RESNA
Working To Restore Nature

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OCT 1993

LETTER REPORT
THIRD QUARTER 1993
GROUNDWATER MONITORING
AND
REMEDIATION ACTIVITIES
at
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California

170077.01

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October 22, 1993
1011MGUE
170077.01

Ms. Marla Guensler
Exxon Company, U.S.A.
P.O. Box 4032
2300 Clayton Road
Concord, California 94520

Subject: Letter Report, Third Quarter 1993 Groundwater Monitoring and Remediation Activities at Exxon Station 7-0104, 1725 Park Street, Alameda, California

Ms. Guensler:

As requested by Exxon Company U.S.A. (Exxon), this letter report summarizes the methods and results of the third quarter 1993 groundwater monitoring and remediation activities performed by RESNA Industries Inc. (RESNA) at the above-referenced site. The site is located on the western corner of the intersection of Park Street and Eagle Avenue in Alameda, California, as shown on the Site Vicinity Map (Plate 1).

Exxon has contracted with RESNA to perform quarterly groundwater monitoring, sampling, and analyses; evaluate the groundwater flow direction and gradient, and gasoline hydrocarbon concentrations in the local groundwater; and perform remediation activities. The locations of the groundwater monitoring wells and pertinent site features are shown on the Generalized Site Plan (Plate 2). Remediation activities at this site currently consists of pumping groundwater from groundwater extraction wells EW-1 through EW-5, passing the groundwater through subsurface collection piping to an aboveground treatment system located east of the station building. Extracted groundwater is then passed through a bioreactor, sediment filtration unit, and activated carbon adsorption canisters for treatment. After treatment, groundwater is discharged into East Bay Municipal Utility District (EBMUD) sanitary sewer.

Previous Work

In 1988, Exxon acquired the subject site, which was formerly a Regal Service Station owned by Wickland Oil Company of Sacramento, California. Previous work at the site includes the replacement of underground storage tanks in 1989. After the tank replacement, Harding Lawson Associates (HLA) of Novato, California drilled six soil borings and constructed six groundwater monitoring wells onsite (HLA, March 21, 1989). HLA 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 (HLA, May 1, 1990). Gasoline hydrocarbons were detected in soil and groundwater (HLA, May 1, 1990). In September 1992, per the County of Alameda's request, HLA performed an offsite groundwater survey, which included collecting and analyzing groundwater samples. Based on their findings, HLA concluded that a hydrocarbon plume, as defined by TPHg concentrations in groundwater, was primarily limited to the site and partially offsite in the vicinity of the intersection of Park and Eagle (HLA, October 30, 1992). In October 1992, HLA performed a vapor-extraction test at the site (HLA, December 28, 1992). In December 1992, HLA began construction of a groundwater treatment system. HLA started the groundwater extraction and treatment system in mid-February 1993. The groundwater treatment system consists of two main steps: (1) biological degradation of petroleum hydrocarbons in a bioreactor and (2) post-treatment by filtration of suspended sediment and biosludge and carbon polishing through carbon absorbers. Currently, the carbon polishing system consists of three 200-pound granular activated carbon canisters plumbed in series. Treated groundwater is discharged into sanitary sewer under EBMUD permit guidelines for this site. Off-gases generated by the bioreactor are collected through a blower and carbon polished via two 200-pound vapor phase activated carbon canisters before discharging into ambient atmosphere. On May 5, 1993, RESNA installed three off-site groundwater monitoring wells (RESNA, July 13, 1993). Exxon initiated quarterly groundwater sampling at the site in 1988.

Groundwater Sampling and Gradient Evaluation

RESNA personnel performed quarterly groundwater monitoring and sampling on July 15, 1993. During field work at the site, RESNA personnel measured depth-to-water (DTW) levels in monitoring wells MW-1 through MW-10. In addition, the groundwater from wells MW-1 through MW-10 was subjectively analyzed for the presence of separate phase product and purged and sampled for laboratory analysis. Wells MW-2 and MW-5 were not sampled due to the presence of separate phase product. Extraction wells EW-1 through EW-5 are incorporated into the remediation system and were not accessible for purging and sampling. The results of the subjective analyses are summarized in Table 1, Cumulative Groundwater Monitoring Data and Results of Laboratory Analyses of Groundwater Samples. Field

methods are described in RESNA's Field Protocol (RESNA, June 30, 1993).

RESNA calculated groundwater elevations for each well by subtracting the measured DTW from the elevation of the wellhead. The measured DTW levels, wellhead elevations, and groundwater elevations for this and the previous monitorings at the site are summarized in Table 1. **Based on the July 15, 1993 data, the evaluated groundwater flow direction was to the east with an approximate gradient of 0.016, as shown on Plate 3,** Groundwater Gradient Map. Groundwater elevations at the site decreased an average of 0.7 feet since last quarter.

Monitoring wells MW-1, MW-3, MW-4, and MW-6 through MW-10 were purged and sampled in accordance with RESNA's field protocol (RESNA, June 10, 1993). Well purge data sheets for the parameters monitored are included in Appendix A.

Results of Laboratory Analysis

Groundwater samples collected from monitoring wells MW-1, MW-3, MW-4, and MW-6 through MW-10 were analyzed for gasoline constituents benzene, toluene, ethylbenzene, and total xylenes (BTEX) and total petroleum hydrocarbons as gasoline (TPHg) using modified Environmental Protection Agency (EPA) Methods 5030/8015/8020. Groundwater samples were analyzed by PACE Incorporated Laboratories (California Hazardous Waste Testing Laboratory Certification No. 1282) in Novato, California. The laboratory analyses and chain of custody record sheets are included in Appendix B. The results of these and previous groundwater analyses are summarized in Table 1. Concentrations of TPHg and benzene in the groundwater are shown on Plate 4, TPHg/Benzene Concentrations in Groundwater.

Results of the laboratory analysis of groundwater samples from monitoring wells MW-1, MW-3, MW-4, and MW-6 through MW-10 indicate:

- TPHg was not detected at concentrations equal to or greater than the laboratory method detection limit (MDL) of 50 parts per billion (ppb) in wells MW-8 and MW-9;

- TPHg was detected in wells MW-1, MW-3, MW-4, MW-6, and MW-7 at concentrations ranging from 160 ppb (MW-10) to 7,600 ppb (MW-1);

- benzene was not detected at concentrations equal to or greater than the laboratory MDL of 0.5 ppb in wells MW-8 through MW-10. Benzene was detected in wells MW-1, MW-3, MW-4, MW-6, and MW-7 at concentrations ranging from 200 ppb (MW-7) to 440 ppb (MW-4). These concentrations are greater than the State of California Department of Health Services (DHS)

Maximum Contaminant Level (MCL) of 1.0 ppb benzene in drinking water;

- except for ethylbenzene in MW-1 (1,100 ppb), toluene, ethylbenzene, and total xylenes were detected in wells MW-1, MW-3, MW-4, MW-6, MW-7, and MW-10 at concentrations less than the DHS Drinking Water Action Level (DWAL) of 100 ppb toluene, and MCLs of 680 ppb ethylbenzene and 1,750 ppb total xylenes.

Groundwater Remediation System

The interim groundwater remediation system (System) was installed in February 1993 to treat dissolved phase petroleum hydrocarbons in groundwater extracted from the first water-bearing zone beneath the site. The extraction system consists of five pneumatic pumps in on-site extraction wells EW-1 through EW-5, collection piping, and associated instrumentation and controls. The treatment system consists of two main modules: treatment (bioreactor), and post-treatment (filtration and carbon polishing). The treatment module consists of a bioreactor, two 200-pound vapor-phase granular activated carbon (GAC) canisters, and the associated air sparging, nutrient and caustic supply systems. Off gases generated during air sparging are polished via two 200-pound vapor-phase carbon canisters. The post-treatment consists of a dual-chamber sand filter, a bag filter, and three 200-pound liquid-phase GAC canisters connected in series. Effluent from the system is discharged to the sanitary sewer regulated by the EBMUD. Sampling ports were installed at various locations of the treatment system and are designated as follows:

"influent"	Composite water sample from recovery wells
"bioreactor"	Water sample from the first compartment of the bioreactor
"A"	Effluent from bioreactor, influent to first GAC canister
"B"	Effluent from second GAC canister, influent to third GAC canister
"C"	Effluent from third GAC canister into sanitary sewer

System Field Procedures

Monitoring and maintenance of the System was conducted by RESNA in accordance with the Operation and Maintenance Manual for the system. RESNA personnel visited the site weekly during the month of April 1993 to assess the performance of the interim remediation system. Beginning in May 1993, operation and maintenance of the system has been performed by RESNA bi-weekly.

Sampling of the system is being performed monthly in accordance with the requirements and procedures of the self-monitoring program associated with the EBMUD wastewater

discharge permit. A copy of the EBMUD wastewater discharge permit is included in Appendix C. Monthly air monitoring is also being performed per the guidelines of the Bay Area Air Quality Management District (BAAQMD).

This quarter influent and effluent water samples were collected from the remediation system on July 8, August 6, and September 8, 1993. Based on RESNA's field data, 219,540 gallons of groundwater has been treated by the system; approximately 0.97 gallons (based on an extraction rate of 2.5 gpm) of TPHg has been removed during this quarter; and 675,360 gallons of groundwater has been extracted and treated by the interim system. To date, an approximately 2.97 gallons of TPHg has been removed since system start-up in February 1993. Table 2, Operation and Performance Data for Groundwater Remediation System, summarizes the total cumulative discharge recorded during each sampling event and the results of laboratory analysis. Copies of RESNA's Facility Inspection Logs and Carbon Breakthrough Calculations are included in Appendices D and E, respectively.

Laboratory analytical results of groundwater samples collected from the influent and effluent sample ports of the system indicated:

- The influent samples had concentrations of TPHg which ranged from 1600 ppb to 2900 ppb; concentrations of benzene ranged from 310 ppb to 510 ppb; concentrations of toluene ranged from 24 ppb to 180 ppb; concentrations of ethylbenzene ranged from 11 ppb to 56 ppb; total xylenes ranged from 130 ppb to 710 ppb.

- Concentrations of TPHg, and BTEX were not detected at their respective laboratory MDLs in the effluent samples.

- The groundwater samples "influent", "A", "B", and "C" collected from the interim groundwater remediation system on August 6, 1993, indicated methyl tetra-butyl ether concentrations were present at concentrations of 120 ppb, 83 ppb, 73 ppb, and 60 ppb, respectively.

- Air monitoring was performed on the off-gases from the system using a photo ionization detector (PID) at influent to the first carbon canister, in between the two carbon canisters, and at the effluent of the second carbon canister. The field measurements indicated no detectable hydrocarbons.

Limitations

This report was prepared in accordance with generally accepted standards of environmental geological and engineering practices in California at the time this investigation was performed. This report has been prepared for Exxon Company U.S.A. and any reliance on this report by third parties shall be at such party's sole risk.

If you have any questions or comments regarding this letter report, please call (408) 264-7723.

Sincerely,
RESNA Industries Inc.

Jeanne Buckthal
Geologic Technician

for Dora Chew
Project Engineer

REGISTERED GEOLOGIST
JAMES LEWIS NELSON
No. 1463
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA

James L. Nelson
Certified Engineering Geologist No. 1463

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Enclosures: References

Plate 1	Site Vicinity Map
Plate 2	Generalized Site Plan
Plate 3	Groundwater Gradient Map (July 15, 1993)
Plate 4	TPHg/Benzene Concentrations in Groundwater
Table 1	Cumulative Groundwater Monitoring Data and Results of Laboratory Analyses of Groundwater Samples
Table 2	Cumulative Operation and Performance Data for Groundwater Treatment System
Appendix A:	Well Purge Data Sheets
Appendix B:	Laboratory Analysis Reports and Chain of Custody Record
Appendix C:	Wastewater Discharge Permit
Appendix D:	Facility Inspection Logs
Appendix E:	Carbon Breakthrough Calculations

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Quarterly Groundwater Monitoring and Remediation Activities — October 22, 1993
Exxon Station 7-0104, Alameda, California — 170077.01

STATEMENT OF CERTIFICATION

I certify under penalty of law that this document and all attachments are prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered an evaluated the information submitted. Based on my inquiry of the person or persons who managed the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge or belief, true, accurate, including the possibility of fine and imprisonment for knowing violations.

EXXON COMPANY, U.S.A

Marla D. Guensler — Date: 10-27-93

Marla D. Guensler
Senior Environmental Engineer

REFERENCES

Department of Health Services, State of California, October 24, 1990. Summary of California Drinking Water Standards.

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

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

Harding Lawson Associates. October 21, 1992. Groundwater Monitoring Results, Exxon Station #7-0104, 1725 Park Street, Alameda, California.

