/17/90	NP	6.75	10.60	2,100	550	13	350	110
	01/31/91	NP	6.78	10.57	---	---	---	---	---
	02/25/91	NP	6.59	10.76	---	---	---	---	---
	03/19/91	NP	5.85	11.50	1,400	900	45	390	150
	04/22/91	sheen	5.72	11.63	---	---	---	---	---
	05/17/91	NP	6.00	11.35	---	---	---	---	---
	07/24/91	NP	6.79	10.56	9,700	1,300	670	950	2,100
	09/10/91	NP	7.25	10.10	---	---	---	---	---
	09/23/91	NP	7.33	10.02	---	---	---	---	---
	10/21/91	NP	7.53	9.82	---	---	---	---	---
	10/22/91	---	---	---	540	220	1.8	110	7.8
	11/18/91	NP	7.13	10.22	---	---	---	---	---
	12/11/91	NP	7.25	10.10	---	---	---	---	---
	01/21/92	NP	6.54	10.81	1,800	650	23	300	64
	02/20/92	NP	4.82	12.53	---	---	---	---	---
	03/19/92	NP	5.24	12.11	---	---	---	---	---
	04/24/92	NP	5.71	11.64	4,900	1,600	78	660	250
	05/13/92	NP	5.99	11.36	---	---	---	---	---
	06/24/92	NP	6.65	10.70	---	---	---	---	---
	07/16/92	NP	6.72	10.63	3,400	1,000	11	550	100
	08/19/92	NP	7.07	10.28	---	---	---	---	---
	09/24/92	NP	7.36	9.99	3,700	1,300	21	330	<10
	02/05/93	NP	5.21	12.14	11,000	2,400	160	1,400	790
	04/30/93	NP	5.88	11.47	6,500	330	320	640	1,300
	05/14/93	NP	7.22	10.13	---	---	---	---	---

See notes on page 8 of 8

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.-W	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-2	06/07/88	---	---	---	110,000	12,000	12,000	2,100	12,000
(16.67)	06/10/88	NP	6.20	10.47	---	---	---	---	---
	01/17/89	NP	5.96	10.71	30,000	6,600	3,300	1,600	7,700
	01/24/89	NP	5.04	11.63	---	---	---	---	---
	06/01/89	sheen	6.32	10.35	8,700	330	280	680	1,200
	09/18/89	NP	6.73	9.94	17,000	580	280	570	220
	10/20/89	NP	6.87	9.80	---	---	---	---	---
	11/22/89	NP	6.80	9.87	---	---	---	---	---
	12/11/89	NP	6.57	10.10	32,000	1,000	850	310	1,200
	02/13/90	NP	6.12	10.55	---	---	---	---	---
	03/13/90	NP	6.02	10.65	39,000	3,500	1,500	2,100	3,900
	04/18/90	NP	6.35	10.32	---	---	---	---	---
	05/23/90	NP	6.28	10.39	---	---	---	---	---
	06/14/90	NP	6.14	10.53	34,000	3,800	730	1,600	3,900
	08/21/90	NP	6.70	9.97	---	---	---	---	---
	09/19/90	NP	6.84	9.83	63,000	670	180	390	1,000
	12/17/90	NP	6.46	10.21	140,000	3,700	2,500	3,000	8,300
	01/31/91	sheen	6.66	10.01	---	---	---	---	---
	02/25/91	NP	6.50	10.17	---	---	---	---	---
	03/19/91	sheen	5.76	10.91	48,000	4,500	1,600	2,100	5,500
	04/22/91	NP	5.78	10.89	---	---	---	---	---
	05/17/91	NP	6.01	10.66	---	---	---	---	---
	07/24/91	NP	6.43	10.24	49,000	3,500	2,200	2,000	6,400
	09/10/91	NP	6.81	9.86	---	---	---	---	---
	09/23/91	NP	6.82	9.85	---	---	---	---	---
	10/21/91	NP	7.01	9.66	---	---	---	---	---
	10/22/91	---	---	---	34,000	3,700	1,100	1,800	5,200
	11/18/91	NP	6.66	10.01	---	---	---	---	---
	12/11/91	NP	6.85	9.82	---	---	---	---	---
	01/21/92	NP	6.22	10.45	21,000	4,600	1,300	1,700	5,100
	02/2092	NP	5.28	11.39	---	---	---	---	---
	03/19/92	NP	5.34	11.33	---	---	---	---	---
	04/24/92	sheen	5.75	10.92	36,000	5,000	970	2,300	5,200
	05/13/92	NP	5.95	10.72	---	---	---	---	---
	06/24/92	NP	6.39	10.28	---	---	---	---	---
	07/16/92	sheen	6.50	10.17	42,000	3,500	490	1,800	3,700
	08/19/92	NP	6.69	9.98	---	---	---	---	---
	09/24/92	sheen	6.74	9.93	26,000	3,600	670	1,700	3,300
	02/05/93	0.01	5.56	11.10	---	---	---	---	---
	04/30/93	sheen	5.78	10.89	280,000	11,000	6,500	5,500	16,000
	05/14/93(d)	---	---	---	---	---	---	---	---

See notes on page 8 of 8

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 3 of 8)

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.-W	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-3	06/07/88	---	---	---	28,000	6,000	80	940	1,900
(17.11)	06/10/88	NP	6.05	11.06	---	---	---	---	---
	01/17/89	NP	5.49	11.62	5,300	2,500	230	590	1,100
	01/24/89	NP	5.38	11.73	---	---	---	---	---
	06/01/89	NP	5.96	11.15	5,400	330	300	570	680
	09/18/89	NP	6.65	10.46	12,000	680	170	350	860
	10/20/89	NP	6.88	10.23	---	---	---	---	---
	11/22/89	NP	6.74	10.37	---	---	---	---	---
	12/11/89	NP	6.37	10.74	14,000	1,100	150	670	690
	02/13/90	NP	5.58	11.53	---	---	---	---	---
	03/13/90	NP	5.48	11.63	18,000	6,300	200	1,100	1,100
	04/18/90	NP	6.01	11.10	---	---	---	---	---
	05/23/90	NP	6.14	10.97	---	---	---	---	---
	06/14/90	NP	5.83	11.28	9,500	1,300	880	310	1,800
	08/21/90	NP	6.67	10.44	---	---	---	---	---
	09/19/90	NP	6.88	10.23	16,000	5,000	65	1,500	450
	12/17/90	NP	6.46	10.65	6,700	1,500	64	650	460
	01/31/91	NP	6.24	10.87	---	---	---	---	---
	02/25/91	NP	6.18	10.93	---	---	---	---	---
	03/19/91	NP	5.35	11.76	18,000	4,200	2,100	1,100	1,200
	04/22/91	NP	5.72	11.39	---	---	---	---	---
	05/17/91	NP	5.55	11.56	---	---	---	---	---
	07/24/91	NP	6.41	10.70	38,000	6,200	990	2,900	9,600
	09/10/91	NP	6.80	10.31	---	---	---	---	---
	09/23/91	NP	6.80	10.31	---	---	---	---	---
	10/21/91	NP	7.09	10.02	---	---	---	---	---
	10/22/91	---	---	---	23,000	3,400	150	2,500	4,400
	11/18/91	NP	6.74	10.37	---	---	---	---	---
	12/11/91	NP	6.79	10.32	---	---	---	---	---
	01/21/92	NP	6.16	10.95	13,000	2,700	30	1,800	740
	02/20/92	NP	4.89	12.22	---	---	---	---	---
	03/19/92	NP	4.85	12.26	---	---	---	---	---
	04/24/92	NP	5.28	11.83	17,000	4,200	170	1,600	600
	05/13/92	NP	5.58	11.53	---	---	---	---	---
	06/24/92	NP	6.22	10.89	---	---	---	---	---
	07/16/92	NP	6.36	10.75	11,000	2,700	230	1,100	570
	08/19/92	NP	6.65	10.46	---	---	---	---	---
	09/24/92	NP	6.93	10.18	7,100	2,000	44	1,000	220
	02/05/93	NP	4.71	12.40	13,000	3,600	110	1,300	430
	04/30/93	NP	5.46	11.65	13,000	1,600	370	1,600	1,800
	05/14/93	NP	6.53	10.58	---	---	---	---	---

See notes on page 8 of 8

TABLE 1
GROUNDWATER MONITORING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 4 of 8)

Well ID #	Sampling	SUBJ	DTW	Elev.-W	TPHg	B	T	E	X
(TOC)	Date	<	ft	>	<		ppb		>
MW-4	01/17/89	NP	5.36	11.98	19,000	1,000	1,500	360	2,200
(17.34)	01/24/89	NP	5.46	11.88	---	---	---	---	---
	06/01/89	NP	6.01	11.33	3,600	180	240	63	810
	09/18/89	NP	6.80	10.54	6,000	290	200	28	510
	10/20/89	NP	7.08	10.26	---	---	---	---	---
	11/22/89	NP	6.82	10.52	---	---	---	---	---
	12/11/89	NP	6.37	10.97	13,000	750	910	510	1,200
	02/13/90	NP	5.49	11.85	---	---	---	---	---
	03/07/90(a)	---	---	---	---	---	---	---	---
	03/13/90	NP	5.44	11.90	12,000	1,500	1500	470	28,000
	04/18/90	NP	6.14	11.20	---	---	---	---	---
	05/23/90	NP	6.22	11.12	---	---	---	---	---
	06/14/90	NP	5.92	11.42	12,000	5,700	400	1,300	760
	08/21/90	NP	6.83	10.51	---	---	---	---	---
	09/19/90	NP	7.07	10.27	5,500	670	180	390	1,000
	12/17/90	NP	6.50	10.84	14,000	1,400	620	540	2,100
	01/31/91	NP	6.66	10.68	---	---	---	---	---
	02/25/91	NP	6.21	11.13	---	---	---	---	---
	03/19/91	NP	5.29	12.05	11,000	1,500	740	620	2,100
	04/22/91	NP	5.26	12.08	---	---	---	---	---
	05/17/91	NP	5.60	11.74	---	---	---	---	---
	07/24/91	NP	6.54	10.80	10,000	1,200	440	410	1,200
	09/10/91	NP	7.04	10.30	---	---	---	---	---
	09/23/91	NP	7.14	10.20	---	---	---	---	---
	10/21/91	sheen	7.30	10.04	---	---	---	---	---
	10/22/91	---	---	---	4,600	750	190	350	780
	11/18/91	NP	6.90	10.44	---	---	---	---	---
	12/11/91	NP	7.01	10.33	---	---	---	---	---
	01/21/92	NP	6.25	11.09	6,000	1,300	320	510	1,200
	02/20/92	NP	4.79	12.55	---	---	---	---	---
	03/19/92	NP	4.70	12.64	---	---	---	---	---
	04/24/92	sheen	5.25	12.09	11,000	1,700	630	710	1,600
	05/13/92	sheen	5.62	11.72	---	---	---	---	---
	06/24/92	sheen	6.19	11.15	---	---	---	---	---
	07/16/92	sheen	6.51	10.83	5,400	870	240	440	700
	08/19/92	NP	6.85	10.49	---	---	---	---	---
	09/24/92	NP	7.17	10.17	5,900	1,300	130	530	690
	02/05/93	NP	4.61	12.73	15,000	2,300	820	980	2,200
	04/30/93	NP	5.59	11.75	21,000	4,000	960	1,500	2,900
	05/14/93	NP	6.50	10.84	---	---	---	---	---

See notes on page 8 of 8

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 5 of 8)

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.-W	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-5	01/17/89	NP	5.39	11.32	26,000	8,700	3,900	990	5,900
(16.71)	01/24/89	NP	5.51	11.20	---	---	---	---	---
	06/01/89	sheen	5.83	10.88	5,200	240	220	130	690
	09/18/89	NP	6.52	10.19	8,000	340	150	140	460
	10/20/89	NP	6.72	9.99	---	---	---	---	---
	11/22/89	NP	6.54	10.17	---	---	---	---	---
	12/11/89	NP	6.21	10.50	15,000	720	320	450	870
	02/13/90	NP	5.60	11.11	---	---	---	---	---
	03/07/90	---	---	---	---	---	---	---	---
	03/13/90	NP	5.54	11.17	10,000	3,400	220	280	800
	04/18/90	NP	5.75	10.96	---	---	---	---	---
	05/23/90	NP	5.98	10.73	---	---	---	---	---
	06/14/90	NP	5.81	10.90	12,000	3,300	160	350	730
	08/21/90	NP	6.51	10.20	---	---	---	---	---
	09/19/90	NP	6.70	10.01	8,500	1,800	85	120	460
	12/17/90	sheen	6.24	10.47	18,000	2,300	810	430	1,400
	01/31/91	NP	6.31	10.40	---	---	---	---	---
	02/25/91	NP	6.13	10.58	---	---	---	---	---
	03/19/91	NP	5.32	11.39	17,000	2,900	610	580	1,200
	04/22/91	sheen	5.30	11.41	---	---	---	---	---
	05/17/91	NP	5.59	11.12	---	---	---	---	---
	07/24/91	NP	6.33	10.38	16,000	3,200	320	690	1,100
	09/10/91	NP	6.66	10.05	---	---	---	---	---
	09/23/91	NP	6.75	9.96	---	---	---	---	---
	10/21/91	sheen	6.92	9.79	---	---	---	---	---
	10/22/91	---	---	---	6,600	2,000	64	320	480
	11/18/91	NP	6.55	10.16	---	---	---	---	---
	12/11/91	NP	6.64	10.07	---	---	---	---	---
	01/21/92	sheen	6.07	10.64	14,000	4,000	190	630	1,300
	02/20/92	NP	4.83	11.88	---	---	---	---	---
	03/19/92	sheen	4.83	11.88	---	---	---	---	---
	04/24/92	sheen	5.32	11.39	12,000	2,600	120	620	530
	05/13/92	sheen	5.61	11.10	---	---	---	---	---
	06/24/92	NP	6.17	10.54	---	---	---	---	---
	07/16/92	sheen	6.25	10.46	20,000	4,000	48	880	720
	08/19/92	sheen	6.53	10.18	---	---	---	---	---
	09/24/92	sheen	6.80	9.91	9,300	2,200	31	330	250
	02/05/93	NP(b)	4.70	12.01	---	---	---	---	---
	04/30/93(c)	sheen	5.43	11.28	30,000	5,900	450	1,900	1,500
	05/14/93	NP	7.31	9.40	---	---	---	---	---

See notes on page 8 of 8

RESNA
Working To Restore Nature

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 6 of 8)

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.-W	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-6	01/17/89	NP	5.59	11.97	38,000	7,400	9,300	2,000	9,900
(17.56)	01/24/89	NP	5.27	12.29	---	---	---	---	---
	06/01/89	sheen	6.25	11.31	23,000	1,900	2,500	2,000	6,000
	09/18/89	NP	6.95	10.61	17,000	650	410	650	320
	10/20/89	NP	7.24	10.32	---	---	---	---	---
	11/22/89	NP	7.05	10.51	---	---	---	---	---
	12/11/89	NP	6.63	10.93	29,000	1,100	810	330	1,500
	02/13/90	NP	5.70	11.86	---	---	---	---	---
	03/07/90	---	---	---	---	---	---	---	---
	03/13/90	NP	5.63	11.93	38,000	12,000	15,000	2,500	12,000
	04/18/90	NP	6.26	11.30	---	---	---	---	---
	05/23/90	NP	6.42	11.14	---	---	---	---	---
	06/14/90	NP	6.19	11.37	38,000	9,100	7,800	2,900	12,000
	08/21/90	NP	7.01	10.55	---	---	---	---	---
	09/19/90	NP	7.23	10.33	22,000	4,200	300	1,400	3,400
	12/17/90	NP	6.66	10.90	20,000	3,100	4,100	890	2,700
	01/31/91	NP	6.39	11.17	---	---	---	---	---
	02/25/91	NP	6.39	11.17	---	---	---	---	---
	03/19/91	NP	5.57	11.99	180,000	11,000	55,000	5,600	28,000
	04/22/91	NP	5.42	12.14	---	---	---	---	---
	05/17/91	NP	5.73	11.83	---	---	---	---	---
	07/24/91	NP	6.72	10.84	48,000	5,400	2,300	2,000	9,000
	09/10/91	NP	7.15	10.41	---	---	---	---	---
	09/23/91	NP	7.25	10.31	---	---	---	---	---
	10/21/91	NP	7.42	10.14	---	---	---	---	---
	10/22/91	---	---	---	18,000	3,100	700	1,400	2,900
	11/18/91	NP	7.08	10.48	---	---	---	---	---
	12/11/91	NP	7.17	10.39	---	---	---	---	---
	01/21/92	NP	6.40	11.16	9,400	2,100	370	1,000	1,100
	02/20/92	NP	5.06	12.50	---	---	---	---	---
	03/19/92	NP	4.86	12.70	---	---	---	---	---
	04/24/92	NP	5.44	12.12	42,000	3,500	8,000	2,100	8,000
	05/13/92	NP	5.83	11.73	---	---	---	---	---
	06/24/92	NP	6.50	11.06	---	---	---	---	---
	07/16/92	NP	6.68	10.88	14,000	1,600	1,000	1,000	2,500
	08/19/92	NP	7.00	10.56	---	---	---	---	---
	09/24/92	NP	7.28	10.28	4,700	790	97	640	540
	02/05/93	NP	4.84	12.72	26,000	2,500	4,300	1,700	5,300
	04/30/93	NP	5.69	11.87	9,600	1,000	410	1,100	1,600
	05/14/93	NP	6.52	11.04	---	---	---	---	---

See notes on page 8 of 8

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 7 of 8)

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.-W	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-7	01/09/90	---	---	---	17,000	380	180	330	1,300
(17.12)	02/13/90	NP	4.98	12.14	---	---	---	---	---
	03/13/90	NP	4.94	12.18	16,000	360	270	83	460
	05/23/90	NP	5.87	11.25	---	---	---	---	---
	06/14/90	NP	5.55	11.57	14,000	1,200	2,800	75	930
	09/19/90	NP	6.79	10.33	16,000	2,800	95	2,500	1,700
	12/17/90	NP	6.15	10.97	75,000	2,600	7,000	3,300	14,000
	01/31/91	NP	6.64	10.48	---	---	---	---	---
	02/25/91	NP	5.80	11.32	---	---	---	---	---
	03/19/91	NP	4.96	12.16	44,000	1,600	740	3,400	8,600
	04/22/91	NP	4.82	12.30	---	---	---	---	---
	05/17/91	NP	5.18	11.94	---	---	---	---	---
	07/24/91	NP	6.22	10.90	18,000	1,300	160	2,700	1,000
	09/10/91	NP	6.71	10.41	---	---	---	---	---
	09/23/91	NP	6.84	10.28	---	---	---	---	---
	10/21/91	NP	7.00	10.12	---	---	---	---	---
	10/22/91	---	---	---	10,000	990	26	1,900	490
	11/18/91	NP	6.56	10.56	---	---	---	---	---
	12/11/91	NP	6.68	10.44	---	---	---	---	---
	01/21/92	NP	5.99	11.13	23,000	2,200	3,000	1,800	6,100
	02/20/92	NP	4.36	12.76	---	---	---	---	---
	03/19/92	NP	4.22	12.90	---	---	---	---	---
	04/24/92	NP	4.84	12.28	25,000	1,400	220	2,100	2,600
	05/13/92	NP	5.24	11.88	---	---	---	---	---
	06/24/92	NP	6.04	11.08	---	---	---	---	---
	07/16/92	NP	6.19	10.93	8,700	470	45	970	86
	08/19/92	NP	6.55	10.57	---	---	---	---	---
	09/24/92	NP	6.83	10.29	9,200	560	48	1,300	54
	02/05/93	NP	4.11	13.01	33,000	1,100	2,300	1,200	4,200
	04/30/93(c)	NP	5.29	11.83	13,000	240	85	710	320
	05/14/93	NP	5.91	11.21	---	---	---	---	---
MW-8 (16.33)	05/14/93	NP	6.54	9.79	<50	<0.5	<0.5	<1.0	<0.5
MW-9 (15.62)	05/14/93	NP	6.61	9.01	<50	<0.5	<0.5	<1.0	<0.5
MW-10 (16.79)	05/14/93	NP	6.91	9.88	97	<0.5	<0.5	9.8	22

See notes on page 8 of 8

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 8 of 8)

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.-W	TPHg	B	T	E	X
		< ft >			< ppb >				
FB	12/11/89	---	---	---	<50	0.88	0.95	0.62	1.7
	12/17/90	---	---	---	<50	<0.5	<0.5	<0.5	<0.5
	03/19/91	---	---	---	<50	<0.5	<0.5	<0.5	<0.5
	07/24/91	---	---	---	<50	<0.5	<0.5	<0.5	<0.6
	10/22/91	---	---	---	<50	<0.5	<0.5	<0.5	<0.5
	01/21/92	---	---	---	<50	<0.5	<0.5	<0.5	<0.5
	07/16/92	---	---	---	<50	<0.5	<0.5	<0.5	<0.5
TB	06/14/90	---	---	---	<50	<0.5	<0.5	<0.5	<0.5
	09/19/90	---	---	---	<50	0.8	<0.5	0.6	1.0
	04/24/92	---	---	---	<50	<0.5	<0.5	<0.5	<0.5
	09/24/92	---	---	---	230	<0.5	<0.5	<0.5	<0.5

Notes:

ft = Feet
SUBJ = Results of subjective evaluation, separate phase product thickness (PT) in feet
NP = separate phase product not present in well
sheen = separate phase product present as a sheen
emulsion = separate phase product present as an emulsion
TOC = Elevation of top of well casing; datum is mean sea level
DTW = Depth to water
Elev.-W = Elevation of groundwater; datum is mean sea level
Elev.-W = TOC- (DTW+(PT*0.8))

ppb = Parts-per-billion
TPHg = Total petroleum hydrocarbons as gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = Total xylene isomers
< = Less than the indicated detection limit shown by the laboratory
FB = Field blank
TB = Travel blank

--- = Not sampled / not measured

(a) = 03/07/90 sampling: Total Dissolved Solids were detected in samples from MW-1 and MW-4 at 910 parts-per-million (ppm) and 370 ppm, respectively.
(b) = 04/30/93: MW-5 was not sampled due to the presence of separate phase product as an emulsion which developed during bailing.
(c) = As per Pace Inc., a peak eluting before benzene was present in the groundwater samples from MW-5 and MW-7. Pace Inc. suspects this peak to be methyl tert butyl ether.
(d) = 05/14/93: MW-2 was inaccessible for depth-to-water measurement and subjective analysis.