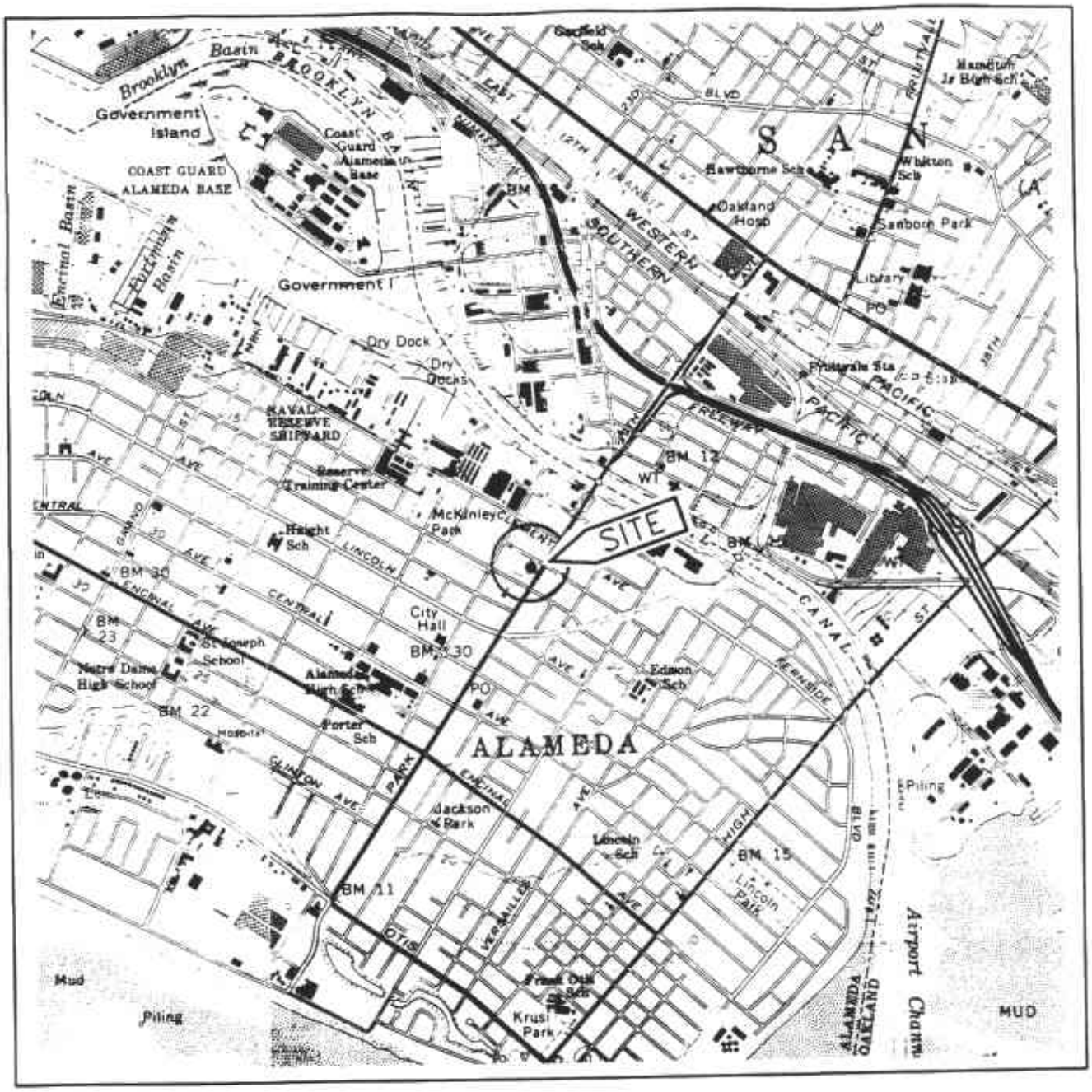
Harding Lawson Associates. October 30, 1992. Offsite Groundwater Survey, Exxon Station #7-0104, 1725 Park Street, Alameda, California.

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

RESNA Industries Inc. April 14, 1993. Groundwater Monitoring Report, Exxon Station 7-0104, 1725 Park Street, Alameda, California 170077.01

RESNA Industries Inc. June 30, 1993. Groundwater Monitoring Status Report, Exxon Station 7-0104, 1725 Park Street, Alameda, California 170077.01

RESNA Industries Inc. July 13, 1993. Problem Assessment Report, Exxon Station 7-0104, 1725 Park Street, Alameda, California 170077.05



Source: U.S. Geological Survey
7.5-Minute Quadrangles
Oakland East/Oakland West, California
Photorevised 1980

N

Approximate Scale

2000 1000 0 2000

feet

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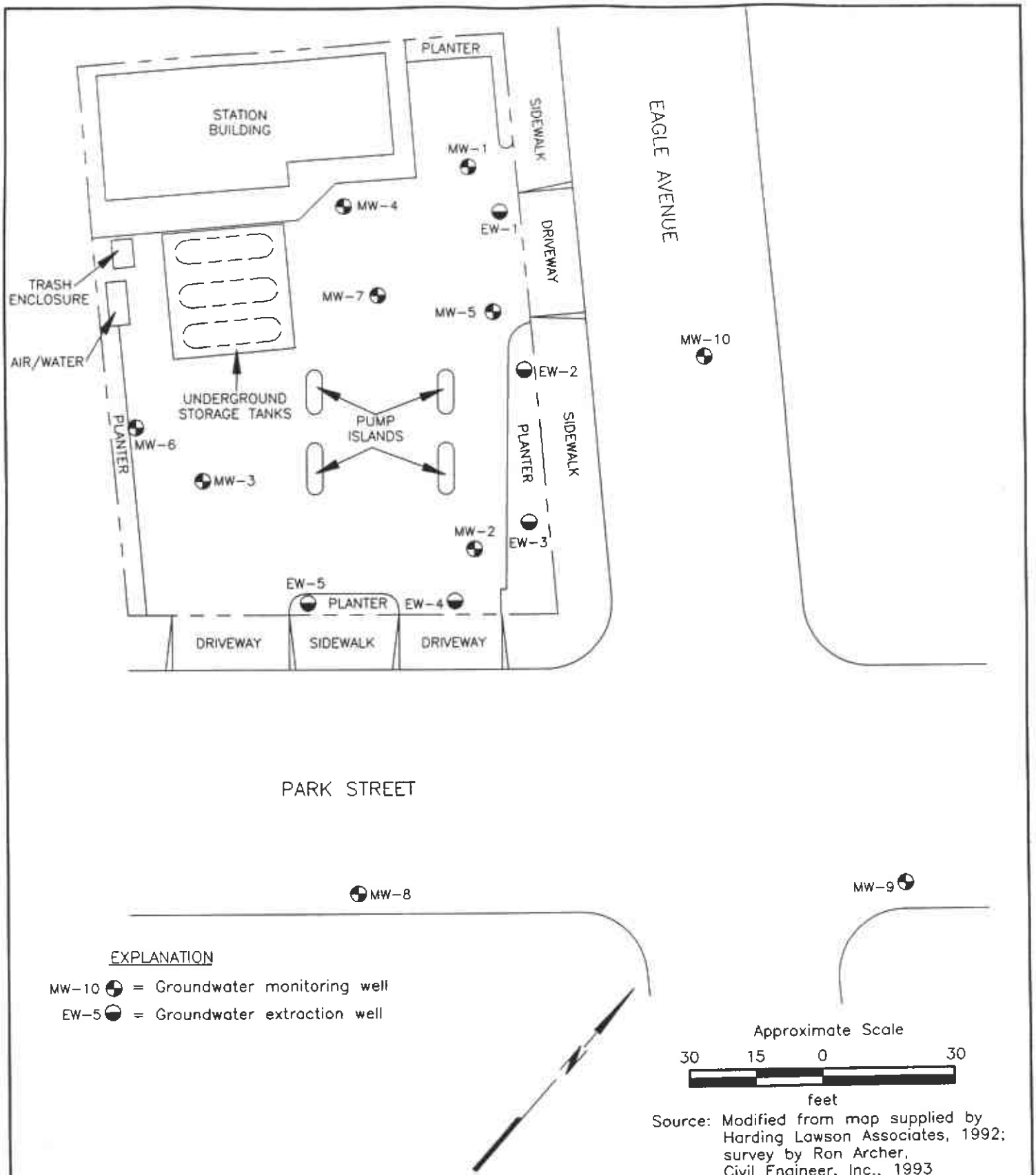
SITE VICINITY MAP
Exxon Service Station 7-0104
1725 Park Street
Alameda, California

PLATE 1



Source: Modified from map supplied by Harding Lawson Associates, 1992; survey by Ron Archer, Civil Engineer, Inc., 1993

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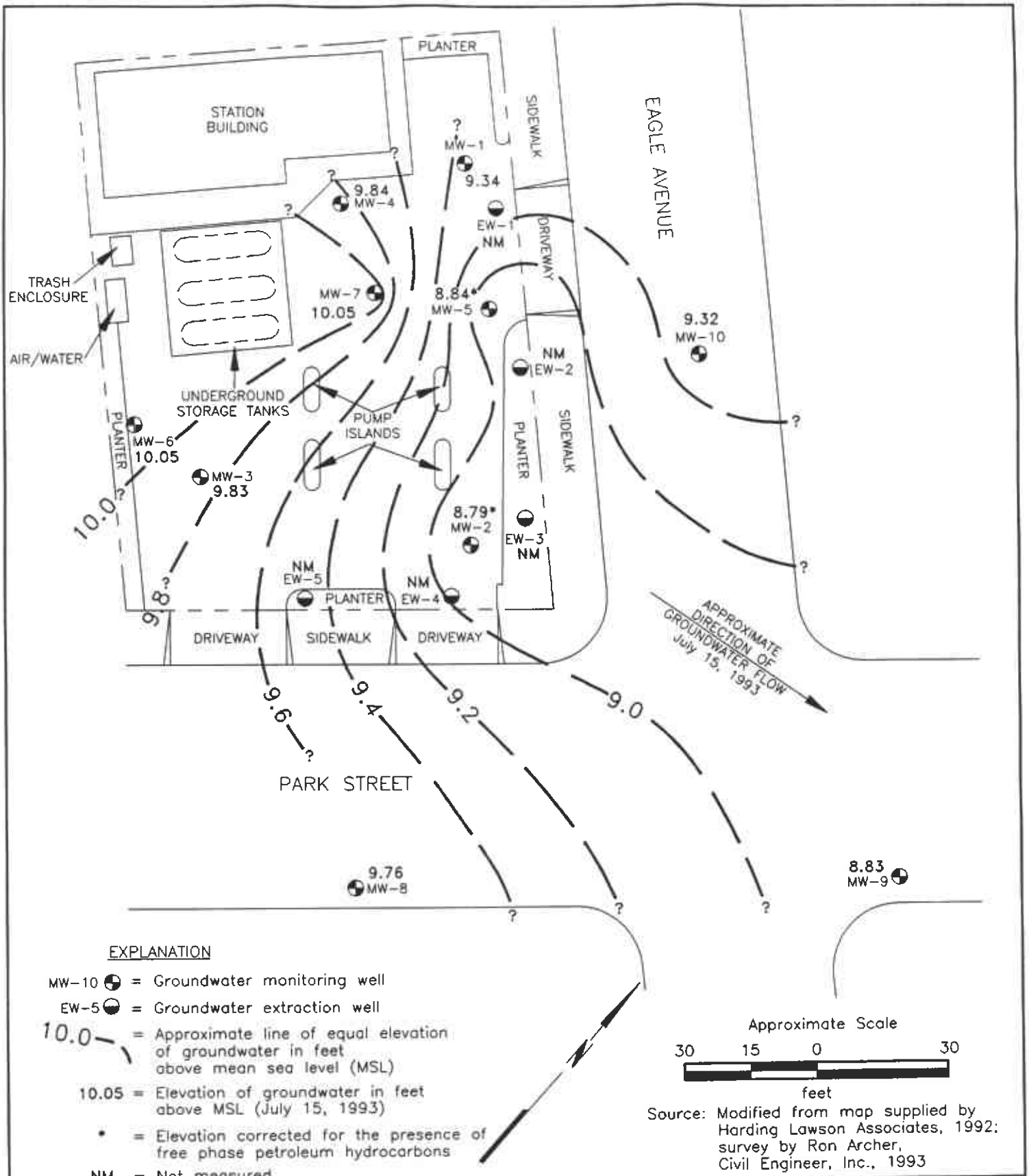
GENERALIZED SITE PLAN
Exxon Service Station 7-0104
1725 Park Street
Alameda, California

PLATE 2



Source: Modified from map supplied by Harding Lawson Associates, 1992; survey by Ron Archer, Civil Engineer, Inc., 1993