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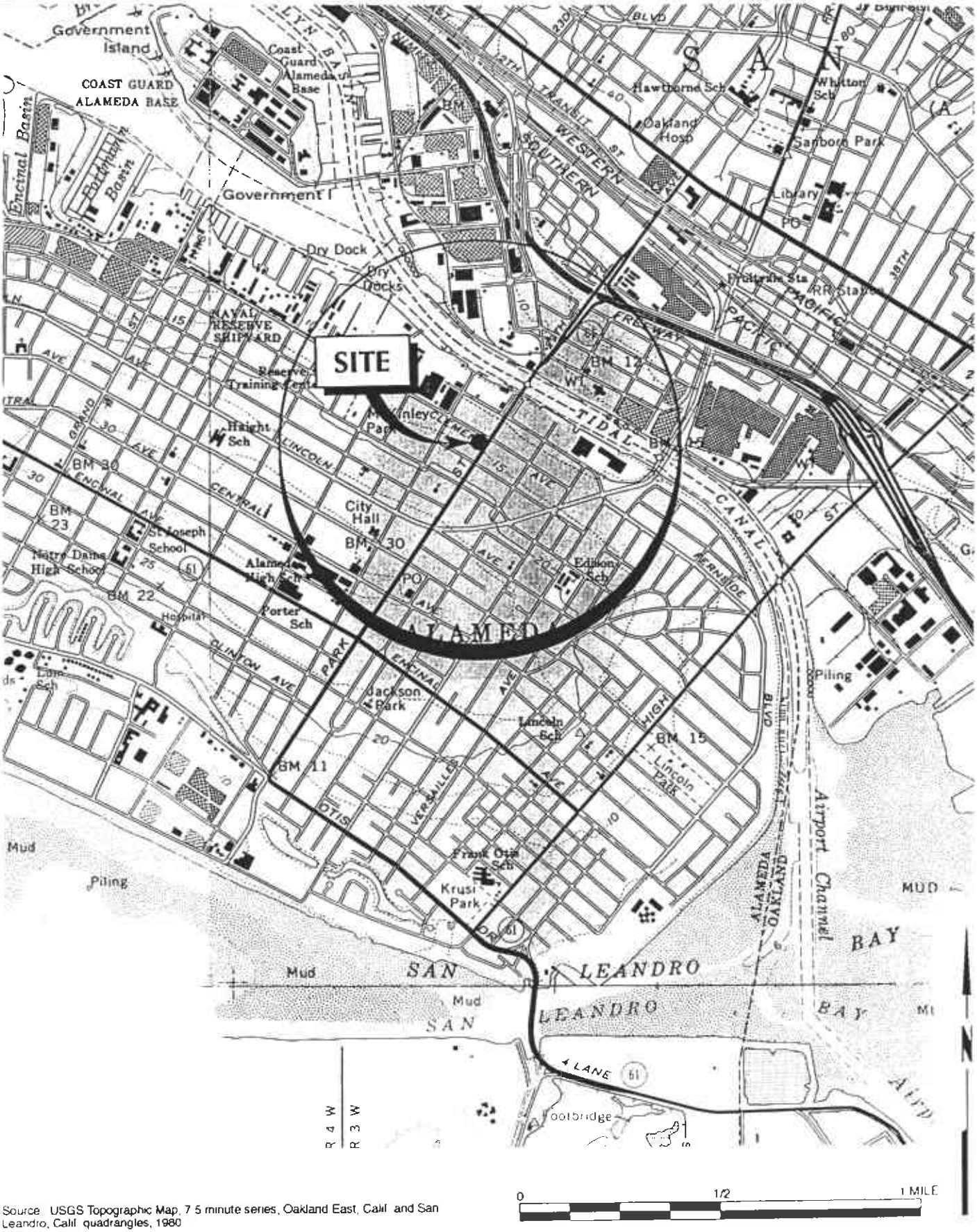
Table 2
CUMULATIVE RESULTS OF SOIL SAMPLES
Exxon Service Station 7-0104
1725 Park Street
Alameda, California
Page 1 of 1

Boring/ Well Number	Sampling Date	Depth (feet)	TPHd (ppm)	TPHg (ppm)	Benzene	Toluene	Ethyl-Benzene	Total Xylenes
MW-1	06/02/88	10.0	NR	11.0	0.670	<0.025	0.150	0.370
MW-2	06/02/88	5.0	NR	1, 400	<2.0	32.0	25.0	150.0
MW-3	06/02/88	5.0	NR	74	<0.500	<0.500	<0.500	2.4
MW-4	01/09/89	5.0	NR	0.6	0.017	0.002	0.007	0.012
MW-5	01/09/89	4.5	NR	2.0	0.055	0.007	0.066	0.240
MW-6	01/09/89	5.0	NR	490	3.7	0.970	23.0	94.0
MW-7	01/04/89	5.5	NR	600	1.7	3.2	10.0	29.0
SB-1	03/19/90	2.2	NR	1.8	0.0062	<.0025	0.016	0.0092
	03/19/90	4.5	NR	260	1.3	1.3	1.4	4.9
	03/19/90	5.0	NR	2,600	6.9	23.0	32.0	14.
SB-2	03/19/90	2.5	NR	1.3	0.013	0.018	0.10	0.54
	03/19/90	4	NR	230	1.2	3.7	2.1	1.3
SB-3	03/19/90	3	NR	1.8	0.0068	0.047	0.011	0.230
	03/19/90	5	NR	540	4.6	12.0	3.2	44.0
SB-4	03/19/90	4	NR	<1.0	<0.0025	<.0025	0.0053	0.018
	03/19/90	5	NR	<1.0	<0.0025	<.0025	<0.0025	<0.0025
SB-5	03/19/90	2.5	NR	<1.0	0.028	0.006	0.0065	0.016
	03/19/90	4.5	NR	<1.0	0.150	0.080	0.016	0.069
	03/19/90	5.5	NR	260	1.3	6.5	4.0	24.0
SB-6	03/19/90	2.5	NR	140	1.1	1.2	1.7	6.7
	03/19/90	5	NR	1.6	0.065	0.020	0.019	0.060
SB-7	03/19/90	3	NR	240	0.260	1.4	1.2	4.7
	03/19/90	6	NR	<1.0	0.055	0.0041	0.012	0.011
SB-8	05/05/93	5.5	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005
SB-9	05/05/93	6.0	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005
SB-10	05/05/93	6.0	<5.0	<1.0	<0.005	<0.005	<0.005	<0.005

NOTES:
Results in parts per million.
< = less than laboratory detection limit
NR = analyses not requested
TPHd = Total Petroleum Hydrocarbons as diesel
TPHg = Total Petroleum Hydrocarbons as gasoline



Source USGS Topographic Map, 7 5 minute series, Oakland East, Calif and San Leandro, Calif quadrangles, 1980

RESNA

PROJECT NO. 170077.05

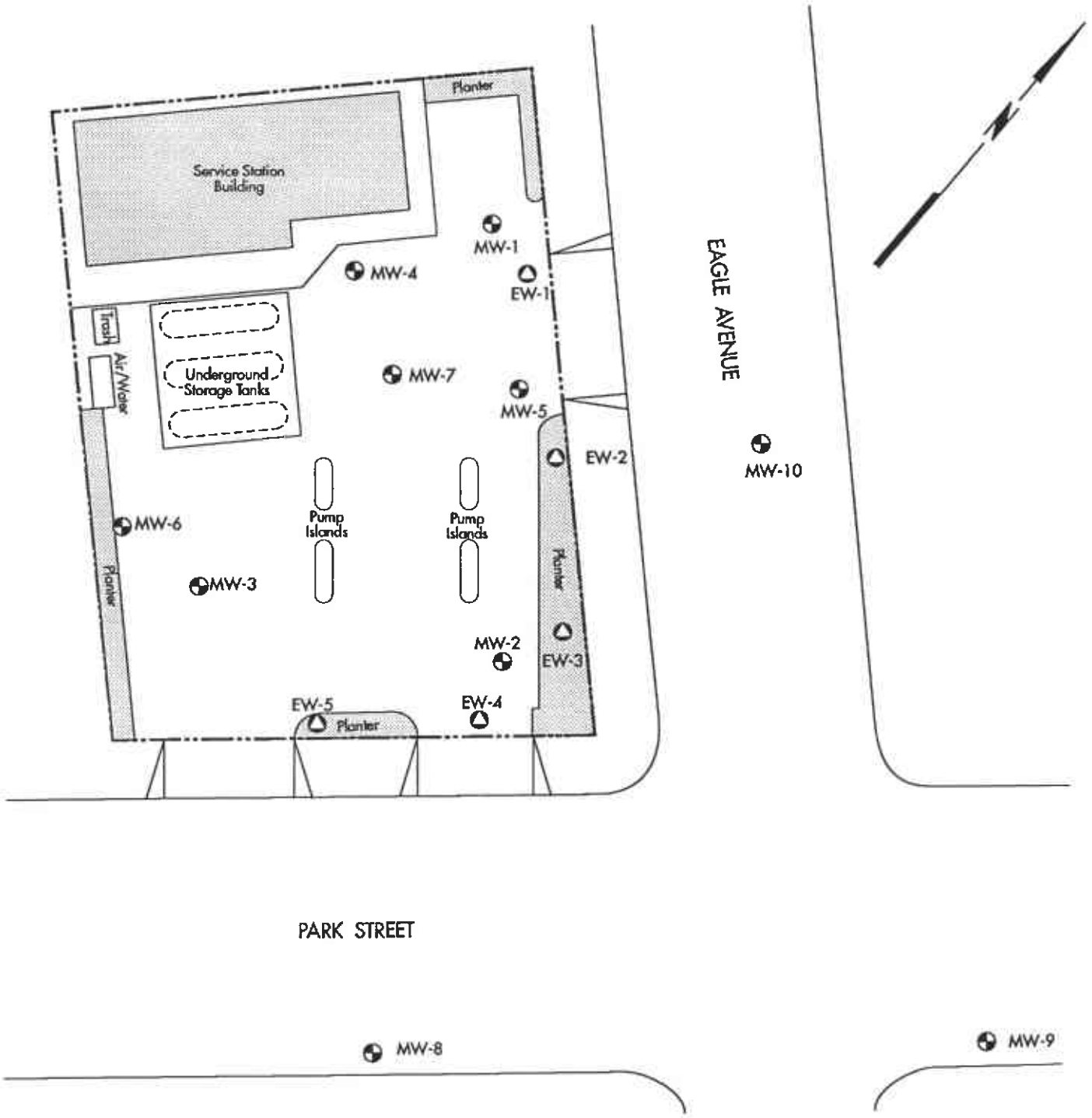
1/93

SITE VICINITY MAP

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

PLATE

1



EXPLANATION

- MW-1 Monitoring well location
- EW-1 Extraction well location

Map Source: Site Map by Harding Lawson Associates, 1992; survey by Ron Archer, Civil Engineer, Inc., 1993

0 30' 60' 90'

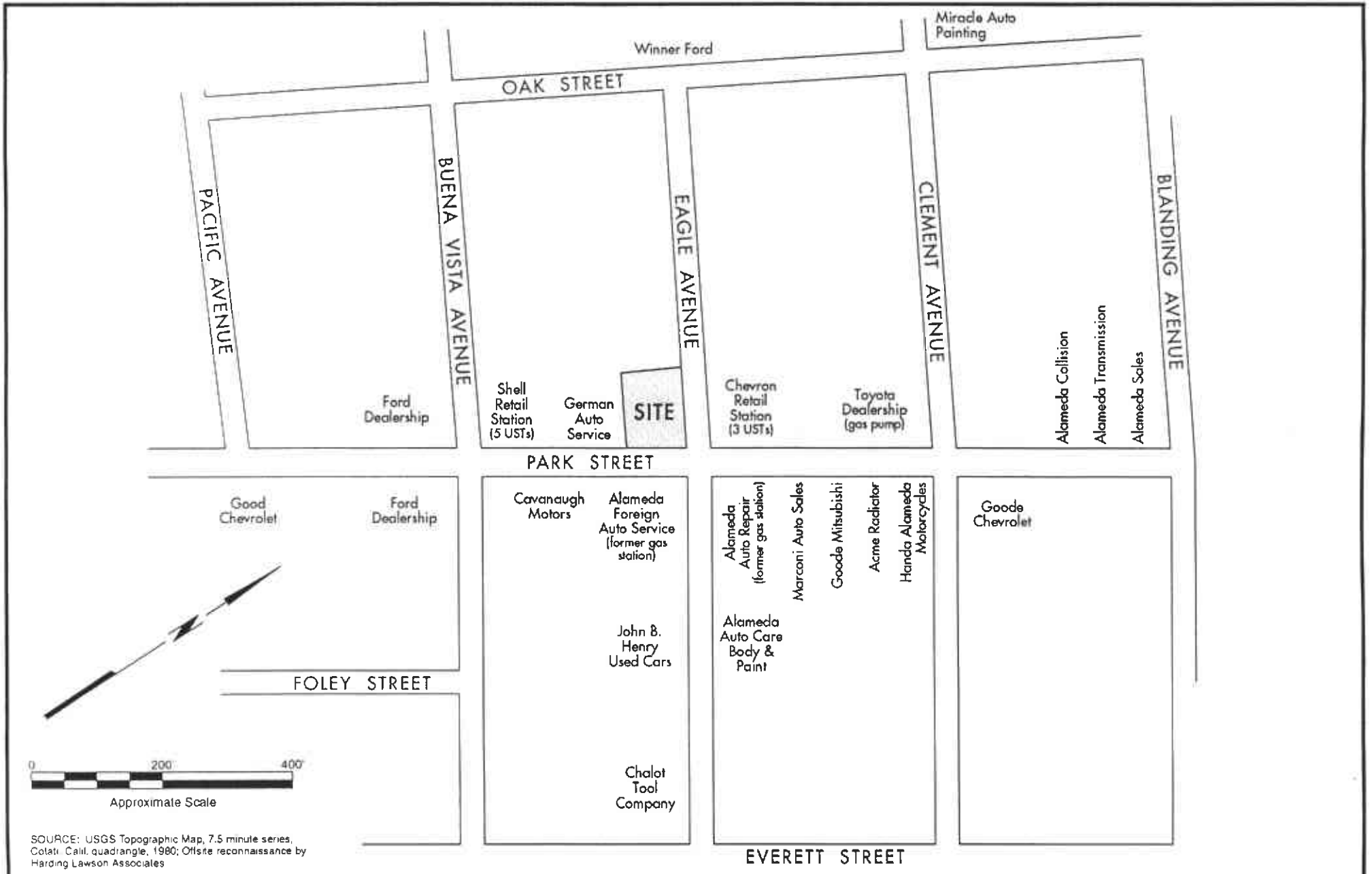
RESNA

PROJECT NO. 170077.05 | 5/93

GENERALIZED SITE PLAN

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

PLATE **2**



SOURCE: USGS Topographic Map, 7.5 minute series, Cotati Calif. quadrangle, 1980; Offsite reconnaissance by Harding Lawson Associates

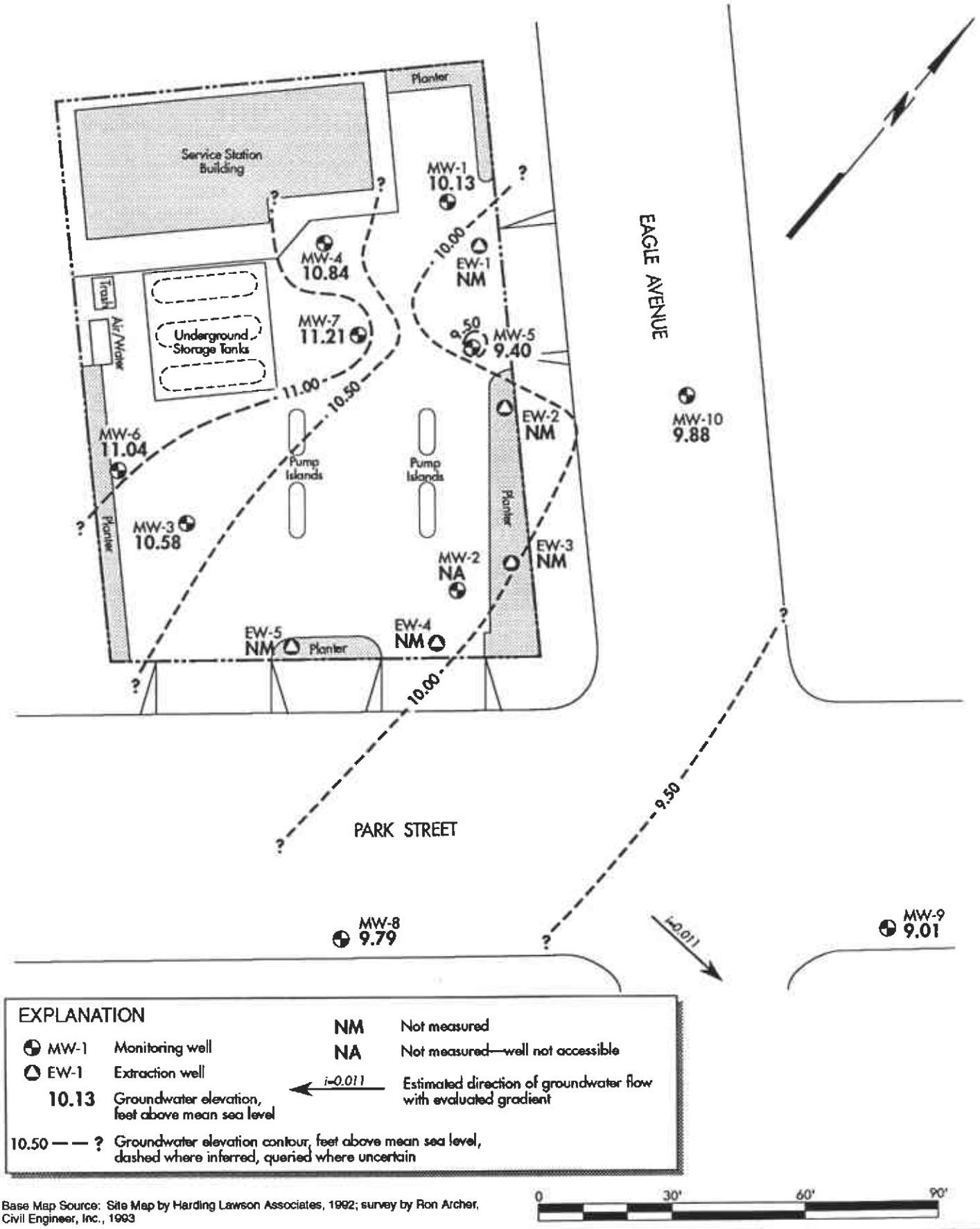
RESNA

PROJECT NO. 170077.05 | 5/93

AREA MAP

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

PLATE
3



EXPLANATION

MW-1	Monitoring well	NM	Not measured
EW-1	Extraction well	NA	Not measured—well not accessible
10.13	Groundwater elevation, feet above mean sea level	i=0.011	Estimated direction of groundwater flow with evaluated gradient
10.50 — — ?	Groundwater elevation contour, feet above mean sea level, dashed where inferred, queried where uncertain		

Base Map Source: Site Map by Harding Lawson Associates, 1992; survey by Ron Archer, Civil Engineer, Inc., 1993

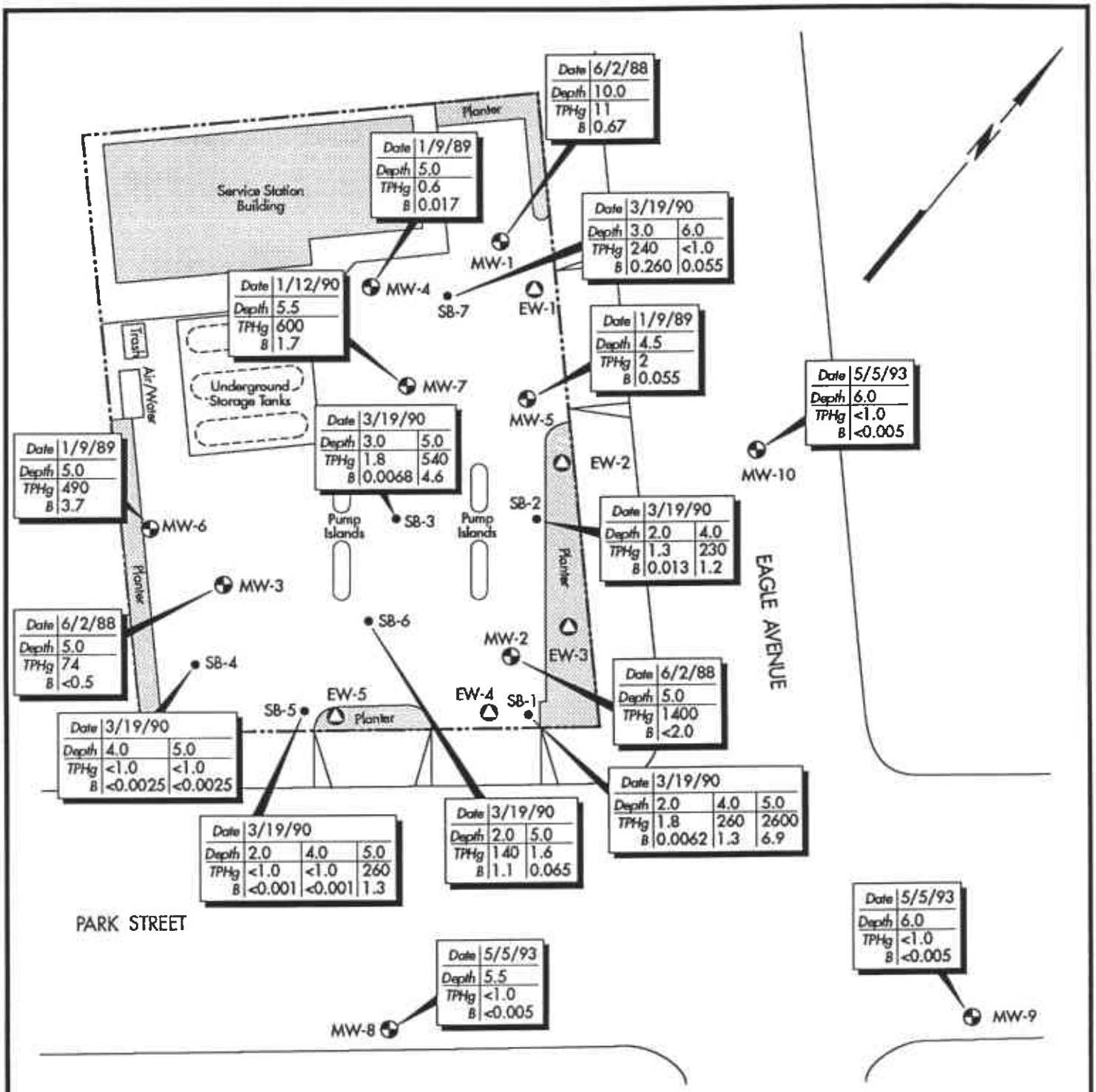
0 30' 60' 90'