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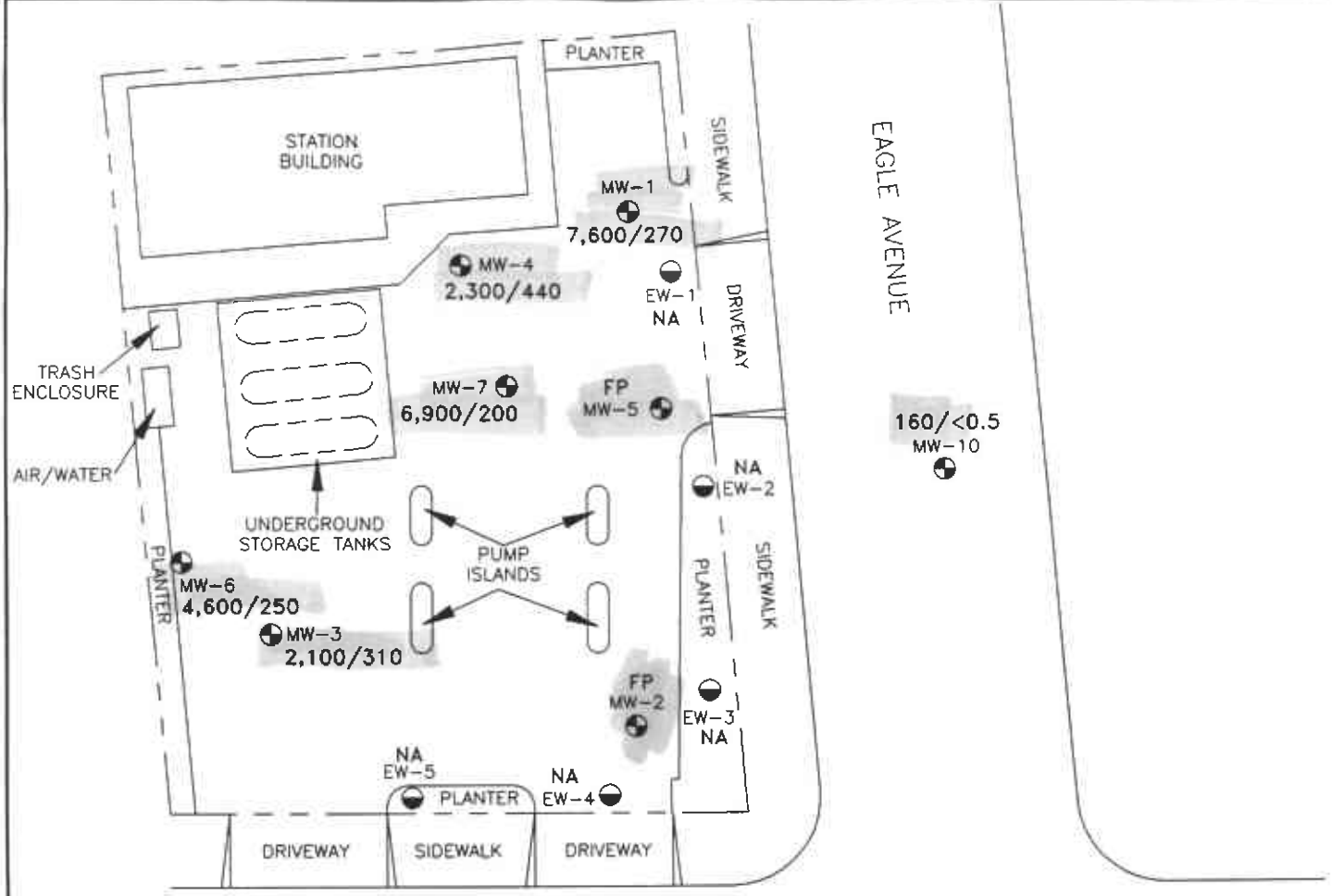
GROUNDWATER GRADIENT MAP
Exxon Service Station 7-0104
1725 Park Street
Alameda, California

PLATE 3



EXPLANATION

MW-10 = Groundwater monitoring well

EW-5 = Groundwater extraction well

7,600/270 = TPHg/benzene concentration in groundwater in parts per billion

NA = Not analyzed

FP = Free phase petroleum hydrocarbons

Approximate Scale

30 15 0 30

feet

Source: Modified from map supplied by Harding Lawson Associates, 1992; survey by Ron Archer, Civil Engineer, Inc., 1993

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TPHg/BENZENE CONCENTRATIONS IN GROUNDWATER
Exxon Service Station 7-0104
1725 Park Street
Alameda, California

PLATE 4

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

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	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	NFP	6.35	11.00	---	---	---	---	---
	01/17/89	NFP	5.81	11.54	6,800	2,000	91	800	1,600
	01/24/89	NFP	5.16	12.19	---	---	---	---	---
	06/01/89	sheen	6.27	11.08	1,700	170	6.9	13	230
	09/18/89	NFP	7.11	10.24	2,100	9.0	53	18	130
	10/20/89	NFP	7.28	10.07	---	---	---	---	---
	11/22/89	NFP	7.02	10.33	---	---	---	---	---
	12/11/89	NFP	6.60	10.75	5,800	200	42	290	330
	02/13/90	NFP	6.02	11.33	---	---	---	---	---
	03/07/90 (a)	---	---	---	---	---	---	---	---
	03/13/90	NFP	5.91	11.44	2,300	430	14	16	220
	04/18/90	NFP	6.18	11.17	---	---	---	---	---
	05/23/90	NFP	6.29	11.06	---	---	---	---	---
	06/14/90	NFP	6.19	11.28	32,000	1,400	19	<5	120
	08/21/90	NFP	7.03	10.32	---	---	---	---	---
	09/19/90	NFP	7.26	10.09	950	290	2.9	<0.5	27
	12/17/90	NFP	6.75	10.60	2,100	550	13	350	110
	01/31/91	NFP	6.78	10.57	---	---	---	---	---
	02/25/91	NFP	6.59	10.76	---	---	---	---	---
	03/19/91	NFP	5.85	11.50	1,400	900	45	390	150
	04/22/91	sheen	5.72	11.63	---	---	---	---	---
	05/17/91	NFP	6.00	11.35	---	---	---	---	---
	07/24/91	NFP	6.79	10.56	9,700	1,300	670	950	2,100
	09/10/91	NFP	7.25	10.10	---	---	---	---	---
	09/23/91	NFP	7.33	10.02	---	---	---	---	---
	10/21/91	NFP	7.53	9.82	---	---	---	---	---
	10/22/91	---	---	---	540	220	1.8	110	7.8
	11/18/91	NFP	7.13	10.22	---	---	---	---	---
	12/11/91	NFP	7.25	10.10	---	---	---	---	---
	01/21/92	NFP	6.54	10.81	1,800	650	23	300	64
	02/20/92	NFP	4.82	12.53	---	---	---	---	---
	03/19/92	NFP	5.24	12.11	---	---	---	---	---
	04/24/92	NFP	5.71	11.64	4,900	1,600	78	660	250
	05/13/92	NFP	5.99	11.36	---	---	---	---	---
	06/24/92	NFP	6.65	10.70	---	---	---	---	---
	07/16/92	NFP	6.72	10.63	3,400	1,000	11	550	100
	08/19/92	NFP	7.07	10.28	---	---	---	---	---
	09/24/92	NFP	7.36	9.99	3,700	1,300	21	330	<10
	02/05/93	NFP	5.21	12.14	11,000	2,400	160	1,400	790
	04/30/93	NFP	5.88	11.47	6,500	330	320	640	1,300
	05/14/93	NFP	7.22	10.13	---	---	---	---	---
	07/15/93	NFP	8.01	9.34	7,600	270	62	1,100	1,000

See notes on page 8 of 8

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA AND
RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 2 of 8)

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	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	NFP	6.20	10.47	---	---	---	---	---
	01/17/89	NFP	5.96	10.71	30,000	6,600	3,300	1,600	7,700
	01/24/89	NFP	5.04	11.63	---	---	---	---	---
	06/01/89	sheen	6.32	10.35	8,700	330	280	680	1,200
	09/18/89	NFP	6.73	9.94	17,000	580	280	570	220
	10/20/89	NFP	6.87	9.80	---	---	---	---	---
	11/22/89	NFP	6.80	9.87	---	---	---	---	---
	12/11/89	NFP	6.57	10.10	32,000	1,000	850	310	1,200
	02/13/90	NFP	6.12	10.55	---	---	---	---	---
	03/13/90	NFP	6.02	10.65	39,000	3,500	1,500	2,100	3,900
	04/18/90	NFP	6.35	10.32	---	---	---	---	---
	05/23/90	NFP	6.28	10.39	---	---	---	---	---
	06/14/90	NFP	6.14	10.53	34,000	3,800	730	1,600	3,900
	08/21/90	NFP	6.70	9.97	---	---	---	---	---
	09/19/90	NFP	6.84	9.83	63,000	670	180	390	1,000
	12/17/90	NFP	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	NFP	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	NFP	5.78	10.89	---	---	---	---	---
	05/17/91	NFP	6.01	10.66	---	---	---	---	---
	07/24/91	NFP	6.43	10.24	49,000	3,500	2,200	2,000	6,400
	09/10/91	NFP	6.81	9.86	---	---	---	---	---
	09/23/91	NFP	6.82	9.85	---	---	---	---	---
	10/21/91	NFP	7.01	9.66	---	---	---	---	---
	10/22/91	---	---	---	34,000	3,700	1,100	1,800	5,200
	11/18/91	NFP	6.66	10.01	---	---	---	---	---
	12/11/91	NFP	6.85	9.82	---	---	---	---	---
	01/21/92	NFP	6.22	10.45	21,000	4,600	1,300	1,700	5,100
	02/2092	NFP	5.28	11.39	---	---	---	---	---
	03/19/92	NFP	5.34	11.33	---	---	---	---	---
	04/24/92	sheen	5.75	10.92	36,000	5,000	970	2,300	5,200
	05/13/92	NFP	5.95	10.72	---	---	---	---	---
	06/24/92	NFP	6.39	10.28	---	---	---	---	---
	07/16/92	sheen	6.50	10.17	42,000	3,500	490	1,800	3,700
	08/19/92	NFP	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	160,000
	05/14/93(c)	---	---	---	---	---	---	---	---
	07/15/93	0.01	7.89	*8.79	---	---	---	---	---

See notes on page 8 of 8

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

Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	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	NFP	6.05	11.06	---	---	---	---	---
	01/17/89	NFP	5.49	11.62	5,300	2,500	230	590	1,100
	01/24/89	NFP	5.38	11.73	---	---	---	---	---
	06/01/89	NFP	5.96	11.15	5,400	330	300	570	680
	09/18/89	NFP	6.65	10.46	12,000	680	170	350	860
	10/20/89	NFP	6.88	10.23	---	---	---	---	---
	11/22/89	NFP	6.74	10.37	---	---	---	---	---
	12/11/89	NFP	6.37	10.74	14,000	1,100	150	670	690
	02/13/90	NFP	5.58	11.53	---	---	---	---	---
	03/13/90	NFP	5.48	11.63	18,000	6,300	200	1,100	1,100
	04/18/90	NFP	6.01	11.10	---	---	---	---	---
	05/23/90	NFP	6.14	10.97	---	---	---	---	---
	06/14/90	NFP	5.83	11.28	9,500	1,300	880	310	1,800
	08/21/90	NFP	6.67	10.44	---	---	---	---	---
	09/19/90	NFP	6.88	10.23	16,000	5,000	65	1,500	450
	12/17/90	NFP	6.46	10.65	6,700	1,500	64	650	460
	01/31/91	NFP	6.24	10.87	---	---	---	---	---
	02/26/91	NFP	6.18	10.93	---	---	---	---	---
	03/19/91	NFP	5.36	11.76	18,000	4,200	2,100	1,100	1,200
	04/22/91	NFP	5.72	11.39	---	---	---	---	---
	05/17/91	NFP	5.55	11.56	---	---	---	---	---
	07/24/91	NFP	6.41	10.70	38,000	6,200	990	2,900	9,600
	09/10/91	NFP	6.80	10.31	---	---	---	---	---
	09/23/91	NFP	6.80	10.31	---	---	---	---	---
	10/21/91	NFP	7.09	10.02	---	---	---	---	---
	10/22/91	---	---	---	23,000	3,400	150	2,500	4,400
	11/18/91	NFP	6.74	10.37	---	---	---	---	---
	12/11/91	NFP	6.79	10.32	---	---	---	---	---
	01/21/92	NFP	6.16	10.95	13,000	2,700	30	1,800	740
	02/20/92	NFP	4.89	12.22	---	---	---	---	---
	03/19/92	NFP	4.86	12.26	---	---	---	---	---
	04/24/92	NFP	5.28	11.83	17,000	4,200	170	1,600	600
	05/13/92	NFP	5.58	11.53	---	---	---	---	---
	06/24/92	NFP	6.22	10.89	---	---	---	---	---
	07/16/92	NFP	6.36	10.75	11,000	2,700	230	1,100	570
	08/19/92	NFP	6.65	10.46	---	---	---	---	---
	09/24/92	NFP	6.93	10.18	7,100	2,000	44	1,000	220
	02/05/93	NFP	4.71	12.40	13,000	3,600	110	1,300	430
	04/30/93	NFP	5.46	11.65	13,000	1,600	370	1,600	1,800
	05/14/93	NFP	6.53	10.58	---	---	---	---	---
	07/15/93	NFP	7.28	9.83	2,100	310	15	230	58