RESNA

PROJECT NO. 170077.05 | 6/93

POTENTIOMETRIC SURFACE MAP
MAY 14, 1993
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

PLATE
4



EXPLANATION

MW-1	Monitoring well	*Date*	Sampling date
EW-1	Extraction well	*Depth*	Depth below surface in feet
SB-5	Soil boring	*TPHg*	Total petroleum hydrocarbons as gasoline concentration in parts-per-million (ppm)
		B	Benzene concentration in ppm

Map Source: Distribution of TPH Concentration in Soil Samples by Harding Lawson Associates, 1990; survey by Ron Archer, Civil Engineer, Inc., 1993

0 30' 60' 90'

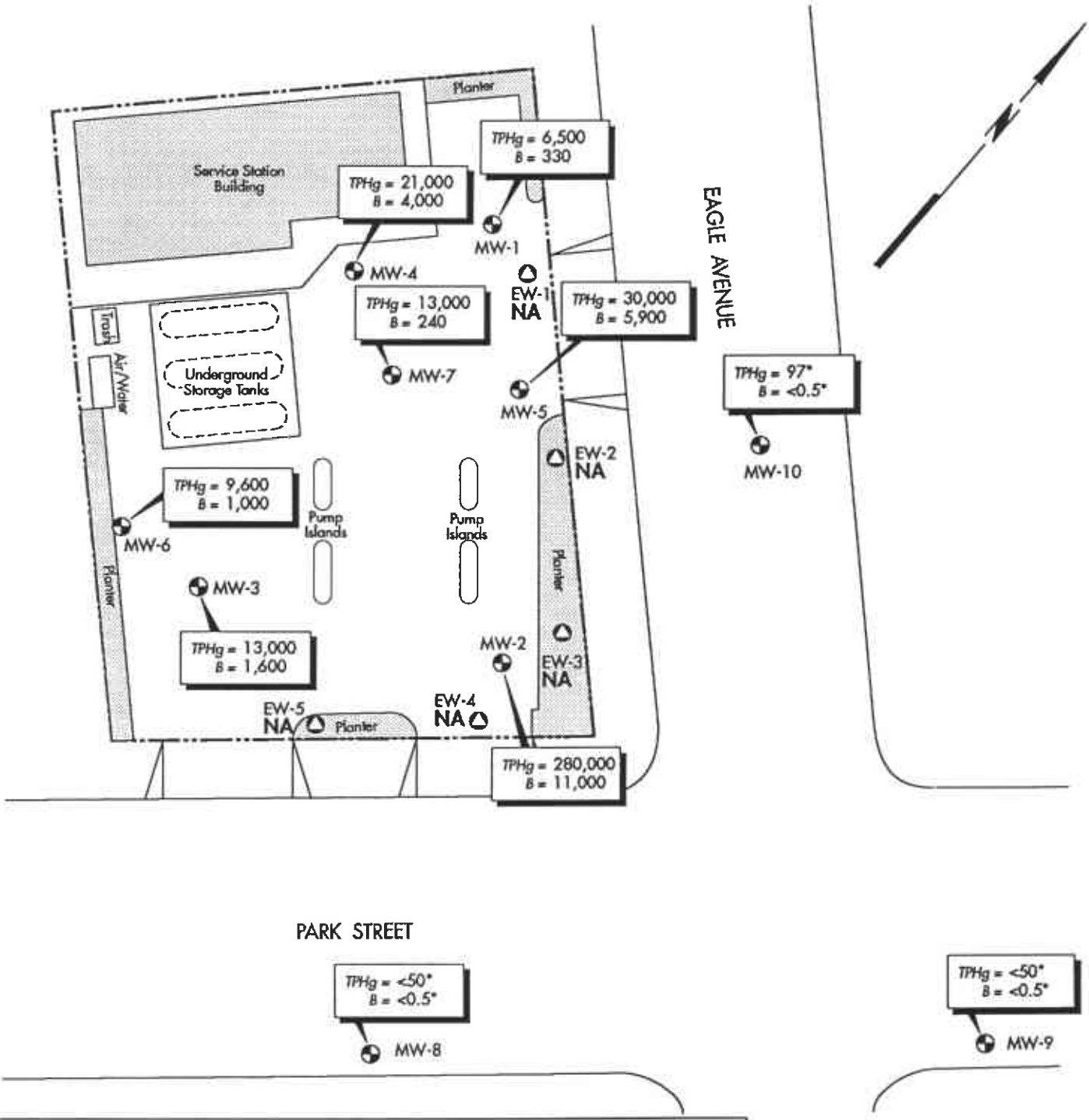
RESNA

PROJECT NO. 170077.05 | 6/93

DISTRIBUTION OF RESIDUAL HYDROCARBONS IN SOIL

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

PLATE 5



EXPLANATION

MW-1	Monitoring well	SPP	Separate phase product present
EW-1	Extraction well	NA	Not analyzed
TPHg =	TPHg concentration in parts-per-billion (ppb)	←	Estimated direction of groundwater flow
B =	Benzene concentration in ppb	*	Sampled on May 14, 1993

Base Map Source: Site Map by Harding Lawson Associates, 1992; survey by Ron Archer, Civil Engineer, Inc., 1993

0 30' 60' 90'

RESNA

PROJECT NO. 170077.05 | 6/93

DISSOLVED HYDROCARBONS IN GROUNDWATER—April 30, 1993

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

PLATE 6

RESNA
Working To Restore Nature

APPENDIX A

FIELD METHODS / WELL PERMIT

Site Safety

This site safety plan describes the basic safety requirements for the drilling project at the work site. The site safety plan is applicable to personnel of RESNA Industries Inc. (RESNA) and to subcontractors of RESNA. RESNA personnel and subcontractors of RESNA scheduled to perform work at the site were informed of the contents of the site safety plan before work began. A copy of the site safety plan was kept at the work site and was available for reference by appropriate parties during the work. The Staff Geologist of RESNA acted as the Site Safety Officer.

Soil Sampling Methods

During drilling, soil samples were typically collected at 5-foot intervals using a California-modified, split-spoon sampler equipped with clean brass sleeves. The samples were collected by advancing the boring to a point just above the sampling depth, then driving the sampler into the native soil through the hollow center of the auger. The sampler was driven 12 inches with a standard 140-pound hammer dropped 30 inches. The number of blows required to drive the sampler each successive 6-inch interval was counted and recorded to give an indication of soil consistency.

Soil samples selected for chemical analysis were sealed with aluminum foil, plastic caps, and tape. The samples were then labeled and promptly placed in iced storage for transport to the analytical laboratory for testing. The field geologist initiated Chain of Custody Records that accompanied the samples to the laboratory.

Monitoring-Well Construction

The monitoring wells were constructed using thread-jointed, 2-, 4-, or 6-inch-inner-diameter, Schedule 40 polyvinyl chloride casing. No chemical cements, glues, or solvents were used in well construction. The screened portion of the well consists of factory-perforated casing with 0.010-inch-wide slots. The annulus of each well was filled with 1/20 sand to approximately 1 foot below the screened interval. The well screen extends from the total depth of each well to approximately 18 to 20 feet below grade. The base of each well was fitted with a threaded polyvinyl chloride (PVC) cap, and the top was fitted with a watertight locking cap. The annular space of each well was packed with sorted sand to a point approximately 3 feet above the slotted intervals. A 1- to 2-foot-thick bentonite plug was placed above the sand to prevent cement from entering the sand pack. The remaining annulus was backfilled with neat cement to grade. A cast-aluminum utility box with a PVC apron was placed over each wellhead and set in concrete flush with the surrounding ground surface. This box has a watertight seal to protect against surface-water infiltration and requires a specially designed wrench to open. This design discourages vandalism and accidental disturbance of the well.

The geologist measured the initial water level to the nearest 0.01-foot with a Solinst water-level indicator before pumping or bailing the wells. The geologist then collected groundwater samples from near the air-fluid interface by lowering approximately half the length of a clean Teflon bailer through the interface. The bailer was retrieved and the water sample examined for floating product, sheen, or other subjective evidence of hydrocarbons.

The geologist developed the wells by surging and pumping. The geologist used a PVC surge block connected to PVC rods to manually surge the well. Following surging, we used an air-lift pump to remove the remaining sediment from the wells. The geologist then purged approximately 3 well volumes (10 to 15 gallons) of water using an electric submersible pump and collected groundwater samples. All water purged during development and sampling was placed in Department of Transportation 17E drums and left on the site pending appropriate disposal.

After the groundwater recovered to static conditions, we sampled the formation water using a Teflon bailer cleaned with a laboratory-grade detergent and deionized water. The water samples were then transferred into laboratory-cleaned, 40-milliliter, glass volatile organic analysis vials and sealed with Teflon-lined lids and 1-liter amber bottles. The samples were then labeled and promptly placed in iced storage. The field geologist initiated a Chain of Custody Record that accompanied the samples to the analytical laboratory.

Laboratory Reporting

Hydrocarbon constituents in groundwater samples are reported by the laboratory in units of parts per billion (ppb). The maximum contaminant levels listed in Title 22 of the California Code of Regulations for benzene, ethylbenzene, and total xylene isomers in drinking water are 1.0, 680, and 1,750 ppb, respectively. The action level established by the California Department of Health Services for toluene is 100 ppb. To conform with the laboratory reports, we report groundwater chemical data in units of ppb.

APR 29 1993

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94588 • (510) 484-2600

28 April 1993

Resna Industries, Inc.
73 Digital Drive
Novato, CA 94949

Gentlemen:

Enclosed is drilling permit 93211 for a monitoring well construction project at 1725 Park Street in Alameda for Exxon Company.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number.

If you have any questions, please contact Wyman Hong or me at 484-2600.

Very truly yours,

Craig A. Mayfield

Craig A. Mayfield
Water Resources Engineer III

WH:mm
Enc.

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 1725 Park St
Alameda, CA
(corner of Park St and Eagle Ave)

CLIENT
Name Exxon Company, U.S.A.
Address P.O. Box 4032 Voice
City Concord Zip CA

APPLICANT
Name RESNA Industries, Inc.
Fax
Address 73 Digital Drive Voice
City Novato, CA Zip 94949

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. 265556

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 20 ft.
Surface Seal Depth 5 ft. Number 2

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

ESTIMATED STARTING DATE May 5, 1993
ESTIMATED COMPLETION DATE May 5, 1993

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

APPLICANT'S SIGNATURE [signature] Date 4/26/93

FOR OFFICE USE

PERMIT NUMBER 93211
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 [signature] Date 28 Apr 93
Wyman Hong

91992

RESNA
Working To Restore Nature

APPENDIX B

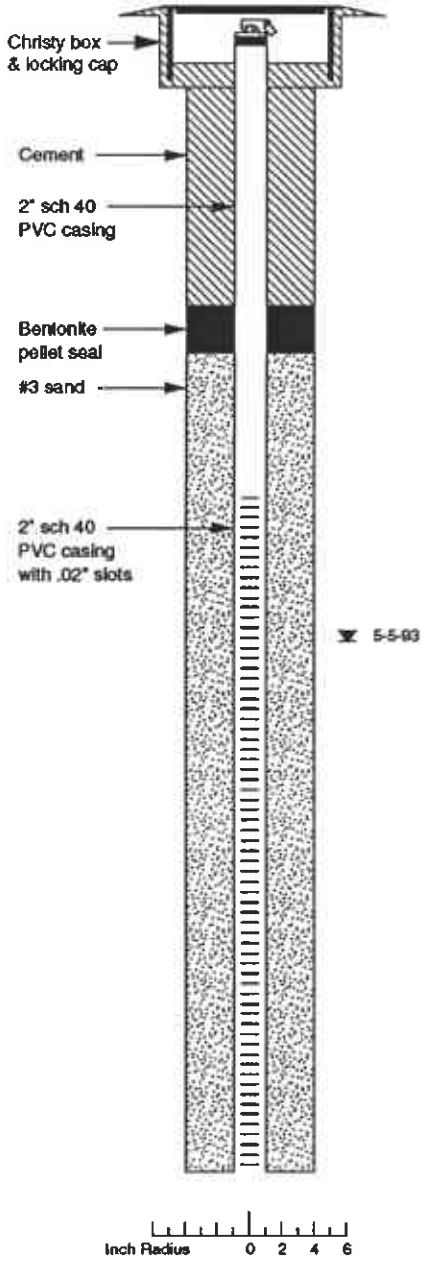
UNIFIED SOIL CLASSIFICATION SYSTEM

AND BORING LOGS

Primary Divisions			Group Symbol	Secondary Divisions
Coarse Grained Soils More Than 50% of Material is Larger Than #200 Sieve Size	Gravels More Than 50% of Coarse Fraction is Larger Than #4 Sieve	Clean Gravels (Less Than 10% Fines)	GW	Poorly sorted gravels; gravel-sand mixtures; little or no fines
			GP	Well sorted gravels or gravel-sand mixtures; little or no fines
		Gravel With Fines	GM Silt > Clay	Silty gravels; gravel-sand-fines mixtures. gravel > (silt > (clay > sand)) gravel > (silt > (sand > clay))
			GC Clay > Silt	Clayey gravels; gravel-sand-clay mixtures. gravel > (clay > (silt > sand)) gravel > (clay > (sand > silt))
	Sands More Than 50% of Coarse Fraction Is Smaller Than #4 Sieve	Clean Sands (Less Than 10% Fines)	SW	Poorly sorted, sands; gravelly sands; little or no fines
			SP	Well sorted sands or gravelly sands; little or no fines
		Sands With Fines	SM Silt > Clay	Any silty sands or any sand-fines mixtures with sand ≥ silt or sand > (silt > clay)
			SC Clay > Silt	Clayey sands or sand-clay mixtures with little or no silt. Sand > (clay > silt)
Fine Grained Soils More Than 50% of Material is Smaller Than #200 Sieve Size	Silts & Clays		ML Silt > Clay	Silts and clayey silts; sandy silts; gravelly silts
			CL Clay > Silt	Clays; silty clays; sandy clays; gravelly clays
	Misc.			Mudstone, Shaley silt
				Limestone
				Silty sandstone
				Shale
				Lapilli Tuff/Pyroclastic Rock

RESNA

UNIFIED SOIL CLASSIFICATION SYSTEM KEY



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
0				Asphalt
1				Base rock, gravel
2				Silty SAND (SM), fine- to medium-grained; light orange; moist
3				Silty SAND with clay (SM), fine- to medium-grained; tan and orange; moist
4				
5	6	1.0		
	9	1.5		
6	11			Silty SAND with clay (SM); same as above; gray-green; medium dense
7				
8				Silty SAND (SM); same as above; brown; wet
9				
10	11			Silty SAND (SM); orange-brown; wet; dense
	20			
11	20			
12				

continues

Logged by:	David DeMent, Jennifer Chase
Project Mgr:	Gary Pischke
Dates Drilled:	5/5/93
Drilling Company:	PC Exploration
Drilling Method:	8" Hollow Stem Auger
Driller:	Frank
Well Head Completion:	Christy box and locking cap
Type of Sampler:	2½" split spoon
TD (Total Depth):	21.5 feet

EXPLANATION

- Recovered drill sample — est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- Sample sealed for chemical analysis
- Sieve sample — NR — No recovery
- Grab sample — ▼ Water level during drilling
- Core sample — ▽ Water level in completed well

CONTACTS:

- ——— Solid where certain
- ····· Dotted where approximate
- – – – Dashed where uncertain
- ////// Hachured where gradational

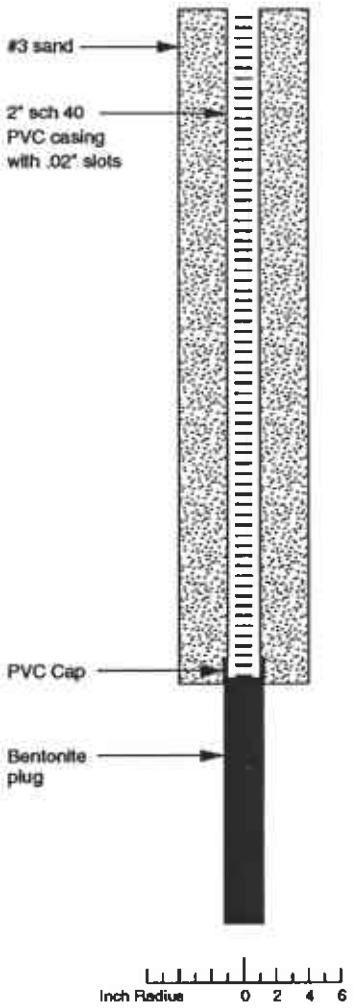
RESNA

PROJECT NO. 170077.05 | 5/93

BORING LOG—Boring B-8 (Monitoring Well MW-8)

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

BORING **B-8**



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13				Silty SAND (SM); same as above
14				
15	7			
	10			Sandy SILT with clay (ML); fine-grained sand; light gray with orange-brown mottling; moist; very stiff
16	16			
17				
18				
19				
20	7			Silty SAND with clay (SM), fine-grained; brown with orange mottling; moist; medium dense
	9			
21	11			
				TD @ 21.5 ft.
22				
23				
24				
25				
26				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

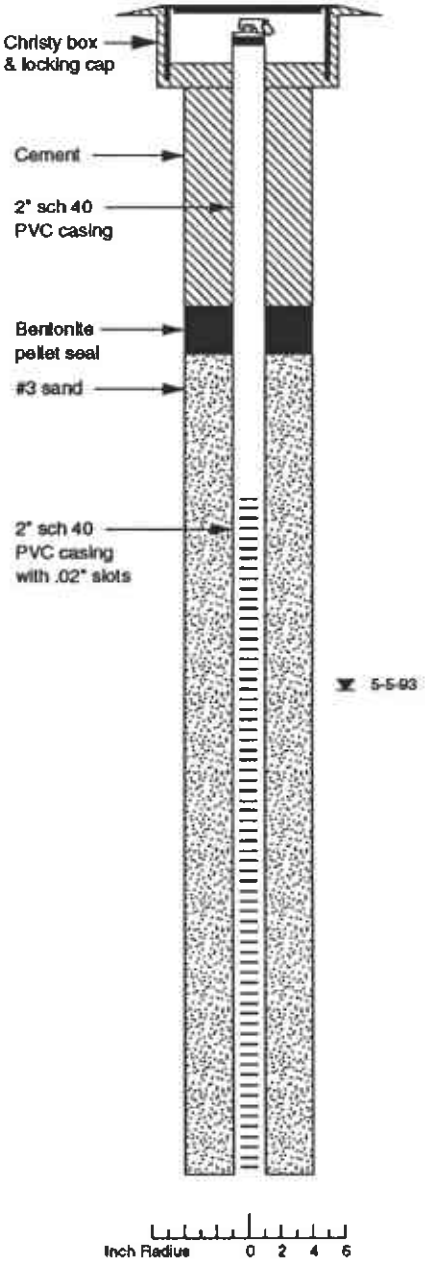
RESNA

PROJECT NO. 170077.05 | 5/93

BORING LOG—Boring B-8 (Monitoring Well MW-8)

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

BORING **B-8**



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
0				Asphalt
1				SILT (ML); orange-brown and dark brown (fill)
2				Silty SAND (SM), fine-grained; orange-brown; with SILT (ML) layers; moist; sightly plastic
3				
4				
5	3	7.2		Silty SAND (SM), fine-grained; light brown with orange-brown mottling along soil fractures; damp; medium dense
	5			
6	11			
7				
8				
9				
10	12			Silty SAND (SM); same as above; wet; dense
	16			
11	14			
12				

continues

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

Logged by:	David DeMent, Jennifer Chase
Project Mgr:	Gary Pischke
Dates Drilled:	5/5/93
Drilling Company:	PC Exploration
Drilling Method:	8" Hollow Stem Auger
Driller:	Frank
Well Head Completion:	Christy box and locking cap
Type of Sampler:	2½" split spoon
TD (Total Depth):	19.0 feet