See notes on page 8 of 8

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA AND
RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
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Well ID # (TOC)	Sampling Date	SUBJ	DTW (ft)	Elev. (ft)	TPHg (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)
MW-4	01/17/89	NFP	5.36	11.98	19,000	1,000	1,500	360	2,200
(17.34)	01/24/89	NFP	5.46	11.88	---	---	---	---	---
	06/01/89	NFP	6.01	11.33	3,600	180	240	63	810
	09/18/89	NFP	6.80	10.54	6,000	290	200	28	510
	10/20/89	NFP	7.08	10.26	---	---	---	---	---
	11/22/89	NFP	6.82	10.52	---	---	---	---	---
	12/11/89	NFP	6.37	10.97	13,000	750	910	510	1,200
	02/13/90	NFP	5.49	11.85	---	---	---	---	---
	03/07/90(a)	---	---	---	---	---	---	---	---
	03/13/90	NFP	5.44	11.90	12,000	1,500	1500	470	28,000
	04/18/90	NFP	6.14	11.20	---	---	---	---	---
	05/23/90	NFP	6.22	11.12	---	---	---	---	---
	06/14/90	NFP	5.92	11.42	12,000	5,700	400	1,300	760
	08/21/90	NFP	6.83	10.51	---	---	---	---	---
	09/19/90	NFP	7.07	10.27	5,500	670	180	390	1,000
	12/17/90	NFP	6.50	10.84	14,000	1,400	620	540	2,100
	01/31/91	NFP	6.66	10.68	---	---	---	---	---
	02/25/91	NFP	6.21	11.13	---	---	---	---	---
	03/19/91	NFP	5.29	12.05	11,000	1,500	740	620	2,100
	04/22/91	NFP	5.26	12.08	---	---	---	---	---
	05/17/91	NFP	5.60	11.74	---	---	---	---	---
	07/24/91	NFP	6.54	10.80	10,000	1,200	440	410	1,200
	09/10/91	NFP	7.04	10.30	---	---	---	---	---
	09/23/91	NFP	7.14	10.20	---	---	---	---	---
	10/21/91	sheen	7.30	10.04	---	---	---	---	---
	10/22/91	---	---	---	4,600	750	190	350	780
	11/18/91	NFP	6.90	10.44	---	---	---	---	---
	12/11/91	NFP	7.01	10.33	---	---	---	---	---
	01/21/92	NFP	6.25	11.09	6,000	1,300	320	510	1,200
	02/20/92	NFP	4.79	12.55	---	---	---	---	---
	03/19/92	NFP	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	NFP	6.85	10.49	---	---	---	---	---
	09/24/92	NFP	7.17	10.17	5,900	1,300	130	530	690
	02/05/93	NFP	4.61	12.73	15,000	2,300	820	980	2,200
	04/30/93	NFP	5.59	11.75	21,000	4,000	960	1,500	2,900
	05/14/93	NFP	6.50	10.84	---	---	---	---	---
	07/15/93	NFP	7.50	9.84	2,300	440	55	130	220

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA AND
RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
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Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-5	01/17/89	NFP	5.39	11.32	26,000	8,700	3,900	990	5,900
(16.71)	01/24/89	NFP	5.51	11.20	---	---	---	---	---
	06/01/89	sheen	5.83	10.88	5,200	240	220	130	690
	09/18/89	NFP	6.52	10.19	8,000	340	150	140	460
	10/20/89	NFP	6.72	9.99	---	---	---	---	---
	11/22/89	NFP	6.54	10.17	---	---	---	---	---
	12/11/89	NFP	6.21	10.50	15,000	720	320	450	870
	02/13/90	NFP	5.60	11.11	---	---	---	---	---
	03/07/90	---	---	---	---	---	---	---	---
	03/13/90	NFP	5.54	11.17	10,000	3,400	220	280	800
	04/18/90	NFP	5.75	10.96	---	---	---	---	---
	05/23/90	NFP	5.98	10.73	---	---	---	---	---
	06/14/90	NFP	5.81	10.90	12,000	3,300	160	350	730
	08/21/90	NFP	6.51	10.20	---	---	---	---	---
	09/19/90	NFP	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	NFP	6.31	10.40	---	---	---	---	---
	02/25/91	NFP	6.13	10.58	---	---	---	---	---
	03/19/91	NFP	5.32	11.39	17,000	2,900	610	580	1,200
	04/22/91	sheen	5.30	11.41	---	---	---	---	---
	05/17/91	NFP	5.59	11.12	---	---	---	---	---
	07/24/91	NFP	6.33	10.38	16,000	3,200	320	690	1,100
	09/10/91	NFP	6.66	10.05	---	---	---	---	---
	09/23/91	NFP	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	NFP	6.55	10.16	---	---	---	---	---
	12/11/91	NFP	6.64	10.07	---	---	---	---	---
	01/21/92	sheen	6.07	10.64	14,000	4,000	190	630	1,300
	02/20/92	NFP	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	NFP	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(b)	NFP	4.70	12.01	---	---	---	---	---
	04/30/93	sheen	5.43	11.28	30,000	5,900	450	1,900	1,500
	05/14/93	NFP	7.31	9.40	---	---	---	---	---
	07/15/93	0.07	7.93	*8.84	---	---	---	---	---

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA AND
RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
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Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-6	01/17/89	NFP	5.59	11.97	38,000	7,400	9,300	2,000	9,900
(17.56)	01/24/89	NFP	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	NFP	6.95	10.61	17,000	650	410	650	320
	10/20/89	NFP	7.24	10.32	---	---	---	---	---
	11/22/89	NFP	7.05	10.51	---	---	---	---	---
	12/11/89	NFP	6.63	10.93	29,000	1,100	810	330	1,500
	02/13/90	NFP	5.70	11.86	---	---	---	---	---
	03/07/90	---	---	---	---	---	---	---	---
	03/13/90	NFP	5.63	11.93	38,000	12,000	15,000	2,500	12,000
	04/18/90	NFP	6.26	11.30	---	---	---	---	---
	05/23/90	NFP	6.42	11.14	---	---	---	---	---
	06/14/90	NFP	6.19	11.37	38,000	9,100	7,800	2,900	12,000
	08/21/90	NFP	7.01	10.55	---	---	---	---	---
	09/19/90	NFP	7.23	10.33	22,000	4,200	300	1,400	3,400
	12/17/90	NFP	6.66	10.90	20,000	3,100	4,100	890	2,700
	01/31/91	NFP	6.39	11.17	---	---	---	---	---
	02/25/91	NFP	6.39	11.17	---	---	---	---	---
	03/19/91	NFP	5.57	11.99	180,000	11,000	55,000	5,600	28,000
	04/22/91	NFP	5.42	12.14	---	---	---	---	---
	05/17/91	NFP	5.73	11.83	---	---	---	---	---
	07/24/91	NFP	6.72	10.84	48,000	5,400	2,300	2,000	9,000
	09/10/91	NFP	7.15	10.41	---	---	---	---	---
	09/23/91	NFP	7.25	10.31	---	---	---	---	---
	10/21/91	NFP	7.42	10.14	---	---	---	---	---
	10/22/91	---	---	---	18,000	3,100	700	1,400	2,900
	11/18/91	NFP	7.08	10.48	---	---	---	---	---
	12/11/91	NFP	7.17	10.39	---	---	---	---	---
	01/21/92	NFP	6.40	11.16	9,400	2,100	370	1,000	1,100
	02/20/92	NFP	5.06	12.50	---	---	---	---	---
	03/19/92	NFP	4.86	12.70	---	---	---	---	---
	04/24/92	NFP	5.44	12.12	42,000	3,500	8,000	2,100	8,000
	05/13/92	NFP	5.83	11.73	---	---	---	---	---
	06/24/92	NFP	6.50	11.06	---	---	---	---	---
	07/16/92	NFP	6.68	10.88	14,000	1,600	1,000	1,000	2,500
	08/19/92	NFP	7.00	10.56	---	---	---	---	---
	09/24/92	NFP	7.28	10.28	4,700	790	97	640	540
	02/05/93	NFP	4.84	12.72	26,000	2,500	4,300	1,700	5,300
	04/30/93	NFP	5.69	11.87	9,600	1,000	410	1,100	1,600
	05/14/93	NFP	6.52	11.04	---	---	---	---	---
	07/15/93	NFP	7.51	10.05	4,600	250	72	540	650

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA AND
RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
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Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	TPHg	B	T	E	X
		<	ft	>	<		ppb		>
MW-7	01/09/90	---	---	---	17,000	380	180	330	1,300
(17.12)	02/13/90	NFP	4.98	12.14	---	---	---	---	---
	03/13/90	NFP	4.94	12.18	16,000	360	270	83	460
	05/23/90	NFP	5.87	11.25	---	---	---	---	---
	06/14/90	NFP	5.55	11.57	14,000	1,200	2,800	75	930
	09/19/90	NFP	6.79	10.33	16,000	2,800	95	2,500	1,700
	12/17/90	NFP	6.15	10.97	75,000	2,600	7,000	3,300	14,000
	01/31/91	NFP	6.64	10.48	---	---	---	---	---
	02/25/91	NFP	5.80	11.32	---	---	---	---	---
	03/19/91	NFP	4.96	12.16	44,000	1,600	740	3,400	8,600
	04/22/91	NFP	4.82	12.30	---	---	---	---	---
	05/17/91	NFP	5.18	11.94	---	---	---	---	---
	07/24/91	NFP	6.22	10.90	18,000	1,300	160	2,700	1,000
	09/10/91	NFP	6.71	10.41	---	---	---	---	---
	09/23/91	NFP	6.84	10.28	---	---	---	---	---
	10/21/91	NFP	7.00	10.12	---	---	---	---	---
	10/22/91	---	---	---	10,000	990	26	1,900	490
	11/18/91	NFP	6.56	10.56	---	---	---	---	---
	12/11/91	NFP	6.68	10.44	---	---	---	---	---
	01/21/92	NFP	5.99	11.13	23,000	2,200	3,000	1,800	6,100
	02/20/92	NFP	4.36	12.76	---	---	---	---	---
	03/19/92	NFP	4.22	12.90	---	---	---	---	---
	04/24/92	NFP	4.84	12.28	25,000	1,400	220	2,100	2,600
	05/13/92	NFP	5.24	11.88	---	---	---	---	---
	06/24/92	NFP	6.04	11.08	---	---	---	---	---
	07/16/92	NFP	6.19	10.93	8,700	470	45	970	86
	08/19/92	NFP	6.55	10.57	---	---	---	---	---
	09/24/92	NFP	6.83	10.29	9,200	560	48	1,300	54
	02/05/93	NFP	4.11	13.01	33,000	1,100	2,300	1,200	4,200
	04/30/93(b)	NFP	5.29	11.83	13,000	240	85	710	320
	05/14/93	NFP	5.91	11.21	---	---	---	---	---
	07/15/93	NFP	7.07	10.05	6,900	200	30	500	48
MW-8	05/14/93	NFP	6.54	9.79	<50	<0.5	<1.0	<0.5	<0.5
(16.33)	07/15/93	NFP	6.57	9.76	<50	<0.5	<0.5	<0.5	<0.5
MW-9	05/14/93	NFP	6.61	9.01	<50	<0.5	<1.0	<0.5	<0.5
(15.62)	07/15/93	NFP	6.79	8.83	<50	<0.5	<0.5	<0.5	<0.5
MW-10	05/14/93	NFP	6.91	9.88	97	<0.5	<0.5	9.8	22
(16.79)	07/15/93	NFP	7.47	9.32	160	<0.5	<0.5	15	19

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TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA AND
RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
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Well ID # (TOC)	Sampling Date	SUBJ	DTW	Elev.	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
NFP = Free-phase petroleum hydrocarbons not present in well
TOC = Elevation of top of well casing; datum is mean sea level
DTW = Depth to water
Elev. = Elevation of groundwater; datum is mean sea level
* = Groundwater elevation adjusted for free-phase petroleum hydrocarbons using the equation: Elev. = TOC - [DTW + (PT * 0.8)] where PT is the product thickness

ppb = Parts per billion
TPHg = Total petroleum hydrocarbons as gasoline
B = Benzene
T = Toluene
E = Ethylbenzene
X = total Xylenes
< = 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) = 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 (MTBE).
(c) = 05/14/93: MW-2 was inaccessible for depth-to-water measurement and subjective analysis.

TABLE 2
CUMULATIVE OPERATION AND PERFORMANCE DATA
FOR GROUNDWATER REMEDIATION SYSTEM
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 1 of 4)

Sample Date	Cumulative Flow (gal)	Average Flow Rate (gpd)	Sample ID	TPHg	B	T	E	X
				< . . . . . (parts per billion) . . . . . >				
02/16/93	NA	NA	"bioreactor"	660	120	40	25	56
02/17/93	NA	NA	"bioreactor"	140	23	5.3	2.8	9.3
02/18/93	NA	NA	"bioreactor"	<50	<0.5	<0.5	<0.5	<0.5
02/22/93	0	NA	"influent"	NS	NS	NS	NS	NS
			"A"	150	16	11	3.7	15
			"B"	NS	NS	NS	NS	NS
			"C"	<50	<0.5	<0.5	<0.5	<0.5
02/23/93	230	288	"influent"	NS	NS	NS	NS	NS
			"A"	110	12	7.4	2.7	14
			"B"	NS	NS	NS	NS	NS
			"C"	<50	<0.5	<0.5	<0.5	<0.5
02/24/93	4,165	5,328	"influent"	4,800	1,000	700	83	50
			"A"	800	200	110	5.1	80
			"B"	NS	NS	NS	NS	NS
			"C"	<50	<0.5	<0.5	<0.5	<0.5
02/25/93	10,130	4,752	"influent"	3,800	930	820	130	740
			"A"	300	11	2.9	<0.5	33
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
02/26/93	15,440	5,328	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
03/04/93	36,240	3,456	"influent"	3,600	760	430	45	600
			"A"	170	5.1	2.1	<0.5	20
			"B"	<50	<0.5	<0.5	<0.5	<0.5
			"C"	<50	<0.5	<0.5	<0.5	<0.5
03/11/93	80,000	6,192	"influent"	3,800	480	390	84	600
			"A"	63	0.5	<0.5	<0.5	0.8
			"B"	<50	<0.5	<0.5	<0.5	<0.5
			"C"	<50	<0.5	<0.5	<0.5	<0.5

See notes on page 4 of 4.