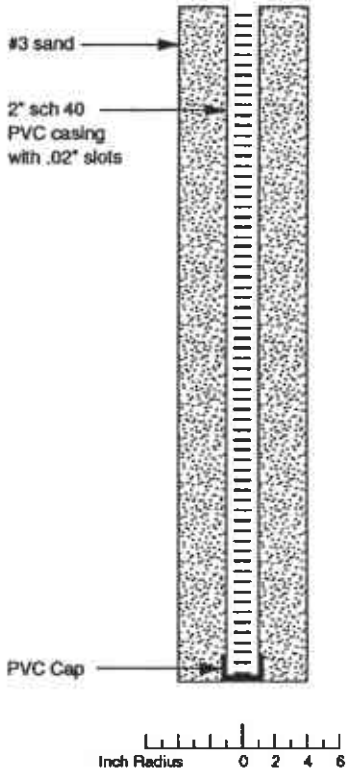
RESNA

PROJECT NO. 170077.05 | 5/93

BORING LOG—Boring B-9 (Monitoring Well MW-9)

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

BORING **B-9**



Measured Depth (Feet)	Blow Counts	PID (ppmv)	GRAPHIC LOG	DESCRIPTION
12				
13				Silty SAND (SM), fine-grained; light brown with orange-brown mottling along soil fractures; wet; dense
14				
15	5			
	5			Clayey SILT (ML) with trace sand; gray with orange-brown mottling; wet; low to medium plasticity; stiff
16	5			
17				Silty SAND (SM), fine-grained; light brown with orange-brown mottling along fractures; wet; dense
18	5			
	5			Silty SAND/Sandy SILT (SM/ML); gray; wet; medium dense
	10			TD @ 19.0 ft.
19				
20				
21				
22				
23				
24				
25				
26				

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

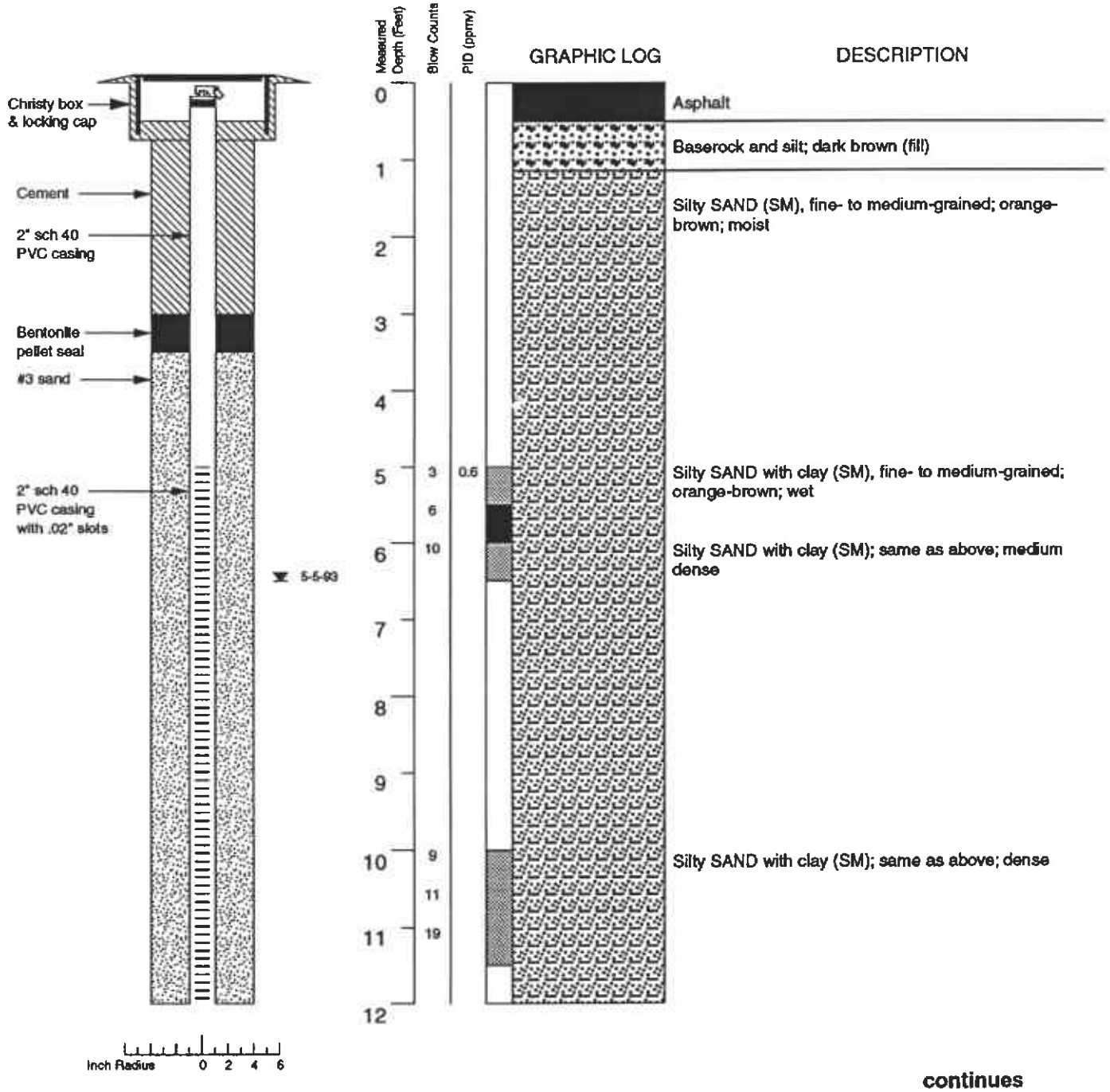
RESNA

PROJECT NO. 170077.05 | 5/93

BORING LOG—Boring B-9 (Monitoring Well MW-9)

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

BORING **B-9**



continues

Logged by:	David DeMent, Jennifer Chase
Project Mgr:	Gary Pischke
Dates Drilled:	5/5/93
Drilling Company:	PC Exploration
Drilling Method:	8" Hollow Stem Auger
Driller:	Frank
Well Head Completion:	Christy box and locking cap
Type of Sampler:	2½" split spoon
TD (Total Depth):	20.5 feet

EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

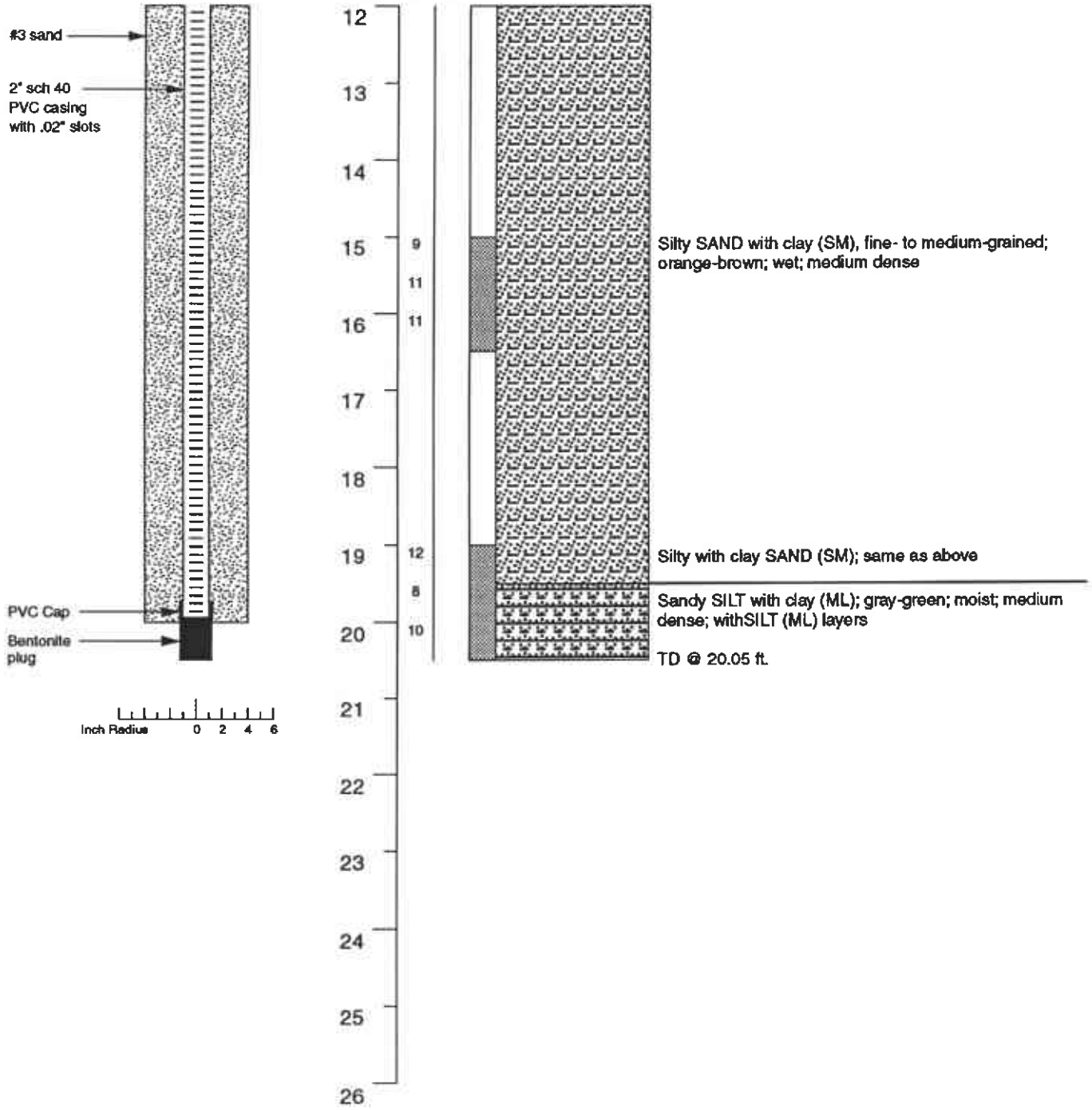
RESNA

PROJECT NO. 170077.05 | 5/93

BORING LOG—Boring B-10 (Monitoring Well MW-10)

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

BORING **B-10**



EXPLANATION

- Recovered drill sample
- Sample sealed for chemical analysis
- Sieve sample
- Grab sample
- Core sample
- est K — Estimated permeability (hydraulic conductivity) 1K = primary 2K = secondary
- NR — No recovery
- Water level during drilling
- Water level in completed well

CONTACTS:

- Solid where certain
- Dotted where approximate
- Dashed where uncertain
- Hachured where gradational

RESNA

PROJECT NO. 170077.05 | 5/93

BORING LOG—Boring B-10 (Monitoring Well MW-10)

Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

BORING B-10

RESNA
Working To Restore Nature

APPENDIX C

CHAIN OF CUSTODY RECORDS AND

LABORATORY ANALYSIS REPORTS

pace INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Resna Industries
73 Digital Dr.
Novato, CA 94949