TABLE 2
CUMULATIVE OPERATION AND PERFORMANCE DATA
FOR GROUNDWATER REMEDIATION SYSTEM
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 2 of 4)

Sample Date	Cumulative Flow (gal)	Average Flow Rate (gpd)	Sample ID	TPHg	B	T	E	X
				< . . . . . (parts per billion) . . . . . >				
03/19/93	NR	NR	"influent"	NS	NS	NS	NS	NS
			"A"	4,100	530	420	100	800
			"B"	NS	NS	NS	NS	NS
			"C"	110	0.8	<0.5	<0.5	7.6
03/31/93	184,321	5,328	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
04/02/93	192,674	4,177	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
04/05/93	208,161	5,162	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
04/07/93	214,604	3,222	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
04/09/93	223,530	4,463	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
04/13/93	238,370	3,710	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
04/16/93	250,960	4,197	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS

See notes on page 4 of 4.

TABLE 2
CUMULATIVE OPERATION AND PERFORMANCE DATA
FOR GROUNDWATER REMEDIATION SYSTEM
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 3 of 4)

Sample Date	Cumulative Flow (gal)	Average Flow Rate (gpd)	Sample ID	TPHg	B	T	E	X
				< . . . . . (parts per billion) . . . . . >				
04/30/93	270,400	1,389	"influent"	2,700	240	140	35	500
			"A"	380	31	22	14	81
			"B"	55	1.3	<0.5	<0.5	2.3
			"C"	<50	1.5	0.9	<0.5	2.4
05/11/93	308,640	3,476	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
05/20/93	346,407	4,196	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
06/14/93	346,407	0	"influent"	3,300	540	340	88	730
			"A"	<50	<0.5	<0.5	<0.5	1.1
			"B"	<50	<0.5	<0.5	<0.5	<0.5
			"C"	<50	<0.5	<0.5	<0.5	<0.5
06/24/93	393,810	4,740	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
			"C"	NS	NS	NS	NS	NS
06/29/93	415,739	4,386	"influent"	NS	NS	NS	NS	NS
			"A"	NS	NS	NS	NS	NS
			"B"	NS	NS	NS	NS	NS
07/08/93	455,820	6,048	"influent"	1,600	310	24	11	130
			"A"	110	2.2	0.7	<0.5	1.4
			"B"	<50	<0.5	<0.5	<0.5	<0.5
			"C"	<50	<0.5	<0.5	<0.5	<0.5
08/06/93	569,132	3,600	"influent"	2,900	510	180	56	710
			"A"	94	1.9	<0.5	<0.5	1.1
			"B"	61	<0.5	<0.5	<0.5	<0.5
			"C"	<50	<0.5	<0.5	<0.5	<0.5
09/08/93	675,360	8,784	"influent"	2,200	330	51	21	210
			"A"	<50	2.1	<0.5	<0.5	<0.5
			"B"	60	<0.5	<0.5	<0.5	<0.5
			"C"	<50	<0.5	<0.5	<0.5	<0.5

See notes on page 4 of 4.

TABLE 2
CUMULATIVE OPERATION AND PERFORMANCE DATA
FOR GROUNDWATER REMEDIATION SYSTEM
Exxon Service Station No. 7-0104
1725 Park Street
Alameda, California
(Page 4 of 4)

Notes:

gal	:	gallons
gpd	:	gallons per day
TPHg	:	total petroleum hydrocarbons as gasoline
B	:	benzene
T	:	toluene
E	:	ethylbenzene
X	:	total xylenes
NA	:	not applicable
NS	:	not sampled
NR	:	not recorded
ND	:	non detected at or above the method detection limit
"influent"	:	composite sample from recovery wells
"bioreactor"	:	water sample from the first compartment of the bioreactor
"A"	:	effluent from bioreactor, influent to first granular activated carbon (GAC) canister
"B"	:	effluent from second GAC canister, influent to third GAC canister
"C"	:	effluent from third GAC canister into sanitary sewer

APPENDIX A

WELL PURGE DATA SHEETS

RESNA
Working to Restore Nature

WELL PURGE DATA SHEET

Project Name: Exxon 7-0104 Job No. 170077.01

Date: July 15, 1993 Page 1 of 1

Well No. MW-1 Time Started 10:20

TIME (hr)	GALLONS (cum.)	TEMP. (F)	pH	CONDUCT. (micromho)
10:20	Start purging MW-1			
10:27	7	76.5	6.72	4.40
10:34	14	69.3	6.70	4.61
10:41	21	67.7	6.70	4.42
10:44	Stop purging MW-1			

Notes:

Well Diameter (inches) : 4
Depth to Bottom (feet) : 20.50
Depth to Water - initial (feet) : 8.01
Depth to Water - final (feet) : 8.60
% recovery : 95
Time Sampled : 11:45
Gallons per Well Casing Volume : 8.15
Gallons Purged : 24
Well Casing Volume Purged : 3.0
Approximate Pumping Rate (gpm) : 1.0

RESNA
Working to Restore Nature

WELL PURGE DATA SHEET

Project Name: Exxon 7-0104 Job No. 170077.01

Date: July 15, 1993 Page 1 of 1

Well No. MW-3 Time Started 11:36

TIME (hr)	GALLONS (cum.)	TEMP. (F)	pH	CONDUCT. (micromho)
11:36	Start purging MW-3			
11:41	6	74.0	6.47	4.45
	DRY			
11:55	10	72.8	6.56	4.18
	DRY			
12:05	12	71.3	6.77	3.91
12:08	Stop purging MW-3			

Notes:

Well Diameter (inches)	: 4
Depth to Bottom (feet)	: 16.20
Depth to Water - initial (feet)	: 7.28
Depth to Water - final (feet)	: 8.01
% recovery	: 92
Time Sampled	: 12:20
Gallons per Well Casing Volume	: 5.82
Gallons Purged	: 13
Well Casing Volume Purged	: 2.2
Approximate Pumping Rate (gpm)	: 0.4

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Working to Restore Nature

WELL PURGE DATA SHEET

Project Name: Exxon 7-0104 Job No. 170077.01

Date: July 15, 1993 Page 1 of 1

Well No. MW-4 Time Started 1:00

TIME (hr)	GALLONS (cum.)	TEMP. (F)	pH	CONDUCT. (micromho)
1:00	Start purging MW-4			
1:06	6	73.1	6.60	5.00
1:12	12	71.0	6.65	4.84
1:18	18	70.6	6.64	4.90
1:20	Stop purging MW-4			

Notes:

Well Diameter (inches)	: 4
Depth to Bottom (feet)	: 17.90
Depth to Water - initial (feet)	: 7.50
Depth to Water - final (feet)	: 12.05
% recovery	: 56
Time Sampled	: 1:45
Gallons per Well Casing Volume	: 6.79
Gallons Purged	: 20
Well Casing Volume Purged	: 3.0
Approximate Pumping Rate (gpm)	: 1.0

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Working to Restore Nature

WELL PURGE DATA SHEET

Project Name: Exxon 7-0104 Job No. 170077.01

Date: July 15, 1993 Page 1 of 1

Well No. MW-6 Time Started 11:00

TIME (hr)	GALLONS (cum.)	TEMP. (F)	pH	CONDUCT. (micromho)
11:00	Start purging MW-6			
11:07	7	70.4	6.80	3.54
11:14	14	69.7	6.78	3.55
11:21	21	68.6	6.58	3.54
11:21	Stop purging MW-6			

Notes:

Well Diameter (inches)	: 4
Depth to Bottom (feet)	: 18.50
Depth to Water - initial (feet)	: 7.51
Depth to Water - final (feet)	: 7.96
% recovery	: 96
Time Sampled	: 12:00
Gallons per Well Casing Volume	: 7.18
Gallons Purged	: 21
Well Casing Volume Purged	: 2.9
Approximate Pumping Rate (gpm)	: 1.0

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WELL PURGE DATA SHEET

Project Name: Exxon 7-0104 Job No. 170077.01

Date: July 15, 1993 Page 1 of 1

Well No. MW-7 Time Started 12:40

TIME (hr)	GALLONS (cum.)	TEMP. (F)	pH	CONDUCT. (micromho)
12:40	Start purging MW-7			
12:45	5	75.4	6.73	3.69
12:50	10	75.1	6.67	3.67
12:55	15	75.2	6.65	3.68
12:57	Stop purging MW-7			

Notes:

Well Diameter (inches)	: 4
Depth to Bottom (feet)	: 16.20
Depth to Water - initial (feet)	: 7.07
Depth to Water - final (feet)	: 7.07
% recovery	: 100
Time Sampled	: 1:30
Gallons per Well Casing Volume	: 5.96
Gallons Purged	: 18
Well Casing Volume Purged	: 2.5
Approximate Pumping Rate (gpm)	: 1.1

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WELL PURGE DATA SHEET

Project Name: Exxon 7-0104 Job No. 170077.01

Date: July 15, 1993 Page 1 of 1

Well No. MW-8 Time Started 9:05

TIME (hr)	GALLONS (cum.)	TEMP. (F)	pH	CONDUCT. (micromho)
9:05	Start purging MW-8			
9:07	2	68.5	6.95	3.34
9:09	4	70.6	6.92	3.04
9:11	6	71.3	6.89	2.86
9:11	Stop purging MW-8			

Notes:

Well Diameter (inches)	: 2
Depth to Bottom (feet)	: 20.00
Depth to Water - initial (feet)	: 6.57
Depth to Water - final (feet)	: 6.70
% recovery	: 99
Time Sampled	: 9:35
Gallons per Well Casing Volume	: 2.18
Gallons Purged	: 6
Well Casing Volume Purged	: 2.8
Approximate Pumping Rate (gpm)	: 1.0

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Working to Restore Nature

WELL PURGE DATA SHEET

Project Name: Exxon 7-0104 Job No. 170077.01

Date: July 15, 1993 Page 1 of 1

Well No. MW-9 Time Started 8:45

TIME (hr)	GALLONS (cum.)	TEMP. (F)	pH	CONDUCT. (micromho)
8:45	Start purging MW-9			
8:47	2	70.1	7.59	3.50
8:49	4	71.1	7.26	2.77
8:51	6	70.6	6.99	5.17
8:51	Stop purging MW-9			

Notes:

Well Diameter (inches)	: 2
Depth to Bottom (feet)	: 20.00
Depth to Water - initial (feet)	: 6.79
Depth to Water - final (feet)	: 6.90
% recovery	: 99
Time Sampled	: 9:20
Gallons per Well Casing Volume	: 2.15
Gallons Purged	: 6
Well Casing Volume Purged	: 2.8
Approximate Pumping Rate (gpm)	: 1.0

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Working to Restore Nature

WELL PURGE DATA SHEET

Project Name: Exxon 7-0104 Job No. 170077.01

Date: July 15, 1993 Page 1 of 1

Well No. MW-10 Time Started 9:50

TIME (hr)	GALLONS (cum.)	TEMP. (F)	pH	CONDUCT. (micromho)
9:50	Start purging MW-10			
9:52	2	68.0	6.74	3.14
9:54	4	70.4	6.76	3.02
9:56	6	71.0	6.78	3.04
9:56	Stop purging MW-10			

Notes:

Well Diameter (inches)	: 2
Depth to Bottom (feet)	: 20.00
Depth to Water - initial (feet)	: 7.47
Depth to Water - final (feet)	: 8.00
% recovery	: 96
Time Sampled	: 10:00
Gallons per Well Casing Volume	: 2.04
Gallons Purged	: 6
Well Casing Volume Purged	: 2.9
Approximate Pumping Rate (gpm)	: 1.0

APPENDIX B

LABORATORY ANALYSIS REPORTS AND CHAIN OF CUSTODY RECORD

pace
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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

July 26, 1993

Mr. Mark Frye
RESNA
73 Digital Dr.
Novato, CA 94949

RE: PACE Project No. 430716.518
Client Reference: Exxon 7-0104 (EE)

Dear Mr. Frye:

Enclosed is the report of laboratory analyses for samples received July 16, 1993.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stacy P. Hoch

Stacy P. Hoch
Project Manager

Enclosures

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

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

RESNA
73 Digital Dr.
Novato, CA 94949

July 26, 1993
PACE Project Number: 430716518

Attn: Mr. Mark Frye

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0115434	
Date Collected:			07/15/93	
Date Received:			07/16/93	
Client Sample ID:			W-6-MW9	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/22/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	07/22/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/22/93
Benzene	ug/L	0.5	ND	07/22/93
Toluene	ug/L	0.5	ND	07/22/93
Ethylbenzene	ug/L	0.5	ND	07/22/93
Xylenes, Total	ug/L	0.5	ND	07/22/93

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REPORT OF LABORATORY ANALYSIS

Mr. Mark Frye
Page 2

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0115442	
Date Collected:			07/15/93	
Date Received:			07/16/93	
Client Sample ID:			W-6-MW8	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/22/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	07/22/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/22/93
Benzene	ug/L	0.5	ND	07/22/93
Toluene	ug/L	0.5	ND	07/22/93
Ethylbenzene	ug/L	0.5	ND	07/22/93
Xylenes, Total	ug/L	0.5	ND	07/22/93

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REPORT OF LABORATORY ANALYSIS

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0115450	
Date Collected:			07/15/93	
Date Received:			07/16/93	
Client Sample ID:			W-7-MW10	
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/22/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	160	07/22/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/22/93
Benzene	ug/L	0.5	ND	07/22/93
Toluene	ug/L	0.5	ND	07/22/93
Ethylbenzene	ug/L	0.5	15	07/22/93
Xylenes, Total	ug/L	0.5	19	07/22/93

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Mr. Mark Frye
Page 4

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0115469	
Date Collected:			07/15/93	
Date Received:			07/16/93	
Client Sample ID:			W-8-MW1	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/22/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	250	7600	07/22/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/22/93
Benzene	ug/L	2.5	270	07/22/93
Toluene	ug/L	2.5	62	07/22/93
Ethylbenzene	ug/L	2.5	1100	07/22/93
Xylenes, Total	ug/L	2.5	1000	07/22/93

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REPORT OF LABORATORY ANALYSIS

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

Parameter	Units	MDL		DATE ANALYZED
PACE Sample Number:			70 0115477	
Date Collected:			07/15/93	
Date Received:			07/16/93	
Client Sample ID:			W-7-MW6	
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/22/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	500	4600	07/22/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/22/93
Benzene	ug/L	5.0	250	07/22/93
Toluene	ug/L	5.0	72	07/22/93
Ethylbenzene	ug/L	5.0	540	07/22/93
Xylenes, Total	ug/L	5.0	650	07/22/93

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REPORT OF LABORATORY ANALYSIS

Mr. Mark Frye
Page 6

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0115485	
Date Collected:			07/15/93	
Date Received:			07/16/93	
Client Sample ID:			W-7-MW3	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/22/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	500	2100	07/22/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/22/93
Benzene	ug/L	5.0	310	07/22/93
Toluene	ug/L	5.0	15	07/22/93
Ethylbenzene	ug/L	5.0	230	07/22/93
Xylenes, Total	ug/L	5.0	58	07/22/93

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REPORT OF LABORATORY ANALYSIS

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0115493	
Date Collected:			07/15/93	
Date Received:			07/16/93	
Client Sample ID:			W-7-MW7	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/22/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	250	6900	07/22/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/22/93
Benzene	ug/L	2.5	200	07/22/93
Toluene	ug/L	2.5	30	07/22/93
Ethylbenzene	ug/L	2.5	500	07/22/93
Xylenes, Total	ug/L	2.5	48	07/22/93

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REPORT OF LABORATORY ANALYSIS

Mr. Mark Frye
Page 8

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0115507	
Date Collected:			07/15/93	
Date Received:			07/16/93	
Client Sample ID:			W-7-MW4	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/21/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	2300	07/21/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/21/93
Benzene	ug/L	0.5	440	07/21/93
Toluene	ug/L	0.5	55	07/21/93
Ethylbenzene	ug/L	0.5	130	07/21/93
Xylenes, Total	ug/L	0.5	220	07/21/93

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

Mr. Mark Frye | FOOTNOTES | July 26, 1993
Page 9 | for pages 1 through 8 | PACE Project Number: 430716518

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

Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 23023
Samples: 70 0115507

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	0.5	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	110%	105%	4%
Benzene	ug/L	0.5	40.0	111%	111%	0%
Toluene	ug/L	0.5	40.0	106%	107%	0%
Ethylbenzene	ug/L	0.5	40.0	105%	101%	3%
Xylenes, Total	ug/L	0.5	120	108%	105%	2%

Mr. Mark Frye
Page 11

QUALITY CONTROL DATA

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 23026
Samples: 70 0115434, 70 0115442, 70 0115450, 70 0115469, 70 0115477
70 0115485

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	0.5	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	101%	101%	0%
Benzene	ug/L	0.5	100	105%	107%	1%
Toluene	ug/L	0.5	100	104%	106%	1%
Ethylbenzene	ug/L	0.5	100	108%	110%	1%
Xylenes, Total	ug/L	0.5	300	105%	107%	1%

Mr. Mark Frye
Page 12

QUALITY CONTROL DATA

July 26, 1993
PACE Project Number: 430716518

Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 23054
Samples: 70 0115493

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	0.5	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	104%	113%	8%
Benzene	ug/L	0.5	100	103%	103%	0%
Toluene	ug/L	0.5	100	102%	102%	0%
Ethylbenzene	ug/L	0.5	100	108%	107%	0%
Xylenes, Total	ug/L	0.5	300	106%	105%	0%

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Mr. Mark Frye
Page 13

FOOTNOTES
for pages 10 through 12

July 26, 1993
PACE Project Number: 430716518

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

4508 16 SE

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

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

Consultant's Name: RESNA INDI

Page 1 of 1

Address: 73 DIGITAL DR. NOVATO CA

Site Location: ALAMEDA CA

Project #: 170077-01

Consultant Project #: 170077-01

Consultant Work Release #: 69300238

Project Contact: ~~Gary Pischke~~ Mark Frye

Phone #: Fax #:

Laboratory Work Release #:

EXXON Contact: Mark Gaensler ☑ EE ☐ C&M

Phone #: Fax #:

EXXON RAS #: 7-0104

Sampled by (print): JEFF ANDREWS

Sampler's Signature: Jeff Andrews

Shipment Method:

Air Bill #:

Shipment Date:

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

Sample Condition as Received
Temperature ° C: PACE
Cooler #: [illegible]
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		HOLD								COMMENTS
W-6-MW9 RINSATE	7-15-93 9:20		HCL	1	11551.5					✓								
W-6-MW9	9:20			3	43.4	✓												
W-6-MW8	9:35			3	44.2	✓												
W-7-MW10	10:00			3	45.0	✓												
W-8-MW1	11:45			3	46.9	✓												
W-7-MW6 RINSATE	12:00			1	52.3477					✓								
W-7-MW6	12:00			3	47.7	✓												
W-7-MW3	12:20			3	48.5	✓												
W-7-MW7	13:30			3	49.3	✓												
W-7-MW4	7-15-93 13:45		HCL	3	50.7	✓												

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
Jeff Andrews	7-15-93	21:30	Rachel H. Allen	7/16/93	1350
Rachel H. Allen	7/16	1400	Ed [illegible] - PACE	7/16	1400
Ed [illegible] PACE	7/16	1730	[illegible] PACE	7/16	[illegible]

Additional Comments:

Distribution: 10/4 White - Original Yellow - Exxon Pink - Lab Goldenrod - Consultant Field Staff

170077.03

pace
INCORPORATED
THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

RECEIVED
SEP 1993
RESNA
SAN JOSE

September 16, 1993

Ms. Dora Chew
RESNA
3315 Almaden Expressway, Suite 34
San Jose, CA 95118

RE: PACE Project No. 430908.514
Client Reference: Exxon 7-0104 (EE)

Dear Ms. Chew:

Enclosed is the report of laboratory analyses for samples received September 08, 1993.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stacy P Hoch

Stacy P. Hoch
Project Manager

Enclosures

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FAX: 415-883-2673

pace INCORPORATED
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REPORT OF LABORATORY ANALYSIS

RESNA
3315 Almaden Expressway, Suite 34
San Jose, CA 95118

September 16, 1993
PACE Project Number: 430908514

Attn: Ms. Dora Chew

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0148014	
Date Collected:			09/08/93	
Date Received:			09/08/93	
			Influent	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	09/14/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	250	2200	09/14/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/14/93
Benzene	ug/L	2.5	330	09/14/93
Toluene	ug/L	2.5	51	09/14/93
Ethylbenzene	ug/L	2.5	21	09/14/93
Xylenes, Total	ug/L	2.5	210	09/14/93

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Ms. Dora Chew
Page 2

September 16, 1993
PACE Project Number: 430908514

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0148022	
Date Collected:			09/08/93	
Date Received:			09/08/93	
Client Sample ID:			A	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	09/15/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	09/15/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/15/93
Benzene	ug/L	0.5	2.4	09/15/93
Toluene	ug/L	0.5	ND	09/15/93
Ethylbenzene	ug/L	0.5	ND	09/15/93
Xylenes, Total	ug/L	0.5	ND	09/15/93

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REPORT OF LABORATORY ANALYSIS

Ms. Dora Chew
Page 3

September 16, 1993
PACE Project Number: 430908514

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0148030	
Date Collected:			09/08/93	
Date Received:			09/08/93	
Client Sample ID:			B	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	09/14/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	60	09/14/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/14/93
Benzene	ug/L	0.5	ND	09/14/93
Toluene	ug/L	0.5	ND	09/14/93
Ethylbenzene	ug/L	0.5	ND	09/14/93
Xylenes, Total	ug/L	0.5	ND	09/14/93

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REPORT OF LABORATORY ANALYSIS

Ms. Dora Chew
Page 4

September 16, 1993
PACE Project Number: 430908514

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0148049	
Date Collected:			09/08/93	
Date Received:			09/08/93	
Client Sample ID:			C	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	09/14/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	09/14/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	09/14/93
Benzene	ug/L	0.5	ND	09/14/93
Toluene	ug/L	0.5	ND	09/14/93
Ethylbenzene	ug/L	0.5	ND	09/14/93
Xylenes, Total	ug/L	0.5	ND	09/14/93

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

11 Digital Drive
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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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QUALITY CONTROL DATA

September 16, 1993
PACE Project Number: 430908514

Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 24516
Samples: 70 0148014, 70 0148030, 70 0148049

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	0.5	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	105%	94%	11%
Benzene	ug/L	0.5	100	98%	102%	4%
Toluene	ug/L	0.5	100	98%	100%	2%
Ethylbenzene	ug/L	0.5	100	96%	97%	1%
Xylenes, Total	ug/L	0.5	300	103%	106%	2%

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Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 24590
Samples: 70 0148022

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
Methyl tert-Butyl Ether (MTBE)	ug/L	5.0	ND
Xylene (total)	ug/L	0.5	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	92%	82%	11%
Benzene	ug/L	0.5	40.0	92%	89%	3%
Toluene	ug/L	0.5	40.0	88%	87%	1%
Ethylbenzene	ug/L	0.5	40.0	85%	85%	0%
Methyl tert-Butyl Ether (MTBE)	ug/L	5.0	40.0	90%	88%	2%
Xylene (total)	ug/L	0.5	120	89%	89%	0%

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

430908.514

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

Consultant's Name: RESNA, 3315 Alameda EXPY, Suite 34 San Jose, CA 95118 Page 1 of 1

Address:

Site Location: 1725 Park Street, Alameda

Project #:

Consultant Project #: 170077.03

Consultant Work Release #: 09300238

Project Contact: Nayeel / Dora

Phone #: (408) 264 7723 Fax #: 264 2435

Laboratory Work Release #:

EXXON Contact: Marla Guensler [✓] EE [ ] C&M

Phone #: (510) 246 5776 Fax #:

EXXON RAS #: 7-0104

Sampled by (print): Nayeel Sh... / Kin Leung

Sampler's Signature: Nayeel ...

Shipment Method:

Air Bill #:

Shipment Date:

TAT: [ ] 24 hr [ ] 48 hr [ ] 72 hr [✓] Standard (5 day)

ANALYSIS REQUIRED

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										
Influent	09/05 ...	H_2O	HCl	2	0142014	X												
A				2	0148022	X												
B				2	0143630	X												
C				2	0148049	X												
				8														

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

COMMENTS

RECEIVED ... 1993 RESNA SAN JOSE

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
[signature]	9/8/93	1350	[signature] / PACE	9/8/93	1350

Additional Comments: 10/2

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

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

July 14, 1993

JUL 15 1993

Mr. Kin Leung
Resna
73 Digital Dr.
Novato, CA 94949

RE: PACE Project No. 430708.510
Client Reference: Exxon 7-0104 (EE)

Dear Mr. Leung:

Enclosed is the report of laboratory analyses for samples received July 08, 1993.

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stacy P. Hoch

Stacy P. Hoch
Project Manager

Enclosures

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THE ASSURANCE OF QUALITY

REPORT OF LABORATORY ANALYSIS

Resna
73 Digital Dr.
Novato, CA 94949

July 14, 1993
PACE Project Number: 430708510

Attn: Mr. Kin Leung

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0108802	
Date Collected:			07/08/93	
Date Received:			07/08/93	
Client Sample ID:			INFLUENT	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/09/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	1600	07/09/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/09/93
Benzene	ug/L	0.5	310	07/09/93
Toluene	ug/L	0.5	24	07/09/93
Ethylbenzene	ug/L	0.5	11	07/09/93
Xylenes, Total	ug/L	0.5	130	07/09/93

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REPORT OF LABORATORY ANALYSIS

July 14, 1993
PACE Project Number: 430708510

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0108810	
Date Collected:			07/08/93	
Date Received:			07/08/93	
Client Sample ID:			'A'	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/09/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	110	07/09/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/09/93
Benzene	ug/L	0.5	2.2	07/09/93
Toluene	ug/L	0.5	0.7	07/09/93
Ethylbenzene	ug/L	0.5	ND	07/09/93
Xylenes, Total	ug/L	0.5	1.4	07/09/93

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REPORT OF LABORATORY ANALYSIS

Mr. Kin Leung
Page 3

July 14, 1993
PACE Project Number: 430708510

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0108829	
Date Collected:			07/08/93	
Date Received:			07/08/93	
Client Sample ID:			'B'	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/09/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	07/09/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/09/93
Benzene	ug/L	0.5	ND	07/09/93
Toluene	ug/L	0.5	ND	07/09/93
Ethylbenzene	ug/L	0.5	ND	07/09/93
Xylenes, Total	ug/L	0.5	ND	07/09/93

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REPORT OF LABORATORY ANALYSIS

Mr. Kin Leung
Page 4

July 14, 1993
PACE Project Number: 430708510

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0108837	
Date Collected:			07/08/93	
Date Received:			07/08/93	
Client Sample ID:			'C'	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	07/09/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	07/09/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	07/09/93
Benzene	ug/L	0.5	ND	07/09/93
Toluene	ug/L	0.5	ND	07/09/93
Ethylbenzene	ug/L	0.5	ND	07/09/93
Xylenes, Total	ug/L	0.5	ND	07/09/93

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

Mr. Kin Leung | FOOTNOTES | July 14, 1993
Page 5 | for pages 1 through 4 | PACE Project Number: 430708510

Client Reference: Exxon 7-0104 (EE)

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

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Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 22732
Samples: 70 0108802, 70 0108810, 70 0108829, 70 0108837

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	0.5	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	85%	91%	6%
Benzene	ug/L	0.5	100	92%	97%	5%
Toluene	ug/L	0.5	100	94%	98%	4%
Ethylbenzene	ug/L	0.5	100	94%	96%	2%
Xylenes, Total	ug/L	0.5	300	100%	91%	9%

Mr. Kin Leung
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FOOTNOTES
for page 6

July 14, 1993
PACE Project Number: 430708510

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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THE ASSURANCE OF QUALITY

EXXON COMPANY, U.S.A.