May 13, 1993
PACE Project Number: 430506508

Attn: Mr. Gary Pischke

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0064244	
Date Collected:			05/05/93	
Date Received:			05/06/93	
Client Sample ID:			S-5.5-B8	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	05/11/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/kg wet	1000	ND	05/11/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	05/11/93
Benzene	ug/kg wet	5.0	ND	05/11/93
Toluene	ug/kg wet	5.0	ND	05/11/93
Ethylbenzene	ug/kg wet	5.0	ND	05/11/93
Xylenes, Total	ug/kg wet	5.0	ND	05/11/93
EXTRACTABLE FUELS - EPA 3550/8015				
Extractable Fuels, as Diesel	mg/kg	5.0	ND	05/10/93
Date Extracted			05/08/93	

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

REPORT OF LABORATORY ANALYSIS

May 13, 1993
PACE Project Number: 430506508

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0064252	
Date Collected:			05/05/93	
Date Received:			05/06/93	
Client Sample ID:			S-6.0-B9	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	05/10/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/kg wet	1000	ND	05/10/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	05/10/93
Benzene	ug/kg wet	5.0	ND	05/10/93
Toluene	ug/kg wet	5.0	ND	05/10/93
Ethylbenzene	ug/kg wet	5.0	ND	05/10/93
Xylenes, Total	ug/kg wet	5.0	ND	05/10/93
EXTRACTABLE FUELS EPA 3550/8015				
Extractable Fuels, as Diesel	mg/kg	5.0	ND	05/10/93
Date Extracted			05/08/93	

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

REPORT OF LABORATORY ANALYSIS

May 13, 1993
PACE Project Number: 430506508

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0064260	
Date Collected:			05/05/93	
Date Received:			05/06/93	
Client Sample ID:			S-6.0-B10	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	05/10/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/kg wet	1000	ND	05/10/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	05/10/93
Benzene	ug/kg wet	5.0	ND	05/10/93
Toluene	ug/kg wet	5.0	ND	05/10/93
Ethylbenzene	ug/kg wet	5.0	ND	05/10/93
Xylenes, Total	ug/kg wet	5.0	ND	05/10/93
EXTRACTABLE FUELS EPA 3550/8015				
Extractable Fuels, as Diesel	mg/kg	5.0	ND	05/10/93
Date Extracted			05/08/93	

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

11 Digital Drive
Novato, CA 94949
TEL: 415-883-6100
FAX: 415-883-2673

Client Reference: Exxon 7-0104 (EE)

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

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Mr. Gary Pischke
Page 5

QUALITY CONTROL DATA

May 13, 1993
PACE Project Number: 430506508

Client Reference: Exxon 7-0104 (EE)

EXTRACTABLE FUELS EPA 3550/8015
Batch: 70 21049
Samples: 70 0064244, 70 0064252, 70 0064260

METHOD BLANK:

Parameter	Units	MDL	Method Blank
Extractable Fuels, as Diesel	mg/kg	5.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Extractable Fuels, as Diesel	mg/kg	5.0	33.3	82%	88%	7%

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Mr. Gary Pischke
Page 6

QUALITY CONTROL DATA

May 13, 1993
PACE Project Number: 430506508

Client Reference: Exxon 7-0104 (FE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 21040
Samples: 70 0064252, 70 0064260

METHOD BLANK:

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

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/kg wet	200	1000	92%	90%	2%
Benzene	ug/kg wet	1.0	40.0	102%	103%	0%
Toluene	ug/kg wet	1.0	40.0	96%	96%	0%
Ethylbenzene	ug/kg wet	1.0	40.0	95%	95%	0%
Xylenes, Total	ug/kg wet	1.0	120	98%	98%	0%

Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 21051
Samples: 70 0064244

METHOD BLANK:

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

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/kg wet	200	1000	104%	92%	12%
Benzene	ug/kg wet	1.0	40.0	98%	98%	0%
Toluene	ug/kg wet	1.0	40.0	95%	95%	0%
Ethylbenzene	ug/kg wet	1.0	40.0	97%	97%	0%
Xylenes, Total	ug/kg wet	1.0	120	100%	100%	0%

Mr. Gary Pischke
Page 8

FOOTNOTES
for pages 5 through 7

May 13, 1993
PACE Project Number: 430506508

Client Reference: Exxon 7-0104 (EE)

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

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EXXON COMPANY, U.S.A.

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

CHAIN OF CUSTODY

430506.508

☑ Novato, CA, 11 Digital Drive, 94949 (415) 883-6100

☐ Huntington Beach, CA, 5702 Bolsa Avenue, 92649 (714) 892-2565

Consultant's Name: RESNA Industries

Page 1 of 1

Address: 17 Digital Drive

Site Location: Alameda, Park St.

Project #:

Consultant Project #: 170077.05

Consultant Work Release #: 09300238

Project Contact: Gary Fischke

Phone #: Fax #:

Laboratory Work Release #:

EXXON Contact: Marla Grensler ☒ EE ☐ C&M

Phone #: Fax #:

EXXON RAS #: 7-0104

Sampled by (print): Jennifer Chase / Dave DeMent

Sampler's Signature: Jennifer Chase

Shipment Method:

Air Bill #:

Shipment Date:

TAT: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☑ Standard (5 day)

ANALYSIS REQUIRED

Sample Condition as Received
Temperature ° C: ____
Cooler #: ____
Inbound Seal Yes No
Outbound Seal Yes No Client

Sample Description	Collection Date/Time	Matrix Soil/Water	Prsv	# of Cont	PACE Sample #	TPH/GAS/BTEX EPA 8015/8020	TPH/Diesel EPA 8015	TRPH EPA 418.1	COMMENTS
S-5.5-B8	5/5 8:40	Soil	No	1	6424.4	X	X*		
S-6.0-B9	5/5 10:50	↓	↓	1	6425.2	X	X		
S-6.0-B10	5/5 15:00	↓	↓	1	6426.0	X	X		

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
Jennifer Chase	5/6/93	13:40	J. Dyp / Pace	5/6/93	1340

Additional Comments:
*Diesel analyses per Jennifer Chase at Resna 5/6/93

Distribution: R/3 White - Original Yellow - Exxon Pink - Lab Goldenrod - Consultant Field Staff

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REPORT OF LABORATORY ANALYSIS

RESNA
73 Digital Dr.
Novato, CA 94949

May 25, 1993
PACE Project Number: 430514524

Attn: Ms. Jennifer Chase

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0072131	
Date Collected:			05/14/93	
Date Received:			05/14/93	
Client Sample ID:			MW-10	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	05/21/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	97	05/21/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	05/21/93
Benzene	ug/L	0.5	ND	05/21/93
Toluene	ug/L	0.5	ND	05/21/93
Ethylbenzene	ug/L	0.5	9.8	05/21/93
Xylenes, Total	ug/L	1.0	22	05/21/93

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REPORT OF LABORATORY ANALYSIS

Ms. Jennifer Chase
Page 2

May 25, 1993
PACE Project Number: 430514524

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0072140	
Date Collected:			05/14/93	
Date Received:			05/14/93	
Client Sample ID:			MW-9	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	05/21/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	05/21/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	05/21/93
Benzene	ug/L	0.5	ND	05/21/93
Toluene	ug/L	0.5	ND	05/21/93
Ethylbenzene	ug/L	0.5	ND	05/21/93
Xylenes, Total	ug/L	1.0	ND	05/21/93

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REPORT OF LABORATORY ANALYSIS

Ms. Jennifer Chase
Page 3

May 25, 1993
PACE Project Number: 430514524

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0072158	
Date Collected:			05/14/93	
Date Received:			05/14/93	
Client Sample ID:			MW-8	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	05/22/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	05/22/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	05/22/93
Benzene	ug/L	0.5	ND	05/22/93
Toluene	ug/L	0.5	ND	05/22/93
Ethylbenzene	ug/L	0.5	ND	05/22/93
Xylenes, Total	ug/L	1.0	ND	05/22/93

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

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TEL: 415-883-6100
FAX: 415-883-2673

Client Reference: Exxon 7-0104 (EE)

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

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FAX: 415-883-2673

Ms. Jennifer Chase
Page 5

QUALITY CONTROL DATA

May 25, 1993
PACE Project Number: 430514524

Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 21368
Samples: 70 0072131, 70 0072140, 70 0072158

METHOD BLANK:

Parameter	Units	MDL	Method Blank
TOTAL FUEL HYDROCARBONS, (LIGHT):			-
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	ND
PURGEABLE AROMATICS (BTXE BY EPA 8020M)			-
Benzene	ug/L	0.5	ND
Toluene	ug/L	0.5	ND
Ethylbenzene	ug/L	0.5	ND
Xylenes, Total	ug/L	1.0	ND

LABORATORY CONTROL SAMPLE AND CONTROL SAMPLE DUPLICATE:

Parameter	Units	MDL	Reference Value	Recv	Dupl Recv	RPD
Purgeable Fuels, as Gasoline (EPA 8015M	ug/L	50	1000	93%	98%	5%
Benzene	ug/L	0.5	100	100%	97%	3%
Toluene	ug/L	0.5	100	103%	99%	3%
Ethylbenzene	ug/L	0.5	100	105%	103%	1%
Xylenes, Total	ug/L	1.0	300	107%	107%	0%

Ms. Jennifer Chase
Page 6

FOOTNOTES
for page 5

May 25, 1993
PACE Project Number: 430514524

Client Reference: Exxon 7-0104 (EE)

MDL	Method Detection Limit
ND	Not detected at or above the MDL.
RPD	Relative Percent Difference

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EXXON COMPANY, U.S.A.

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

CHAIN OF CUSTODY

430514.524

☒ Novato, CA, 11 Digital Drive, 94949 (415) 883-6100

☐ Huntington Beach, CA, 5702 Bolsa Avenue, 92649 (714) 892-2565

Consultant's Name: RESNA

Address: 73 DIGITAL DR.

Site Location: ALAMEDA

Project #:

Consultant Project #: 170077.01

Consultant Work Release #: 09300238

Project Contact: JENNIFER CHASE

Phone #: 382-7406 Fax #:

Laboratory Work Release #:

EXXON Contact: MARLA GUENSLER ☐ EE ☐ C&M

Phone #: Fax #:

EXXON RAS #: 7-0104

Sampled by (print): STEPHEN LEACH

Sampler's Signature:

Shipment Method: HAND DELIVER

Air Bill #:

Shipment Date: 5/14/93

TAT: ☐ 24 hr ☐ 48 hr ☐ 72 hr ☒ Standard (5 day)

ANALYSIS REQUIRED

Sample Condition as Received
Temperature °C CLIENT
Cooler #: COURIER
Inbound Seal Yes No
Outbound Seal Yes No

Sample Description	Collection Date/Time	Matrix Soil/Water	Prsv	# of Cont	PACE Sample #	TPH/GAS/BTEX EPA 8015/8020	TPH/Diesel EPA 8015	TRPH EPA 418.1	COMMENTS
MW-10	5/14/12:55	WATER	HCL	3	7213.1	X			
MW-9	5/14/1:28	WATER	HCL	3	7214.0	X			
MW-8	5/14/1:50	WATER	HCL	3	7215.8	X			

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
	5/14/93	5:30	Theresa Powers PACE	5/14	1730

Additional Comments:

Distribution: 5/12 White - Original Yellow - Exxon Pink - Lab Goldenrod - Consultant Field Staff