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

CHAIN OF CUSTODY

430708.510

☒ 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 ___

Address: 73 DIGITAL DR., NOVATO, CA 94949

Site Location: EXXON 7-0104, ALAMEDA

Project #: ~~170077.03~~ dl

Consultant Project #: 170077.03

Consultant Work Release #: 09300238

Project Contact: KIN LEUNG

Phone #: (415)382-7400 Fax #: 382-7445

Laboratory Work Release #:

EXXON Contact: MARLA GUENSLER ☒ EE ☐ C&M

Phone #: Fax #:

EXXON RAS #: 7-0104

Sampled by (print): KIN LEUNG

Sampler's Signature: Kin Wai Leung

Shipment Method: ICE CHEST

Air Bill #:

Shipment Date:

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

ANALYSIS REQUIRED

Sample Condition as Received
Temperature °C: CLIENT
Cooler #: COOLER
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
INFLUENT	7-8-93 1230	H_2O	HCl	2	10880.2	X											
'A'	↓	↓	↓	↓	81.0	X											
'B'					82.9	X											
'C'					83.7	X											
5/2																	

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
Kin Wai Leung	7/8/93	2:50	[illegible] PACE	7/8/93	2:50

Additional Comments:

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

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REPORT OF LABORATORY ANALYSIS

August 16, 1993

AUG 17 199

Mr. Kin Leung
Resna
73 Digital Dr.
Novato, CA 94949

RE: PACE Project No. 430809.501
Client Reference: Exxon 7-0104 (EE)

Dear Mr. Leung:

Enclosed is the report of laboratory analyses for samples received August 09, 1993.

Please note that Methyl tert-butyl ether was detected in the following samples at the approximated levels:

Influent	120ug/L
'A'	83ug/L
'B'	73ug/L
'C'	60ug/L

Footnotes are given at the end of the report.

If you have any questions concerning this report, please feel free to contact us.

Sincerely,

Stacy P Hoch

Stacy P. Hoch
Project Manager

Enclosures

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Novato, CA 94949
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REPORT OF LABORATORY ANALYSIS

Resna
73 Digital Dr.
Novato, CA 94949

August 16, 1993
PACE Project Number: 430809501
PACE WPP# 3046

Attn: Mr. Kin Leung

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0127521	
Date Collected:			08/06/93	
Date Received:			08/09/93	
			INFLUENT	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	08/11/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	2900	08/11/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	08/11/93
Benzene	ug/L	2.5	510	08/11/93
Toluene	ug/L	0.5	180	08/11/93
Ethylbenzene	ug/L	0.5	56	08/11/93
Xylenes, Total	ug/L	0.5	710	08/11/93

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REPORT OF LABORATORY ANALYSIS

Mr. Kin Leung
Page 2

August 16, 1993
PACE Project Number: 430809501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0127548	
Date Collected:			08/06/93	
Date Received:			08/09/93	
Client Sample ID:			'A'	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	08/11/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	94	08/11/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	08/11/93
Benzene	ug/L	0.5	1.9	08/11/93
Toluene	ug/L	0.5	ND	08/11/93
Ethylbenzene	ug/L	0.5	ND	08/11/93
Xylenes, Total	ug/L	0.5	1.1	08/11/93

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Mr. Kin Leung
Page 3

August 16, 1993
PACE Project Number: 430809501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0127556	
Date Collected:			08/06/93	
Date Received:			08/09/93	
Client Sample ID:			'B'	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	08/11/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	61	08/11/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	08/11/93
Benzene	ug/L	0.5	ND	08/11/93
Toluene	ug/L	0.5	ND	08/11/93
Ethylbenzene	ug/L	0.5	ND	08/11/93
Xylenes, Total	ug/L	0.5	ND	08/11/93

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REPORT OF LABORATORY ANALYSIS

Mr. Kin Leung
Page 4

August 16, 1993
PACE Project Number: 430809501

Client Reference: Exxon 7-0104 (EE)

PACE Sample Number:			70 0127564	
Date Collected:			08/06/93	
Date Received:			08/09/93	
Client Sample ID:			'C'	
Parameter	Units	MDL		DATE ANALYZED
ORGANIC ANALYSIS				
PURGEABLE FUELS AND AROMATICS				
TOTAL FUEL HYDROCARBONS, (LIGHT):			-	08/11/93
Purgeable Fuels, as Gasoline (EPA 8015M)	ug/L	50	ND	08/11/93
PURGEABLE AROMATICS (BTXE BY EPA 8020M):			-	08/11/93
Benzene	ug/L	0.5	ND	08/11/93
Toluene	ug/L	0.5	ND	08/11/93
Ethylbenzene	ug/L	0.5	ND	08/11/93
Xylenes, Total	ug/L	0.5	ND	08/11/93

These data have been reviewed and are approved for release.

Darrell C. Cain
Regional Director

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

Mr. Kin Leung
Page 5

FOOTNOTES
for pages 1 through 4

August 16, 1993
PACE Project Number: 430809501

Client Reference: Exxon 7-0104 (EE)

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

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Mr. Kin Leung
Page 6

QUALITY CONTROL DATA

August 16, 1993
PACE Project Number: 430809501

Client Reference: Exxon 7-0104 (EE)

PURGEABLE FUELS AND AROMATICS
Batch: 70 23651
Samples: 70 0127521, 70 0127548, 70 0127556, 70 0127564

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	0.5	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	104%	104%	0%
Benzene	ug/L	0.5	40.0	95%	100%	5%
Toluene	ug/L	0.5	40.0	98%	100%	2%
Ethylbenzene	ug/L	0.5	40.0	94%	96%	2%
Xylenes, Total	ug/L	0.5	120	108%	110%	1%

Mr. Kin Leung
Page 7

FOOTNOTES
for page 6

August 16, 1993
PACE Project Number: 43080950l

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

430809 ~~500~~ 501

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

Consultant's Name: RESNA INDUSTRIES

Page 1 of 1

Address: 73 DIGITAL DR., NOVATO, CA 94949

Site Location: EXXON 7-0104, ALAMEDA

Project #:

Consultant Project #: 170077.03

Consultant Work Release #: 09300238

Project Contact: KIN LEUNG

Phone #: (415) 382-7400 Fax #: 382-7415

Laboratory Work Release #:

EXXON Contact: MARLA GUENSLER ☒ EE ☐ C&M

Phone #: Fax #:

EXXON RAS #: 7-0104

Sampled by (print): KIN LEUNG

Sampler's Signature: Kin Wai Leung

Shipment Method: ICE CHEST

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

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
INFLUENT	8-6-93 1730	H_2O	HCl	2	12752.1	X												
'A'	↓	↓	↓	↓	12754.8	X												
'B'					12755.6	X												
'C'					12756.4	X												

Relinquished by/Affiliation	Date	Time	Accepted by/Affiliation	Date	Time
Kin Wai Leung / RESNA	8-9-93	10:07	Sandra Briones Pace	8/9	10:07

Additional Comments:

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

APPENDIX C

WASTEWATER DISCHARGE PERMIT

EBMUD

STANDARD PROVISIONS AND REPORTING REQUIREMENTS

I. Exxon Service Station #7-0104, located at 1725 Park Street, in Oakland, shall comply with all items of the attached STANDARD PROVISIONS AND REPORTING REQUIREMENTS, 11/92 Revision.

REPORTING REQUIREMENTS

I. Exxon Service Station #7-0104 shall notify EBMUD Source Control in writing, one week prior to start up. The District will conduct a site inspection before discharge may be initiated.

II. Exxon Service Station #7-0104 shall monitor discharges per the schedule found in the Self-Monitoring and Reporting Requirements, Section IV, on page 3 of this permit and submit the reports as required below.

III. Exxon Service Station #7-0104 shall submit quarterly reports as follows:

Date Due	Reporting Period
April 30, 1993	January 25 through March 31, 1993
July 30, 1993	April 1 through June 30, 1993
October 29, 1993	July 1 through September 30, 1993
January 28, 1994	October 1 through December 31, 1993

The quarterly report shall contain:

1. A summary of the treatment unit self-monitoring results, any other monitoring, and well sample results that occurred during the reporting period.

2. The estimated date that primary carbon canister breakthrough will occur, using current loading data.

3. Copies of the Facility Inspection Log. This log must include flow totalizer readings from each sample date, maintenance activities performed, description of operational changes, visual observations of the unit for leaks or fouling and off-haul of hazardous wastes.

EBMUD

WASTEWATER DISCHARGE LIMITATIONS

Exxon Service Station #7-0104 shall not discharge wastewater from Side Sewer number 1 into the sanitary sewer if the strength of the wastewater exceeds the following:

REGULATED PARAMETER	DAILY MAXIMUM, mg/L
Arsenic	2 mg/L
Cadmium	1 mg/L
Chlorinated Hydrocarbons (Total Identifiable)	0.5 mg/L
Chromium	2 mg/L
Copper	5 mg/L
Cyanide	5 mg/L
Iron	100 mg/L
Lead	2 mg/L
Mercury	0.05 mg/L
Nickel	5 mg/L
Oil and Grease	100 mg/L
Phenolic compounds	100 mg/L
Silver	1 mg/L
Zinc	5 mg/L
pH (not less than)	5.5 S.U.
Temperature	150 °F
Benzene	0.005 mg/L
Toluene	0.012 mg/L
Ethylbenzene	0.005 mg/L
Xylenes	0.011 mg/L

SELF-MONITORING AND REPORTING REQUIREMENTS

I. Exxon Service Station #7-0104 shall obtain representative samples of the wastewater discharge. The sampling shall be performed according to the frequency and methods outlined below and according to the methods and requirements found in STANDARD PROVISIONS AND REPORTING REQUIREMENTS, 11/92 Revision.

II. Self-monitoring Reports shall contain:

1. Laboratory results.
2. Chain of custody documentation.
3. Signatory requirements.

III. Sample location "C", also known as Side Sewer number 1, shall be the sample port located on the effluent side of the final carbon vessel. Sample location "B" shall be the sample port located between the end two carbon vessels. Sample location "A" shall be the sample port located on the influent side of the first carbon vessel, after the retention tank. The sample locations are shown on Harding Lawson Associates Plate 2 in this Permit.

IV. Sample locations "A", "B", and "C" per the following schedule:

Two hours after system start-up[1,2]
Daily for first three days[1,2]
Weekly for the first three weeks
Monthly for the first year

[1] Sample locations "A" and "C" only.
[2] Laboratory results to be available within 24 hours of sample collection and faxed to 510/287-1351.

V. Parameters to be monitored and sample types:

EPA 8020 (as gasoline) - grab sample
BTEX - grab sample

VI. All samples must be obtained using containers, collection methods, preservation techniques, holding times and analytical methods set forth in 40 CFR Part 136, except for the 8000 series methods, which are found in U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Test Methods for Evaluating Solid Waste, SW-846.

EBMUD

MONITORING and TESTING CHARGES

Total EBMUD Inspections Per Year: 3 @ $510.00 each = $1,530.00 /year

Total Analyses Per Year:

Parameter	Tests per year	Charge per test	Total Charge per year
EPA 624	3	$156.00	$468.00
EPA 625	1	$199.00	$199.00
Metals	1	$111.00	$111.00
		Monitoring and Testing Charge =	$2,308.00 /year
			$192.33 /month

WASTEWATER DISPOSAL CHARGE

All wastewater discharged will be charged for treatment and disposal service at the unit rate measured for other carbon treated groundwater discharges.
Current unit rate: $0.32 /Ccf

Volume discharged in Ccf/month = 292.8 $93.70 /month

WASTEWATER CAPACITY FEE

The capacity fee is calculated by multiplying the monthly wastewater discharge volume by the applicable fee in effect at start-up. Each month, 1/36 of the capacity fee will be charged, until the entire fee has been paid in 3 years.

Discharge volume = 218880 gallons per month
Capacity fee rate = $46.72 /Ccf-month
Capacity fee = $13,671.22 or $379.76 /month

EBMUD

WASTEWATER DISCHARGE PERMIT

Terms and Conditions

Exxon Service Station No.7-0104
Account No. 502-66631
Page No. 5

FEES AND WASTEWATER CHARGES

The following fees and charges are due when billed by the District:

Permit Fee (Paid $2,260). Balance:	$0.00
Monthly Monitoring Charges	$192.33
Monthly Wastewater Disposal Charge	$93.70
Monthly Wastewater Capacity Fee	$379.76
Total Monthly Charges =	$665.79

This Permit may be amended to include changes to rates and charges which may be established by the District during the term of this Permit.

AVERAGE WASTEWATER DISCHARGE *

LAST 12 MONTHS	PRECEDING 12 - 24 MONTHS
N/A	N/A

* Gallons per calendar day

AUTHORIZATION

The above named Applicant is hereby authorized to discharge wastewater to the community sewer, subject to said Applicant's compliance with EBMUD Wastewater Control Ordinance, compliance conditions, reporting requirements and billing conditions.

Effective Date: January 25, 1993

Expiration Date: January 24, 1994

MANAGER, WASTEWATER DEPARTMENT

1/22/93
DATE

10-30-2-91

EAST BAY MUNICIPAL UTILITY DISTRICT

APPENDIX D

FACILITY INSPECTION LOGS

DAILY FIELD REPORT

Project # 170077.03 Project Name EXXON 7-0104 By K. LEUNG To Date 7/8/93

Main Activity O & M / REFILL NUTRIENT

Vehicle Type	Odometer IN	Odometer OUT	Total Mileage
☐ Rent ☐ RESNA ☐ Personal			

Time Description

1100 - SYSTEM RUNNING UPON ARRIVAL, REFILL NUTRIENT TANK

CONTROL PANEL: ON NUTRIENT PUMP: ON pH: 6.30

CAUSTIC: AUTO TRANSFER PUMP: AUTO

SAND FILTER: 19.2 PSI BAG FILTER: 16.5 PSI

1 ST CARBON: 10.0 PSI

FLOW METER: 455 820 FLOW RATE: 4.2 GPM

AIR COMPRESSOR: ON HOUR 1750.2

AIR SPARGING: ON PRESSURE: 25 PSI

CAUSTIC LEVEL: <5 NUTRIENT: 200 GAL

- BACKWASH SAND FILTER & CARBON DRUMS
- COLLECTED BIO. SAMPLE FROM WELLS & AFTER BIO-TANK
- COLLECTED SAMPLES FROM 'INF', 'A', 'B' AND 'C'.
- DRAIN COMPRESSOR TANK

pH: 6.30 SAND FILTER: 18.2 PSI

BAG FILTER: 16.1 PSI 1 ST CARBON: 8.0 PSI

FLOW METER: 455 950 FLOW RATE: 5.7 GPM

Depart Job Site

Arrive ☐ Home ☐ Office ☐ Hotel

DAILY FIELD REPORT

Project No. 170077.03 Project Name EXXON 7-0104 By K. LEUNG To Date 7/20/93

Main Activity O & M

cle Type	☐ Rent ☐ WGR ☐ Personal	Odometer IN	Odometer OUT	Total Mileage

Time	Description
	Depart ☐ Home ☐ Office ☐ Hotel
10:30	Arrive at Job Site.
10:35	Record field parameter:
	control panel: on nutrient pump: on pH: 6.34
	caustic pump: Auto Transfer pump: Auto
	Sand filter pressure: 19.2 psi Bag Filter: 16.0 psi
	1st carbon pressure: ? 10.8 psi
	Flow meter: 507390 Flow rate: 4.3 gpm
	Air compressor: On
	Air sparging Flow rate: 2 cfm pressure: 25 psi
10:45	Backwash sand filters, carbon drums. Clean pH probe. Refill Caustic tank, drain compressor tank
11:37	Record field data:
	control panel: on nutrient pump: on pH: 6.95
	Caustic pump: Auto Transfer pump: Auto
	Sand Filter pressure: 19.0 psi Bag Filter: 17.2 psi
	1st Carbon drum pressure: 8.0 psi
	Flow meter: 507570 Flow Rate: 6.0 gpm
	Caustic tank: 750 gal nutrient tank: 175 gal
12:00	left site

Depart Job Site

Arrive ☐ Home ☐ Office ☐ Hotel

DAILY FIELD REPORT

Project No. 170077.03 Project Name EXXON 7-0104 By K. LEUNG To Date 8/6/93

Main Activity O & M

icle Type ☐ Rent ☐ WGR ☐ Personal	Odometer IN	Odometer OUT	Total Mileage

Time	Description
	Depart ☐ Home ☐ Office ☐ Hotel
1530	Arrive at Job Site
1535	Record Field data:
	Control panel: on Nutrient pump: On pH: 7.11
	Sand Filter Pressure: 20.1 psi Bag Filter: 12.0 psi
	1st Carbon Drum Pressure: 7.8 psi
	Flow meter Reading: 569732 Flow Rate: 2.5 gpm
	Caustic level: >50 gal
	Nutrient Level: 40 gal
	Air Compressor: on Hour: 2298
	Air Sparging Flow Rate: 2 cfm Pressure 25 psi
1540	~~Refill~~ Backwash sand filter, carbon drums. Clean pH
	probe, drain compressor tank
1620	Record Field Data:
	Control panel: on nutrient pump: on pH: 7.11
	Sand Filter pressure: 19.2 psi Bag Filter: 17.9 psi
	1st Carbon drum: 5.9 psi
	Flow meter reading: 569792 Flow rate: 4.6 gpm
	Other parameter remains the same.
1630	left site

Depart Job Site

Arrive ☐ Home ☐ Office ☐ Hotel

DAILY FIELD REPORT

Project No. 170077.03 Project Name EXXON 7-0104 By K. LEUNG To Date 8/13/93

Main Activity O & M / change out Bag Filter

cle Type	Odometer IN	Odometer OUT	Total Mileage
☐ Rent ☐ WGR ☐ Personal			

Time	Description
	Depart ☐ Home ☐ Office ☐ Hotel
12:45	Arrive at Job Site .
12:50	Record Field Data :
	Control panel : On Nutient pump : on pH: 6.70
	Sand Filter Pressure : 20 psi Bag Filter Pressure : 16.5 psi
	1st Carbon Pressure : 10.6 psi
	Flow meter Reading : 597866 Flow Rate : 3.8 gpm
	Caustic level : >50 gal Nutrient level : 26 gal
	Air compressor : on Hour : 2416
	Air Sparging Flow Rate : 2 cfm Pressure : 25 psi
13:15	Backwash sand Filter, carbon drums, changeout bag filter
	clean pH probe, drain compressor tank
14:20	Record ~~Final~~ Field Data :
	pH : 7.21
	Sand Filter Pressure : 18.2 psi
	Bag Filter Pressure : 15.8 psi
	Flow meter Reading : 597920
	Flow Rate : 6.5 gpm
	other parameters remain the same,
15:10	Left site

Depart Job Site

Arrive ☐ Home ☐ Office ☐ Hotel

DAILY FIELD REPORT

Project No. 170077.03 Project Name EXXON 7-0104 By K. LEUNG To Date 8/20/93

Main Activity O & M, change out Bag Filter

Vehicle Type	Odometer IN	Odometer OUT	Total Mileage
☐ Rent ☐ WGR ☐ Personal			

Time	Description
	Depart ☐ Home ☐ Office ☐ Hotel
1310	Arrive at Job Site
1315	Record Field Data:
	Control Panel: on Nutrient Pump: On pH: 6.62
	Sand Filter Pressure: 20.5 psi Bag Filter Pressure: 20.0 psi
	1st carbon Pressure: 0.0 psi
	Flow Rate: 0.0 gpm
	Flow meter Reading: 601140
	Caustic level: >50 gal
	Nutrient level: 20 gal
	Air Compressor: on Hour: 2494
	Air Sparging Flow Rate: 2 cfm, Pressure: 25 psi
1327	Backwash sand Filter, clean pH probe, backwash carbon drums.
	change out filter bag, drain compressor tank
14	Record Field Data:
	pH: 7.23
	Sand Filter pressure: 17.8 psi
	Bag Filter Pressure: 15.5 psi
	1st carbon Drum Pressure: 12.0 psi
	Flow Rate: 7.5 gpm
	Flow Meter Reading: 601163
	Other parameters remains the same
	Depart Job Site
	Arrive ☐ Home ☐ Office ☐ Hotel

DAILY FIELD REPORT

Project No. 170077.03 Project Name EXXON 7-0104 By K. LEUNG To Date 9/8/93

Main Activity

Vehicle Type ☐ Rent ☐ WGR ☐ Personal	Odometer IN	Odometer OUT	Total Mileage

Time	Description
	Depart ☐ Home ☐ Office ☐ Hotel
0905	Arrive at Job Site, WAIT FOR NARISH TO SHOW UP.
0915	INSPECT SYSTEM, SYSTEM RUNNING FINE
0930	RECORD OPERATION DATA:
	CONTROL PANEL: ON NUTRIENT PUMP: ON CAUSTIC PUMP: OFF
	pH: 6.45
	SAND FILTER PRESSURE: ~~20~~ 18.2 PSI BAG FILTER: 14.8 PSI
	1ST CARBON PRESSURE: 11.8 PSI
	FLOWMETER READING: 0675120 FLOW RATE: 6.1 GPM
	CAUSTIC LEVEL: >50 GAL
	NUTRIENT LEVEL: 50 GAL
	AIR COMPRESSER: ON HOUR:
	AIR SPARGER FLOW RATE: 2CFM, PRESSURE: 25 PSI
10:00	NARISH ARRIVE, SHOW HIM THE ROUTINE O & M WORK
10:20	BACKWASH SAND FILTER, BACKWASH CARBON DRUMS, CLEAN pH PROBE.
	DRAW COMPRESSOR TANK, REFILL NUTRIENT TANK
12:00	COLLECTED WATER SAMPLES 'INFLUENT', 'A', 'B', 'C' & 'BIOTANK'
12:25	RECORD FIELD DATA:
	pH: 7.28
	SAND FILTER PRESSURE: 16 PSI BAG FILTER: 15 PSI
	1ST CARBON DRUM: 11.2 PSI
	FLOWMETER: 0675360 FLOW RATE: 7.5 GPM
	CAUSTIC LEVEL: >50 GAL
	NUTRIENT LEVEL: > 200 GAL
	AIR COMPRESSOR: ON
	OTHER PARAMETER STAY THE SAME
12:50	LEAVE SITE FOR OFFICE

Depart Job Site

Arrive ☐ Home ☐ Office ☐ Hotel

ATTACHMENT E

CARBON BREAKTHROUGH CALCULATIONS

CARBON BREAKTHROUGH CALCULATIONS

Design Criteria

Volume of wastewater treated	=	219,540 gallons
Days of operation	=	62 days (July 8, 1993, through September 8, 1993)
Avg. Influent TPHg Conc.	=	≈ 85 ppb (based on cumulative results of laboratory analyses of influent water samples (Table 1)
Carbon Canisters	=	Three, 200-pound activated liquid-phase carbon canisters

Assumptions

1) Based on manufacturer's specifications on liquid-phase carbon, carbon has an adsorption capacity of:

   5 pounds (lbs) TPHg/100 lbs carbon = 10 lbs TPHg/200-lb carbon canister

2) Breakthrough is said to have occurred when the first reported detectable levels of hydrocarbons are detected at the sample port downstream of the second carbon (CARB-BT2/BT2).

Breakthrough Calculations

The average amount of TPHg in pounds per gallon, before activated carbon treatment, is calculated below:

$$\frac{85\ \mu grams\ TPHg}{1\ \ell\ H_2O} \quad \frac{1\ gram}{1{,}000{,}000 \mu grams} \quad \frac{1\ lb}{454\ grams} \quad \frac{3.785\ \ell}{1\ gallon} = \frac{7.1\times10^{-7}\ lbs\ TPHg}{1\ gallon\ H_2O}$$

The amount of TPHg in pounds to be treated during this 62 day period on a pound per day basis (lb/day), before activated carbon treatment is calculated below:

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<u>Site</u>: 7-C[illegible]

D. 09/23/93
Time 9.40 A.M

- Upon arrival Met Mr. Robert Bellamo of RAMCMD
- Gave him a brief tour of the System
- Mr. Bellamo went through each permit condition set by RAMCMD for site with me & [illegible] happy [illegible] that ~~each~~ one of them [illegible] [illegible] [illegible] (treatment). Mr Bellamo [illegible] not [illegible] all [illegible] [illegible] (discharges) He told me that he [illegible] [illegible] A [illegible] Engineer [illegible] [illegible] site [illegible] [illegible] [illegible] [illegible] & [illegible] a copy to [illegible]
- Checked on the flow meter [illegible] flow rate was [illegible] below 3.0 GPM.
- Backwashed [illegible] sand [illegible] of carbon [illegible]
- Looked for other possible system [illegible] but every thing seemed ok @ that time.
Flow rate now is 5.29 GPM
- Departure @ 11:15 AM.

[illegible]

$$\frac{7.1\times10^{-7}\ lbs\ TPH}{1\ gallon\ H_2O}\ \frac{219{,}540\ gallons}{62\ days} = \frac{0.0025\ lbs\ TPH}{1\ day}$$

Carbon breakthrough rate after flow through two carbon canisters is calculated as follows:

$$\frac{5\ lb\ TPHg}{100\ lbs\ Carbon}\ \frac{200\ lb\ Carbon}{One\ Canister}\ \frac{1\ day}{0.0025\ lb\ TPHg} = \frac{4{,}000\ days}{One\ Canister}$$

Thus at the design criteria detailed above, 3 in-series liquid-phase carbon canisters appear to be adequate for 10 years.